



Sebastian Vettel bids farewell to F1

AUTOSPORT

24 NOVEMBER 2022

F1 ABU DHABI FINALE

Max smokes 'em one more time

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extends
record
as Leclerc
pips Perez

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Verstappen extends 2022 record as his predecessor says goodbye

After the drama and excitement of George Russell's first Formula 1 victory in Brazil, usual 2022 service was restored in Abu Dhabi. Max Verstappen never looked like losing, while Sergio Perez and Charles Leclerc battled for second in the race and the championship – a fight won brilliantly and deservedly by the Ferrari driver.

As Alex Kalinauckas explains in our report on page 16, the differing strategies between Red Bull team-mates Verstappen and Perez contributed to Leclerc's success. But Verstappen can hardly be blamed for that, particularly as it was his excellent tyre management that allowed him to be on a one-stopper – and there were several other factors that contributed to Perez falling short by 1.3 seconds.

Verstappen's victory moves his season-wins record to 15. We compare his year to the best campaigns of previous greats on p33.

In stark contrast to the 2021 season finale, there was a lot of good feeling in the Yas Marina paddock – much of it directed at Sebastian Vettel in his last grand prix as a driver (p4). Vettel has matured into one of motorsport's finest ambassadors and the high regard with which he is held was clear to see. Autosport wishes the four-time champion well in his future endeavours – while also being bold enough to have a go at finding a place for him in the pantheon of F1 legends (p14)...

At the other end of his career is Kalle Rovanpera. Tom Howard talks to key figures about the new World Rally champ's rise on p38.



Kevin Turner

Kevin Turner
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**NEXT WEEK
1 DECEMBER**

Toyota's 2022 successes
World Endurance and World
Rally reviews, plus a
British star's F1 test



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ENGINEERING SUPPLEMENT

The exciting new sportscar era – and how the WEC and IMSA cooperation came about – is the main focus of our latest Engineering supplement.

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Vettel given send-off as he bows out of F1

FORMULA 1

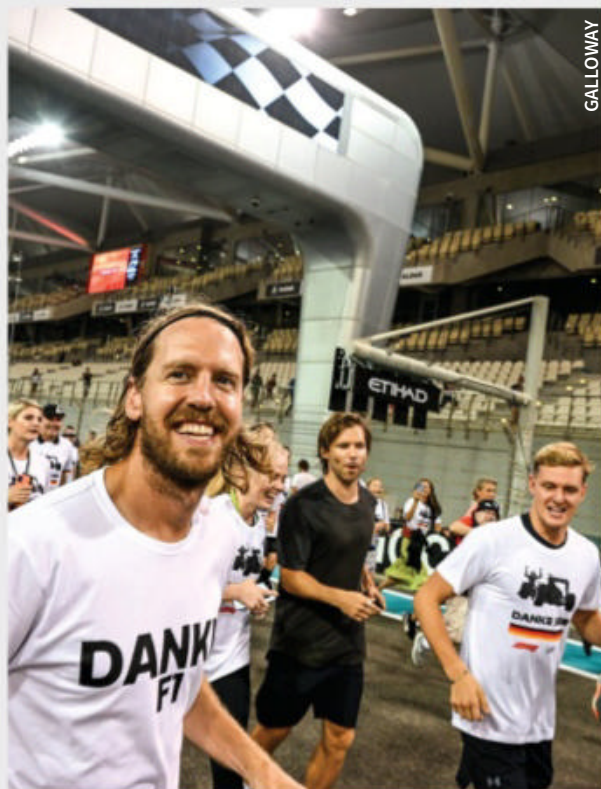
Formula 1 bade an emotional farewell to Sebastian Vettel as the four-time world champion retired from the pinnacle of the sport following last weekend's Abu Dhabi Grand Prix.

Vettel, 35, announced at the end of July that he would be hanging up his helmet after the 2022 season, calling time on a 15-year career in F1 that included stints with BMW Sauber, Toro Rosso, Red Bull, Ferrari and Aston Martin.

The German had always maintained that he was at peace nearing the final races of his F1 career, only showing a slight tinge of real sadness when racing at Suzuka, his favourite track, for the final time. But the Abu Dhabi weekend sparked an outpouring of affection for Vettel from the entire F1 paddock. People shared stories and gave tributes to a driver whose greatness on track at the peak of his powers was matched by his decency and awareness of social issues in the wider world.

Vettel admitted last Thursday at Yas Marina that it was "difficult to grasp" it would be his final race weekend, but privately maintained to the Aston Martin team that it had to be business as usual as it looked to beat Alfa Romeo in the fight for sixth in the championship.

Vettel plans to take some time away from F1, but former title rival Lewis Hamilton tipped him to return and race in the future. "You're probably going to come back," he told Vettel in the press conference. "I'm sitting here kind of accepting, yes, it's your last race, but you'll be back."



Fernando Alonso and Mick Schumacher both raced with Vettel tribute helmets in Abu Dhabi, adopting the German flag strip down the middle of their designs. Alonso said that his and Vettel's careers were "linked" given their title fights in 2010 and 2012. Aston Martin ran with a 'Danke Seb' message on its car over the weekend.

Vettel brought the paddock together on Saturday night by holding a special track run, one of his favourite activities on a race weekend. Around 200 people took part and were encouraged by Vettel to take their time, either running or walking. Attendees were handed special T-shirts for the run reading 'Danke Seb' and with a graphic of



Vettel waves goodbye to F1 with 53 wins, 57 poles, and 38 fastest laps from 299 GP starts



Vettel bowing before his Red Bull RB9 after clinching his fourth world title at the Indian Grand Prix in 2013. Vettel hung around until the very end to clap those crossing the line.

"Thank you Formula 1 for all these years, and thank you to all the people in the paddock," he said. "We travel the whole year together, I thought it was just a nice idea to invite everyone."

Vettel was also gifted a signed engine cover from his 2018 car by Ferrari, and addressed the team in Italian, as well as receiving a rear-wing endplate from Red Bull. All 20 F1 drivers met up for dinner on Thursday night, the first time that has happened since 2016, to say goodbye to Vettel, and a guard of honour was formed on the grid ahead of the race. Multiple drivers said that they were making a concerted effort on track not to hinder his weekend.

Vettel sparkled in qualifying to reach Q3 and start from ninth, but was left frustrated by Aston Martin's strategy, believing he

NEW FACES IN NEW PLACES TAKE TO TRACK IN ABU DHABI



FORMULA 1 Post-season testing got under way on Tuesday morning at Yas Marina following the Abu Dhabi Grand Prix. First onto the track was the old man of the grid, Fernando Alonso, getting in his first mileage as an Aston Martin driver ahead of his switch to the team in 2023.



Pierre Gasly, meanwhile, got onto the circuit with Alpine, where he has replaced Alonso for 2023 following his release from AlphaTauri to form an all-French line-up with Esteban Ocon.



Or you could say that Gasly has replaced Oscar Piastri, not that the Australian and his management would ever agree... The ex-Alpine protege and 2021 FIA Formula 2 champion got down to business with the McLaren team, which secured his services for next season.



The beneficiary of all these driver-market shenanigans was Nyck de Vries, the 2021 Formula E title winner who suddenly found himself as a full-time F1 driver and who on Tuesday climbed aboard with his new team AlphaTauri. **Photographs by Motorsport Images**



could have finished as high as sixth had he pitted sooner. He crossed the finish line 10th after a late charge on fresh tyres, but it wasn't enough to give Aston Martin sixth in the points, and the team lost out to Alfa Romeo on countback.

"I feel a bit empty, to be honest, it's been a big weekend," Vettel said after getting out of the car. "It was a bit of a different warm-up today to get into the race, but once the lights go off it's full-on race mode."

"Obviously, we didn't go for maybe the best strategy, so it was a shame because I think we could have turned the constructors' championship around for us. But overall, it's been a big day and a big thank you to all the support — so many flags, so many smiling faces, which has been very, very special. I'm sure I'm going to miss more than I understand right now."

LUKE SMITH

P14 VETTEL'S PLACE AMONG GREATS

Ricciardo to take up Red Bull reserve role

FORMULA 1

Daniel Ricciardo is set to join Red Bull for next year as its third driver, returning to the team where he enjoyed most of his success in Formula 1.

The Australian has been in talks with a number of teams about a reserve role for 2023 after accepting in October that he would not be on the grid next year following his exit from McLaren. Despite interest from Mercedes, Ricciardo ultimately favoured a return to Red Bull, where he raced from 2014-18, winning seven races. He is set to take up a third-driver role that will include simulator work and appearances in promotional events such as demonstration runs in old cars.

The news was let slip by Red Bull advisor Helmut Marko, who revealed last

Friday on Sky Germany that Ricciardo would be joining. The contract was still unsigned, and team boss Christian Horner said that Marko “in his enthusiasm has obviously announced it”.

“To have a driver of Daniel’s profile and history with the team within the group is only an asset for us,” said Horner. “It means that he keeps in touch with Formula 1, and we’ll obviously be using him on the simulator as well. He’ll be attending potentially some events, of course if he does sign a contract.”

Ricciardo explained on Saturday that he thought taking up the Red Bull role was better than chasing a seat further down the grid since he “knew that I wanted some time off next year from a race seat and just from competition”. He settled on



taking a year away from racing quite soon after his McLaren exit was confirmed in late August, feeling it would allow him to better understand if he had the motivation for a return in 2024.

Asked what happens if he

gets to the middle of next year and decides he does not desire a comeback, he said: “Then that’s my answer. If next year I’m not interested in coming back, then I must be doing some really cool shit.”

LUKE SMITH

No appetite for Perez Monaco crash probe



FORMULA 1

Formula 1 team bosses says it’s too late for the FIA to investigate Sergio Perez’s Q3 accident from May’s Monaco Grand Prix, despite the governing body’s president offering to do so.

Perez crashed at Portier in the final moments of qualifying in Monte Carlo, causing a red flag that ended the session and gave him third on the grid, ahead of Red Bull

team-mate Max Verstappen. The world champion’s refusal to help Perez in the recent Sao Paulo GP was reported to be linked to concerns that the Monaco crash was deliberate to stay ahead on the grid, but Verstappen and Red Bull have refused to confirm that. Perez, who went on to win the Monaco GP, denied last weekend in Abu Dhabi that the crash was premeditated. “Everyone makes mistakes in Monaco in general places in qualifying,” he said.

“It’s not like it was done on purpose.”

FIA president Mohammed Ben Sulayem indicated last Friday that he would be happy to launch an investigation if a rival team complained, saying he was “not shy or afraid” of tackling any issue. But Red Bull’s rivals have shown little appetite in pursuing the case, believing it is time to move on.

“I don’t think we can judge, and it’s not down to us as well to do it,” said Ferrari chief Mattia Binotto, who saw Carlos Sainz’s car get damaged in the second impact of Perez’s crash. “It’s down to the FIA. I’m pretty sure they looked at the time, and we need to move forward and think that things are moving forward.”

McLaren supremo Zak Brown said that the “train has left the station”, while Mercedes boss Toto Wolff felt that an investigation would not be good for the sport, adding that there had been “enough of a PR crisis in the last couple of weeks around that team [Red Bull], and I think we don’t need another one”.

Perez denied reports that Red Bull had conducted an internal investigation of the Monaco incident, or that he had admitted a deliberate action to team boss Christian Horner and Red Bull motorsport advisor Helmut Marko. “That’s just speculation from the media out there,” he said.

LUKE SMITH & ADAM COOPER

Spa and Baku set for sprints

FORMULA 1

Spa and Baku are set to host Formula 1 sprint races next year as the format expands to six race weekends.

After debuting the Saturday races in 2021, F1 held another three sprints this year at Imola, the Red Bull Ring and Interlagos, with varying levels of action and overtaking. The expansion to six sprints for 2023 has already been agreed with teams and the FIA.

F1 conducted analyses into which tracks were likely to offer the best action for sprint races, creating an overtaking index that informed the decision. Autosport learned at last weekend's Abu Dhabi Grand Prix that the six circuits in the frame to host a sprint next year are Baku (Azerbaijan, right), Red Bull Ring (Austria), Spa (Belgium), Losail (Qatar), Austin (USA) and Interlagos (Brazil).

The tracks are yet to be set in stone, with sources indicating it remains possible that Saudi Arabia could host a sprint at the second round of the season in place of Qatar later in the year, with negotiations ongoing.

A sprint at Spa would last just 15 laps given the length of the circuit, but the Belgian GP offered one of the best races for overtaking this year, especially in the early stages as Max Verstappen fought back from



a grid penalty. Its hosting of a sprint is also understood to be a positive indication for its future on the F1 calendar beyond 2023.

Speaking exclusively to Autosport about the driving force for the change of sprint venues, F1 managing director of motorsport Ross Brawn said: "They are not necessarily the most commercially lucrative of the options we have, but they're the ones where

we thought the sprint would work well. We're trying to find a balance. And that's what we will always do. We'll never compromise on the event."

F1 is also still evaluating the idea of making the Saturday races standalone events so that they do not decide the grid for the main grand prix.

LUKE SMITH & JONATHAN NOBLE



Wheelarch plan for F1 in wet

FORMULA 1

The FIA is commissioning a study that may lead to Formula 1 cars being fitted with temporary wheel covers during extreme wet running in a bid to improve visibility.

With the new generation of cars throwing up more spray in wet conditions than previous eras, moves are being made to remedy the issue. A study was confirmed by the FIA following the latest F1 Commission meeting at last weekend's Abu Dhabi Grand Prix. This will entail CFD simulations to assess the wheelarches' viability and impact on the cars aerodynamically, and aims to reduce the amount of spray by 50%.

The wheelarches would either be added before a race or during a red flag, but could not be removed during a pitstop. During a wet-to-dry race, the wheel arches would remain fitted for the entirety. The FIA's study will also assess "the contribution of surface water picked up through the underfloor tunnels to understand its significance" to the spray problem.

FIA head of single-seaters Nikolas Tombazis said he was "very confident" the wheelarches would be available for 2024, but he said there was a chance they could be ready for the second half of 2023, depending on how plans progressed.

LUKE SMITH & ALEX KALINAUCKAS

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DAMS ran Iwasa and Nissany this year, but now Leclerc (inset) is joining

Leclerc's little brother gets F2 graduation

SUTTON
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IMAGES

FORMULA 2

Arthur Leclerc, younger brother of Ferrari Formula 1 star Charles Leclerc, will make the move up to Formula 2 with DAMS in 2023.

Ferrari Academy driver Leclerc joins the French squad following three years with Prema Racing, initially in Formula Regional and then in FIA Formula 3, in which he finished sixth in the 2022 standings.

DAMS has shown improved form this season following its takeover by former F1 racer Charles Pic. It fielded Ayumu Iwasa to fifth in the points, and its two cars locked out the front row for last weekend's finale at Yas Marina, where Leclerc (22) is taking the wheel for this week's post-season test.

"I'm delighted to be making the step up to Formula 2 with DAMS in 2023," said Leclerc. "Charles Pic has done an amazing job to help the team back to winning ways throughout the season and I'm aiming to keep that going next year. We've a lot of work to do before the start of the new campaign in Bahrain in March, and I'm really looking forward to getting started in the post-season test in Abu Dhabi!"

Meanwhile, Prema welcomes back Mercedes F1 junior Frederik Vesti, the Dane completing the Italian squad's line-up for his second season in F2 alongside star F3 graduate Ollie Bearman.

Vesti won the 2019 Formula Regional European title with Prema and was a race winner with the team in his rookie F3 season in 2020, before switching to ART Grand Prix for his second F3 campaign and his step up to F2 this year, in which he was ninth in the points.

"I have big dreams and Prema is the team I believe that I can achieve those dreams with," said Vesti. "There is no doubt that 2023 F2 is going to be incredibly close, but I will give my everything to be fast and consistent throughout the season."

Swiss F2 veteran Ralph Boschung has remained loyal to Campos Racing for next season after a 2022 campaign that was disrupted by a neck injury. Clement Novalak returns to Trident, the team with which he placed third in F3 in 2021, after competing with MP in his rookie F2 season this year.



FERRARI



PREMA

O'Sullivan completes Prema F3 line-up

FORMULA 3

Zak O'Sullivan, the 2021 Aston Martin Autosport BRDC Award winner, will join Prema Racing for his second season in the FIA Formula 3 Championship next year, as predicted by Autosport.

The 17-year-old Williams F1 protege spent his rookie F3 campaign with Carlin, scoring a pole position on home ground at Silverstone and two podiums. He switched to Prema for the post-season test at Jerez and will

now line up alongside the team's newly crowned Formula Regional European champion, Ferrari junior Dino Beganovic, and the Swede's fellow FRegional ace, Mercedes F1-backed Paul Aron, both of whom also took part in the running in Spain.

"Zak will bring in his experience, which is something we always really value, and he already did an outstanding job in post-season testing," said Prema chief Rene Rosin. "That will boost our preparations for 2023,

and we are confident we will see Zak thrive in our environment.

"We are equally delighted to work with the Williams Driver Academy, and we are grateful for the trust they have put into us."

Over at MP Motorsport, Mari Boya remains with the Dutch team for his step up from FRegional, in which he was 10th in the standings this year. The 18-year-old Spaniard drove alongside Jonny Edgar and Franco Colapinto at Jerez, and is the first confirmation at MP.



F1 launches female F4 series

F1 ACADEMY

Formula 1 has announced a new F4-level all-female series from 2023 known as F1 Academy to help women climb the junior single-seater ladder.

The series is set to feature a 15-car grid, consisting of five teams each entering three drivers. These teams will be existing squads across Formula 2 and Formula 3, racing over seven triple-header rounds. Only one round is planned for an F1 weekend, maximising track time outside the confines of the grand prix schedule.

F1 Academy will be based on the Tatuus T421 chassis, engines supplied by Autotecnica and capable of 165bhp, and Pirelli tyres, all of which are in widespread use across European F4 competition. It will be managed by Bruno Michel, the CEO of

Formula Motorsport Ltd that oversees Formula 2 and Formula 3.

Although F1 will subsidise each entry with a budget of €150,000 per season, the drivers competing in F1 Academy will be required to match the amount, which it claims “represents a fraction of the usual costs in a comparable series”.

F1 said in its announcement that the new category is not aimed as a replacement for W Series, the all-female series that was established in 2019 but was forced to curtail its 2022 season due to funding issues. Instead, F1 Academy “aims to develop and prepare young female drivers to progress to higher levels of competition including W Series”, which “continues to provide a great platform for drivers and the F1 Academy is intended to add an extra route for the next generation of young female drivers, who will race in an environment that will allow them to gain fundamental experience thanks to a great amount of track time”.

W Series responded by saying it “welcomes any initiative which shares our ambition to provide more opportunities for women in motorsport”, and the “addition of the F1 Academy as a feeder to W Series and other series is a further step in inspiring the next generation to progress up the motorsport ladder”.

LUKE SMITH



BRAUN REPLACES JARVIS IN SHANK ACURA ATTACK

IMSA

Three-time IMSA class champion Colin Braun will return to North American sportscar racing's front line with Meyer Shank Racing in 2023. The 34-year-old will contest the full IMSA SportsCar Championship in the GTP class alongside Tom Blomqvist in the team's defence of its title with the new Acura ARX-06.

The American has been chosen to replace Oliver Jarvis, who left the team after his option for 2023 wasn't renewed. Braun was one of five hopefuls, including Neel Jani and Felipe Fraga, to test with Shank. The deal represents a resurrection for a driver who had raced down the class pecking order over the past years with CORE Autosport, with which he won the 2022 LMP3 title. Yet as long ago as 2006, he was a two-time winner in the old Grand-Am series and was picked up by Roush for its stock car development programme.

Braun is renewing a relationship with Shank: he contested the Daytona 24 Hours with the team back in 2009 and set a series of FIA speed records driving a Riley-Ford on the Daytona superspeedway in 2013.

Braun explained that he is “ready to once again compete in IMSA's top class for wins and championships”.

GARY WATKINS



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Breen ends M-Sport deal for return to Hyundai

WRC

Craig Breen is to rejoin Hyundai for next season's World Rally Championship after parting ways with M-Sport halfway through his two-year contract. The Irishman has agreed a deal to contest a partial campaign next year, sharing the third i20 N alongside the experienced Dani Sordo, who has been retained by the South Korean marque.

The move means that Breen (above) reclaims a role he held with Hyundai from 2019-21. He has endured a difficult full season with M-Sport, which yielded podium finishes in Monte Carlo and Sardinia in its Ford Puma machinery amid a campaign plagued by incident.

Confirmation of Breen's return to Hyundai has ended suggestions of a comeback for former Citroen and Toyota driver Kris Meeke, who was among the manufacturer's shortlist of options. "Joining Hyundai Motorsport for the 2023 WRC season feels like a homecoming for me," said Breen. "We have secured some very memorable results together in the past, including several runner-up results, so hopefully I will be able to take that a step further."

Hyundai also announced that former Toyota driver Esapekka Lappi will join Thierry Neuville at its Alzenau-based squad, with the Finn taking over the seat vacated by 2019 world champion Ott Tanak. The Estonian's future in the WRC is yet to be resolved, with his most realistic option being a return to M-Sport.

"Life is full of surprises — getting a

chance to join Hyundai Motorsport and to drive a full-calendar WRC programme was something we didn't expect," said Lappi, who scored three podiums from seven events this year, when he shared the third Toyota with Sebastien Ogier. "This is truly a dream and a unique opportunity; we are very happy to join the Hyundai family."

Lappi's decision to join Hyundai creates a vacancy in the Toyota ranks that has resulted in the Japanese marque reshuffling its line-up for 2023. New world champion Kalle Rovanpera and Elfyn Evans have been retained, alongside eight-time world champion Ogier, who will again contest a partial season in the third GR Yaris. Takamoto Katsuta (below) has earned a promotion to the third points-scoring car for events Ogier won't contest and will continue to drive a fourth car when the Frenchman is competing.

Toyota has confirmed that it is open to renting out its fourth car for the events where Ogier is absent.

TOM HOWARD



'Garage 56' car on track at VIR

LE MANS 24 HOURS

Chevrolet's plan to take a Next Gen NASCAR Cup-based ZL1 Camaro to the Le Mans 24 Hours next year is taking shape. The car ran at Virginia International Raceway last week in what was described by Hendrick Motorsports, which is developing the car, as a "huge milestone" for the project aimed at filling the Garage 56 entry slot reserved for innovative machinery.

The test was the second for the car run by Action Express Racing after an initial roll-out at Road Atlanta at the end of August. Both runs were undertaken by two-time Le Mans winner Mike Rockenfeller, who explained that the Camaro was now being moulded into the form in which, entry permitting, it will race at the French enduro.

"It's definitely a big step," said the German, who has raced a Cadillac DPi jointly run by Action Express and Hendrick in IMSA enduros over the past two seasons. "We have less weight and a bit more downforce. Power is a bit different, we increased a little bit there. Now we have paddleshift and traction control. We are pretty close to what we think will be the race car at Le Mans. But of course, it's still a very long way to go."

Rockenfeller revealed that the revised car ended up approximately 10s quicker than a regular Cup car around VIR. "It's weight, its power, it's tyre grip — it's just a lot faster," he said.

Hendrick Motorsports VP of competition Chad Knaus called the test a "huge milestone" as Chevy, Hendrick and tyre supplier Goodyear attempt to celebrate the appearances of a pair of stock cars at Le Mans in 1976. It wasn't revealed whether the car was running the mooted hybrid system that could come on stream in the NASCAR Cup as early as 2024.

GARY WATKINS





New rules to cut strategy calls

WEC

Strategic options in the World Endurance Championship are set to be reduced next year, with a change in the sporting rules for the pits to be closed during a Full Course Yellow virtual safety car under discussion.

The move, which is expected to go before the next FIA World Motor Sport Council on 7 December, is part of a change in the way the races are neutralised in an attempt to improve the spectacle. The guidelines at the moment call for an FCY, and the 80km/h (50mph) max speed it demands, to last a minimum of two laps to give all teams the possibility to bring their cars into the pits.

Instead, FCYs, typically called to remove debris from the track, will be shorter and sharper. This suggests that for longer yellow periods where an FCY is currently used, the race director will now have to call a safety car, which could also benefit the show by closing up the field.

The FIA and the Automobile Club de l'Ouest are refusing to confirm that the new procedures will be put in place in time

for next year, subject to WMSC approval. WEC championship manager Marek Nawarecki insisted that there were only "ongoing discussions" about possible revisions to the sporting code.

The potential loss of one strategic variation is disappointing, according to many of the WEC teams. "The benefit will be to have shorter race interruptions," said Toyota Gazoo Racing Europe technical director Pascal Vasselon. "The big loss is that you are losing strategy options, options for the teams to play different games."

The WEC and the associated European and Asian Le Mans Series run by the ACO are also set to outlaw tyre warmers for 2023, a move in line with the phasing out of tyre blankets in Formula 1. Again the rulemakers are refusing to confirm that it is a done deal, but WEC tyre suppliers Michelin and Goodyear are known to be already testing in preparation for the change.

"The Endurance Commission [which makes proposals to the WMSC] is committed to sustainability and all options are on the table," said Nawarecki.

GARY WATKINS

IN THE HEADLINES

DI RESTA FOR ASIAN LMS

Peugeot World Endurance Championship driver Paul di Resta will renew his relationship with United Autosports in the two-weekend, four-race Asian Le Mans Series in the United Arab Emirates in February. The ex-Formula 1 driver will race one of two ORECA-Gibson 07s fielded by the British team alongside Phil Hanson, with whom he won the Asian title in 2018-19, and American amateur Jim McGuire.

HANSON IN TURKEY FLOCK

Meanwhile, Hanson, the WEC LMP2 champion in 2019-20, and FIA Formula 3 racer Juan Manuel Correa will drive the TF Sport-run Racing Team Turkey ORECA-Gibson 07 in January's Daytona 24 Hours IMSA series opener. They will share the car with regulars Salih Yoluc and Charlie Eastwood in the LMP2 class.

CORREA BACK ON F2 GRID

Correa returned to the Formula 2 grid at last weekend's Yas Marina finale for the first time since sustaining serious injuries at Spa in 2019 in the crash that claimed the life of Anthoine Hubert. Correa, who was on board at Van Amersfoort Racing, qualified 17th, and that was also his best result.

WILSON'S INDY 500 DEAL

US-based Brit Stefan Wilson has secured a ride with Dreyer & Reinbold Racing for his annual attack on the Indy 500 in 2023. DRR, which ran Wilson's late older brother Justin in IndyCar in 2010-11, is linking up with Cusick Motorsports for the project.

PIERSON JOINS INDY LADDER

American Josh Pierson, who became the youngest participant in history in the Le Mans 24 Hours this year at the age of 16, has joined the development programme of IndyCar team Ed Carpenter Racing. Pierson will next season combine his World Endurance Championship campaign at United Autosports with a partial schedule in Indy NXT (formerly Lights) with HMD Motorsports.

GIBBS REPLACES BUSCH

NASCAR Xfinity champion Ty Gibbs will step up to the Cup Series full time in 2023 with the Toyota-equipped Joe Gibbs Racing squad of his grandad. He replaces Richard Childress Racing-bound double Cup champion Kyle Busch.



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Next step for Ferrari and Leclerc

An excellent drive to second place in Abu Dhabi, securing the target of runner-up in the drivers' championship, augurs well for taking the fight to Red Bull next year

ALEX KALINAUCKAS

“Where is P2?” It was about the only thing that Charles Leclerc got wrong last Sunday in Abu Dhabi, missing where to park next to Max Verstappen in the smoky pitstraight parc ferme after their celebratory burnouts. After heading briefly towards the third-place finisher's spot, he squeezed his Ferrari F1-75 around the Red Bull and ended up where he should have been.

The same goes for the final result of Formula 1 2022. In beating Sergio Perez to second in the season finale with a flawless drive in circumstances that his Ferrari team have historically struggled with, Leclerc sealed the runner-up spot behind Verstappen as well. It was his target throughout the season run-in, allied with working with Ferrari to start addressing the issues that blighted the middle part of their campaign and ultimately cost them the championship.

The good news is, based on what F1 witnessed last weekend and at several other races since the Belgian GP, where Leclerc now acknowledges he knew the 2022 title was lost, Ferrari is making positive progress on its tyre management and strategy issues. The events of the previous weekend in Brazil, however, do prove that the work is not yet done. And the real bad news is that no driver on the cusp of championship glory can be satisfied with second place.

Leclerc wasn't gushing with delight at his Abu Dhabi or championship result either when he crossed the line 1.3 seconds ahead of Perez at Yas Marina last Sunday, or when he faced the

“Looking back on the season, it's remarkable to note that Leclerc ended up with just three wins”

media in the hours afterwards. But that's just how true champions react. Their steely inner drive won't let them accept what is, to them, beneath them. Leclerc knows he has the speed to be a world champion, with the most poles of all this season as further proof, and that he can battle Verstappen wheel to wheel and prevail. But it clearly hurts that it didn't come off this time.

Looking back on the season, it's remarkable to note that Leclerc ended up with just three wins. By rights his total should have been double that, with victories clearly lost in Spain, Monaco and at Silverstone through no fault of his own. Paul Ricard was his own error, but the win against a rapid Verstappen was on there, and there's a case to be made for Hungary and Singapore being there for the taking too. Nine wins to match his pole total would have left the history books reflecting more of

the promise this campaign contained.

But even with three wins, that's still an impressive turnaround for Ferrari considering the two awful years that preceded 2022, and the red team deserves big credit for making good on its promise to get back into the title fight after the performance pain of losing its pre-2020 engine arrangement. Perhaps this is why, for Leclerc, the season just gone is “difficult to sum up”. But he concluded: “I'm confident that in terms of pace, we will manage to catch Red Bull back next year.”

For both Leclerc and Ferrari, the Abu Dhabi weekend surely provided a springboard into next year for several important reasons. The first is that the team turned around what looked like being a very tricky race based on its FP2 showing. As Carlos Sainz ended up on the attacking two-stopper, it was left to Leclerc to demonstrate Ferrari's tyre management progress, which he did with aplomb. Plus, he didn't buckle under late pressure from Perez.

The main problem for Ferrari and Leclerc is that Verstappen still dominated the race to win by 8.8s from pole on the same strategy. But the Dutchman possesses the best car of 2022, which continued to be fettled and improved around the floor and rear-end bodywork – key parts of the RB18's tyre-preservation prowess. The car was overseen by Adrian Newey, who, one senior F1 paddock figure suggested to Autosport, knew not to be seduced by chasing big possible downforce gains from running a ground-effects car super-low and very stiff. This aided his team in understanding and avoiding porpoising and resulting handling problems this year. Now, Ferrari and Mercedes too have a chance to redesign their challengers with this in mind and can focus on reeling Red Bull in.

Regarding rubber, Leclerc also acknowledges that Abu Dhabi “was a good race but we also sometimes have very bad races and we don't seem to have the understanding yet of how to have a good tyre management all the time”. This is an issue Ferrari still hasn't fully addressed from 2021 and is an area where it can make big gains over the course of a championship. Red Bull does get its sums and set-ups wrong on tyres at times, but they are rare anomalies and Ferrari should be striving to reach such consistency.

Leclerc is also targeting improvements in his own game for 2023, saying “it's been quite a few years that I'm in F1 and it's more about getting the details and being at my 100% as often as possible”. At the same time, he knows now to sometimes take a step back and perhaps not push too hard and risk going over the edge, as he did in France.

If Leclerc can do all this, armed with an improved Ferrari package, he will enter the class of championship-calibre drivers and fulfil the potential he has long shown. 🏆

➔ **P16 ABU DHABI GP REPORT**



Where Vettel stands with the greats

Now that the German's illustrious Formula 1 career is over, it's time to assess his decade and a half at the pinnacle of motorsport

KEVIN TURNER

Sebastian Vettel retires from Formula 1 with 53 victories from his 299 world championship starts, and four titles to his name. Those statistics automatically put him into an elite group, but where exactly does he sit in the pantheon of F1 legends?

Vettel is third on the all-time wins list, behind Lewis Hamilton and Michael Schumacher, while his 57 poles place him fourth, with Hamilton, Schumacher and Ayrton Senna on more. Vettel's tally of four world titles has only been surpassed by Schumacher, Hamilton (both on seven) and Juan Manuel Fangio (five).

Of course, careers are longer now, so strike rate provides a better way of comparing drivers. Excluding the Indianapolis 500, which counted for points from 1950-60, only 15 drivers have a wins strike rate of 15% or better in the world championship. Vettel is one of those, but he is further down the list than on the wins tally: 12th, between Damon Hill and Nigel Mansell.

Even the strike rate doesn't tell the full story. It can't take into account time spent in uncompetitive cars or the strength of the eras in which the drivers were competing. When Autosport considered the question of the greatest driver of all time for our 70th anniversary celebrations, we looked at era-defining drivers. These are the performers who, through statistics and the opinions of their peers, set the standard. Since the start of the world championship in 1950, they are Fangio, Stirling Moss, Jim Clark, Jackie Stewart,

“Vettel's 2008 Italian GP win for Toro Rosso stands as one of the great wet-weather drives”

Niki Lauda, Alain Prost, Senna, Schumacher and Hamilton.

This seems a sensible starting point when discussing the greatest of all time, with the caveat that some other drivers – most notably Alberto Ascari, Gilles Villeneuve and Fernando Alonso – also need to be considered for their places in the hierarchy during their careers.

Vettel didn't quite match Hamilton and Alonso across his period in F1, though you could make a case for him being the third-strongest driver of his generation. It makes sense to select these three because, until the rise of Max Verstappen, they had won all but three of the titles since the end of the Schumacher era – Kimi Raikkonen, Jenson Button and Nico Rosberg being the interlopers.

Although a little too inexperienced in 2009 and facing too much of a task to catch early pacesetter Button, Vettel nailed his Red Bull opportunities thereafter, taking four consecutive titles.

His domination over team-mate Mark Webber extended over time as Red Bull rallied around him and he adapted well to the driving style required to get the best out of the blown-diffuser concept.

On the negative side, Vettel was more often troubled by his team-mates than Hamilton or Alonso. After his title run, he struggled alongside Daniel Ricciardo during 2014 in the first year of the hybrid era. Vettel then comfortably outperformed Raikkonen when they were both at Ferrari before Charles Leclerc wrestled the pre-eminent position away in 2019-20. The team-mate defeats suffered by Hamilton (to Button in 2011, Rosberg in 2016 and George Russell in 2022) and Alonso (to Button in 2015 and Esteban Ocon this season) are not as heavy as those of Vettel in 2014 and 2020.

All of the biggest F1 names have great drives on their CV and Vettel is no exception. He might not have as many swashbuckling performances against the odds as Alonso or examples of turning a race around as Hamilton, but Vettel's 2008 Italian Grand Prix win for Toro Rosso stands as one of the great wet-weather drives and he was capable of crushing domination.

A weakness in wheel-to-wheel combat was sometimes an unfair criticism levelled at Vettel. He showed on numerous occasions, memorably in his charge from 24th to third in the 2012 Abu Dhabi GP, that he's capable of battling through the pack. Nevertheless, when Vettel went wheel to wheel with Hamilton in their 2017-18 title fights it was the Mercedes driver who usually came off best, and Vettel spent too much time facing the wrong way after spins in battle. Vettel also made an error of judgement at the start of the 2017 Singapore GP, triggering a multi-car crash, and showed a crucial weakness by going off while leading the 2018 German GP.

There were some red-mist moments, too. Both his 2010 Turkish GP clash with Webber and contact with Hamilton behind the safety car in the 2017 Azerbaijan GP were unnecessary – and costly.

Vettel was not quite the defining driver of his era. That puts him in the very fine batch of great drivers behind the 'Big Nine' listed above. Verstappen is on a trajectory that will surely place him ahead too.

Alonso probably has to be regarded higher on the all-time list, given his consistently high level even in mediocre machinery, placing Vettel third within his generation. That means battling the likes of Jack Brabham, Nelson Piquet and Mansell among the tier of second and third-best performers of their eras – no shame there.

Comparing across time is always tricky no matter how objective the attempt. But, given all of the above, Vettel probably sits in the top 20 to 30 F1 drivers of all time. This should in no way be seen as a back-handed compliment. Nearly 800 drivers have started a world championship event, 113 have won and only 34 have taken the crown.

Vettel is a knowledgeable fan of the sport. His own place in F1 history is assured and, once he has taken some time to reflect, we'd love to know where he thinks he fits on the list of greatest drivers... ❁

YOUR SAY

Get exposure via the great British motorsport audience and the opportunities thereafter on the career path up the motorsport ladder

DAVE JACOBS

A new home for W Series?

Embracing the concept and vision of the W Series and its many values, I think it's a shame that financial struggles appear to have scuppered the championship this year and potentially its future.

I met Jamie Chadwick prior to the Brands Hatch finale in 2019. She is a great ambassador for the championship, as are all the drivers, and as delighted as I am that Jamie is now a triple champion, the series needs to move on and be financially independent. Initially the plan would have meant that the champion would move on to new ventures and allow for the next generation to thrive...

However (and absolutely in no way any disrespect to the champion), if being part of the Formula 1 support is too expensive, maybe W Series should cut its cloth and speak to Alan Gow and join the BTCC support and at least get exposure via the great British motorsport audience and the opportunities thereafter on the career path up the motorsport ladder.

Dave Jacobs
Hastings

It takes two to tango

In the 17 November issue Kevin Turner writes, 'Most in the Autosport office wouldn't have given the Red Bull driver a penalty, but it is now clear that he races the seven-time world champion differently to the other drivers on the grid.'

Does it occur to any of you that Lewis Hamilton races Max Verstappen differently to the other drivers on the grid and is at least equally to blame for their collisions?

EG Makin
By email

Hamilton has to race Verstappen differently because everyone else gives Lewis racing room and Max does not. Until the middle of 2021 Hamilton consistently prevented collisions between the two — ed

Not a fan of BoP

I have just read 'Peugeot gets weight break for Bahrain' (Pit and Paddock, 10 November). How ludicrous are the

multiple penalties and advantages to individual cars.

The World Endurance Championship should take a step back and take a good look at itself. I can only assume that this shambles is an attempt to get closer racing, but there has to be a better way; or maybe WEC isn't really a spectator sport.

If a specific car wins more races, not because it is better, but because it was better driven, then what are WEC going to do? Will they make the offending drivers wear clown boots?

Austin Parffitt
By email

Sadly, BoP is often required to get manufacturer interest — ed

Mud flaps in Formula 1?

The FIA is now researching fitting spray-suppression components to Formula 1 cars in wet races. Really, we might see mud flaps in F1? One wonders what Alain Prost's McLaren (below) and Ayrton Senna's Toleman at Monaco in 1984 would have looked like with those fitted...

Graeme Innes-Johnstone
Elland



Have your say, get in touch


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RACE CENTRE

FORMULA 1

MASTERFUL MAX OUT OF REACH AS LECLERC PIPS PEREZ

The world champion dominated, while his Red Bull team-mate was denied second place in the championship by the on-form Ferrari driver

ALEX KALINAUCKAS

PHOTOGRAPHY



motorsport
IMAGES







“It was all about tyre management.” Hardly the most exciting statement in the history of motorsport, but such is modern Formula 1 and, with it, dominant race winner Max Verstappen perfectly summed up the 2022 Abu Dhabi Grand Prix.

On his way to sealing a seventh 2022 pole, Verstappen had helped team-mate Sergio Perez lock out the front row for Red Bull with faultless tow tactics. Ferrari’s Charles Leclerc trailed in third, and needed to defeat Perez in the race to beat the Mexican to second place in the drivers’ championship.

Leclerc’s task looked tricky. Not only did Red Bull have the best possible starting positions for its drivers, but it had also comprehensively outshone its red rival in FP2 – as ever, the only comparable practice session for this event given its twilight setting. On Friday evening at the Yas Marina track, Ferrari’s best race pace using the medium tyres had come in 0.6 seconds per lap slower than Red Bull’s leading average on the yellow-walled rubber – set to be an important race compound, with the softs a non-starter due to being the softest (C5) in Pirelli’s 2022 range. Leclerc even wondered aloud why he was lapping so slowly.

To improve things, Ferrari had gone out early in final practice to gather additional high-fuel data even in the hotter FP3 conditions, and also to assess a significant set-up tweak. This was moving to its smaller rear-wing package, which would help down the straights and also avoid the added downforce of its higher-drag arrangement eating into the fragile tyres if the drivers had to push on. In any case, a two-stop race

strategy looked likely ahead of Sunday’s twilight event. But if the drivers could take things slightly easier, one-stopping was also viable. “What we did was to put some more effort, some more laps, on the high-fuel runs on race simulations to make sure that we had the right balance for the race,” explained Ferrari team boss Mattia Binotto. “And I think that later in the race, with the balance of the car, the drivers’ capability made the difference overall in terms of first-stint pace and overall race-distance speed.”

But there’s plenty to cover until we get there, including how all races actually get going: the start. Here, the Red Bulls launched off the front row in unison, but with Perez enjoying a better second phase of acceleration – enough to put his nose down the inside of Verstappen for the 90-degree left-hander. But it wasn’t a serious move, and the world champion easily swung through the corner and headed off into a lead he would never lose other than during the pitstops cycle.

Leclerc maintained third, while team-mate Carlos Sainz fell back behind Mercedes’ fast-starting Lewis Hamilton from fifth. This would end up being critical to the outcome of Leclerc’s race. But that’s getting ahead once again. For now, the focus was the Turn 5 left-hander, reprofiled for the 2021 race and the scene of Verstappen’s controversial championship-winning pass last season.

Here, Leclerc had a brief look to the inside of Perez but, again, the move wasn’t really on. And now Leclerc’s line meant Hamilton was soon closing in on the subsequent main back straight, with Sainz likewise powering up behind. At the Turn 6 braking zone for the



Perez attempts a sniff at the lead, but Verstappen was never going to be denied

ETHERINGTON

chicane that breaks up the Abu Dhabi track's two main straights, Leclerc had used his skinnier rear wing (compared to the drag-laden Mercedes) to scamper just clear enough to be unruffled, while Sainz made a late move to pass Hamilton on the inside.

It was rather similar to Verstappen's dive at the same spot in 2021, as was the outcome. Hamilton had left space to the inside and, when the Ferrari ran out wide towards the exit kerbs, the Briton bumped over these. He did so hard, briefly getting airborne and damaging his W13's floor enough to "lose a little bit of performance", with balance shifted unfavourably forward until a pitstop front-wing adjustment later on. Hamilton maintained enough momentum through the runoff to rejoin after cutting Turn 7 and stay ahead of Sainz.

All of this meant that Verstappen romping to a 1.1s lead over Perez at the end of lap one of 58, and the second Red Bull in turn being 0.9s in front of Leclerc, went rather unnoticed. Instead, Hamilton continuing to threaten the lead Ferrari stole the focus, and he did so over the next two tours too.

During this stage, the stewards noted and then cleared Sainz over

"LEWIS HAD TO GIVE THE POSITION BACK TO CARLOS. IT GAVE ME A LITTLE BIT OF BREATHING SPACE"

a possible 'forcing another driver off-track' infraction and then began assessing whether Hamilton had gained a lasting advantage by cutting Turn 7. As such, Mercedes ordered the seven-time world champion to hand the position back to Sainz to avoid a possible penalty, which gave Leclerc a 1.9s buffer at the end of lap four. "It was really difficult, especially starting on the medium because obviously you do the first part of the race trying not to fight too much," Leclerc said of his opening phase. "But obviously in the first few laps Lewis was quite close. He had to give the position back to Carlos. And then at that point, I could manage my tyres a little bit better. It gave me a little bit of breathing space. And then from that moment onwards, we did a great job."

At this point, the Red Bull drivers had commenced their own tyre management shifts at the head of the race, nursing the C4 mediums mainly in the mid 1m30s, bar Verstappen nipping into the high 1m29s on lap three. This had helped establish his lead gap at 2s once Leclerc was no longer vulnerable to Hamilton, with the Ferrari also facing essentially the same gap to Perez. From laps six to eight, Verstappen and Perez logged near-identical times in their preferred time bracket, with Leclerc slightly slower and fractionally more erratic over the same distance. But when Perez stopped being able to match Verstappen's latest metronomic run in the 1m30.6s as they headed towards the end of lap 10, the gap between the team-mates grew.

It was 3.1s at that point, with Leclerc a further three seconds in arrears and Sainz that same margin back in fourth – now ahead of George Russell. The second Mercedes had made up for being passed >>

by McLaren's Lando Norris at the start, after being baulked by Sainz into Turn 1, and then overhauled team-mate Hamilton and his hobbled car. Hamilton had briefly headed Sainz again by battling ahead using DRS into the Turn 9 long, left-hand hairpin on lap five, before Sainz in turn forged back ahead on the outside line at the same spot with DRS on lap eight.

Here, the race between the frontrunners essentially split. Sainz and the Mercedes duo became also-rans. The Ferrari driver could not close in on team-mate Leclerc throughout the first stint, and he used a two-stop strategy to the finish, where he led home Russell by 11.0s. The Briton's race was compromised badly by picking up a 5s penalty at his first of two stops, where a long right-rear change was compounded by Russell being released into Norris's path.

After this, Hamilton closed in on Russell before the younger Mercedes pilot was pitted for a second time, with Hamilton frustrated at having to go to the end on a single service. Not that it mattered because, in the words of engineer Peter Bonnington, Hamilton's loathed W13 "just gave up the ghost" when a hydraulics issue on lap 55 meant he lost gearshifts and retired in the pits. Remarkably, it was the Silver Arrows' sole 2022 unreliability-induced DNF.

Their various travails would mean the podium battle was a contained three-horse race with just over a fifth of the race completed. From laps 10 to 15, although Leclerc's gap to Verstappen would slip out to seven seconds, in this phase he began to gain vital ground on Perez.

The Ferrari driver was also reaping the reward of the team's wing-change choice and altering his driving style so that it "changed quite a bit overnight from Friday to Saturday". "This paid off," he explained in the post-race press conference, essentially referring to his medium

"I WANTED TO GO A LITTLE BIT FASTER, BUT WE WERE STILL NOT SURE IF THE TYRE WAS GOING TO HOLD ON"

tyres lasting for the same distance as Verstappen's, while Perez "died" on that rubber in fewer laps. Making this slightly easier for Leclerc was tyre degradation overall being less than Pirelli had predicted on Sunday in the cooler twilight running conditions than experienced in FP2. "Checo just took a bit more out of the front-right tyre," Red Bull team boss Christian Horner explained. "And it just started to open up. Now, whether that was a slight difference of set-up or just different technique, we need to analyse."

Red Bull therefore pitted Perez to take hard tyres at the end of lap 15.



Sainz starts his move on Hamilton, who ends up squeezed out over the kerbs

That opened up the chance for Leclerc, who stayed out until lap 21 to take hards after Verstappen had come in on the previous tour, to have a real shot at beating a faster car. This was because Red Bull now faced, said Horner, the "prospect of either being a dying fly at the end of the stint or to try and attack — and we chose to try and attack".

The Red Bulls — separated by 1.2s at the end of Verstappen's out-lap due to the powerful undercut effect in a tyre management race, and Verstappen sliding back to the mid-1m31s for the final three laps of his first stint — were set on different strategy courses. But for Ferrari to

exploit this difference, Leclerc had to force the issue and show good enough tyre preservation and pace to close what was a 6.2s gap to Perez after his first tour on hards.

The race might have looked very different here had Perez not locked up passing the yet-to-stop Sebastian Vettel on his own out-lap. The Turn 6 gaffe meant he had to battle past the Aston at the same spot a lap later, and meant Verstappen was still ahead when he emerged from the pits.

Clear in the lead, Verstappen was able to gently ease in his white-walled rubber — the vital factor in making the one-stopper work. This was his much-preferred strategy since he'd come into the race lacking a second set of new hards such as Perez possessed, and this reduced Red Bull's tactical possibilities for its lead car given the C3's much better durability. "I brought them in quite nicely because I had a good gap," Verstappen explained. "And at one point, I wanted to go a little bit faster, but

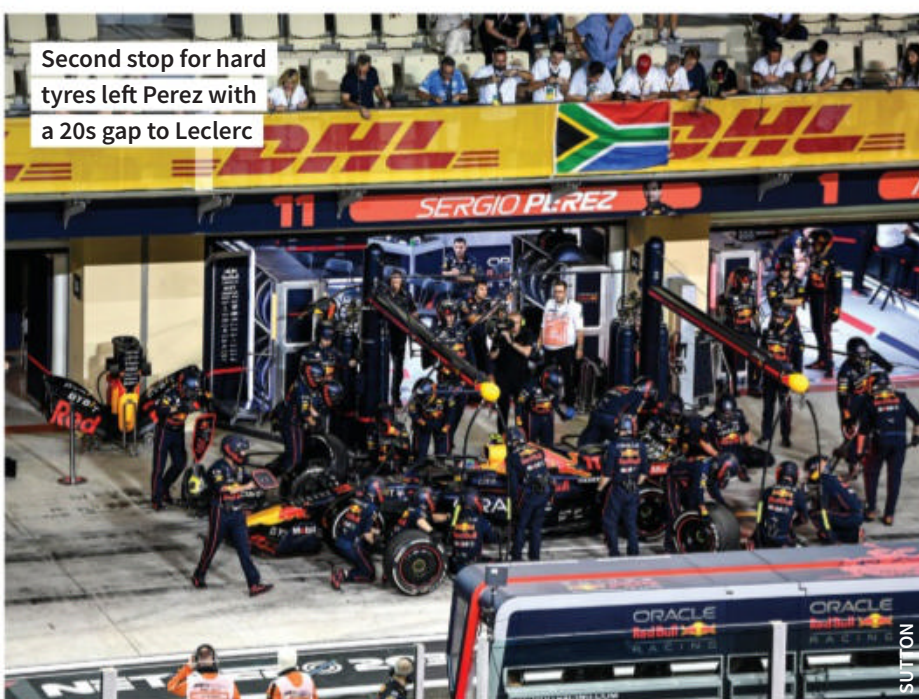


Hamilton put Leclerc under pressure in the opening laps

HONE



To and fro with Hamilton cost Sainz crucial time, falling behind lead battle



Second stop for hard tyres left Perez with a 20s gap to Leclerc

we were still not sure if the tyre was going to hold on for the whole stint to the end. So, it was a bit of management to see if you could make it.”

This did, however, actually end up hurting Perez. From laps 22 to 31, he was never more than 2.4s adrift of his team-mate and running in the turbulent air coming off the leading Red Bull – still a factor, no matter how this has been reduced for 2022. Indeed, on lap 29, Perez said he was “being held up by Max”. His point wasn’t that he was losing a possible race win against the Dutchman, but that Leclerc was now lurking very close behind. On that tour, his gap to Perez was down to 2.3s from 6.2s after stopping. It then closed to 1.5s by the start of lap 33 – at which point Ferrari made its most important strategy choice. This was to enact a “dummy pitstop”, said Binotto, which would have become a real second service for Leclerc had Perez stayed out on that lap. But with Red Bull wanting to give its driver an attack in the final stint rather than hold on with ancient hards, that’s what occurred.

As Verstappen was easing to a final victory margin of 8.8s – and seemingly so comfortable on his rubber efficiency drive that he could advise Perez, via engineers Gianpiero Lambiase and Hugh Bird, on how long the hards would really last – Perez now faced closing a 19.8s gap to Leclerc over the final 24 laps. Sainz and Russell would pit out of his way, but he’d also have to overtake Hamilton.

His attack on the Mercedes driver began on lap 45, by which time he faced a 10s deficit to Leclerc, who was asking for silence from Ferrari as he concentrated on avoiding wheel-slips and oversteer slides in his bid to get his rubber to last 37 tours to the flag, as well as not leaning on it too hard through the long-but-rapid Turn 3 right over the brow of the hill in sector one. But, again at Turn 6, Perez locked his left-front and slid deep while passing Hamilton in what should have been a simple move – although not as deep as against Vettel. Hamilton gained enough ground back that, with DRS down the next curved ‘straight’, he could swoop around the outside of Perez into Turn 9 – a small spot of revenge for the Mexican’s own immense defending while assisting >>

QUALIFYING



He stood on the track and addressed the crowd before him – more than 100 paddock personnel wearing identical T-shirts commemorating his Formula 1 career and achievements. After a few words of thanks and encouragement, Sebastian Vettel joined the masses – including Mick Schumacher – for a farewell run around the Yas Marina track. This was two hours after he’d equalled his best qualifying position of the season with ninth.

“It was a bit emotional before getting in the car,” Vettel said after qualifying. “But once I was in the car it was all thoughts into qualifying. It was coming alive, I was coming alive.”

Vettel had two Q1 runs to escape – not guaranteed given Aston Martin’s fluctuating 2022 form. But he felt the car was “doing what I want this weekend”, which made for many thrilling rides. He also had to dramatically scythe through out-lapper traffic as he completed his last run in the opening segment. The mercurial AMR22 was quick but still a handful, with Vettel able to throw the green machine into the critical apexes at Turns 1 and 5 and just about hang on as the front gripped and the rear bucked slightly each time. Perhaps the biggest headache came courtesy of his former squad, as he twice encountered Red Bulls powering up to speed out of the final corner to start their Q2 runs as he completed his.

With only one set of fresh softs left for Q3, Vettel ran solo after the frontrunners had completed their opening efforts. He was again on the edge through the Turns 1 and 5 left-handers, while a similar moment of wrestling

came out of Turn 14. With no Max Verstappen or Sergio Perez to worry about out of the final corner, Vettel just had to hold a much smaller wiggle to stay within track limits and he set a 1m24.961s. Lando Norris and Esteban Ocon slotted their faster McLaren

and Alpine machines ahead a short while later, but Daniel Ricciardo also bade farewell to F1 qualifying (for now) by failing to beat his former team-mate.

Up front, Verstappen claimed pole ahead of Perez, as Red Bull locked out the front row for the first time since the 2018 Mexican GP. Red Bull planned for Verstappen to tow Perez on both Q3 runs in a bid to get him ahead of Leclerc. This worked, but only on the second runs – where Verstappen’s 1m23.824s eclipsed his 1m23.988s first effort, set running in the pack after his RB18’s engine had shut down unexpectedly in the garage. It needed a systems reboot before Verstappen could head out, which left Perez to set a 1m24.316s that he bettered with his tow-boosted second attempt to end up 0.228s adrift.

ALEX KALINAUCKAS

“IT WAS A BIT EMOTIONAL BEFORE GETTING IN THE CAR. BUT THEN IT WAS ALL THOUGHTS INTO QUALIFYING”



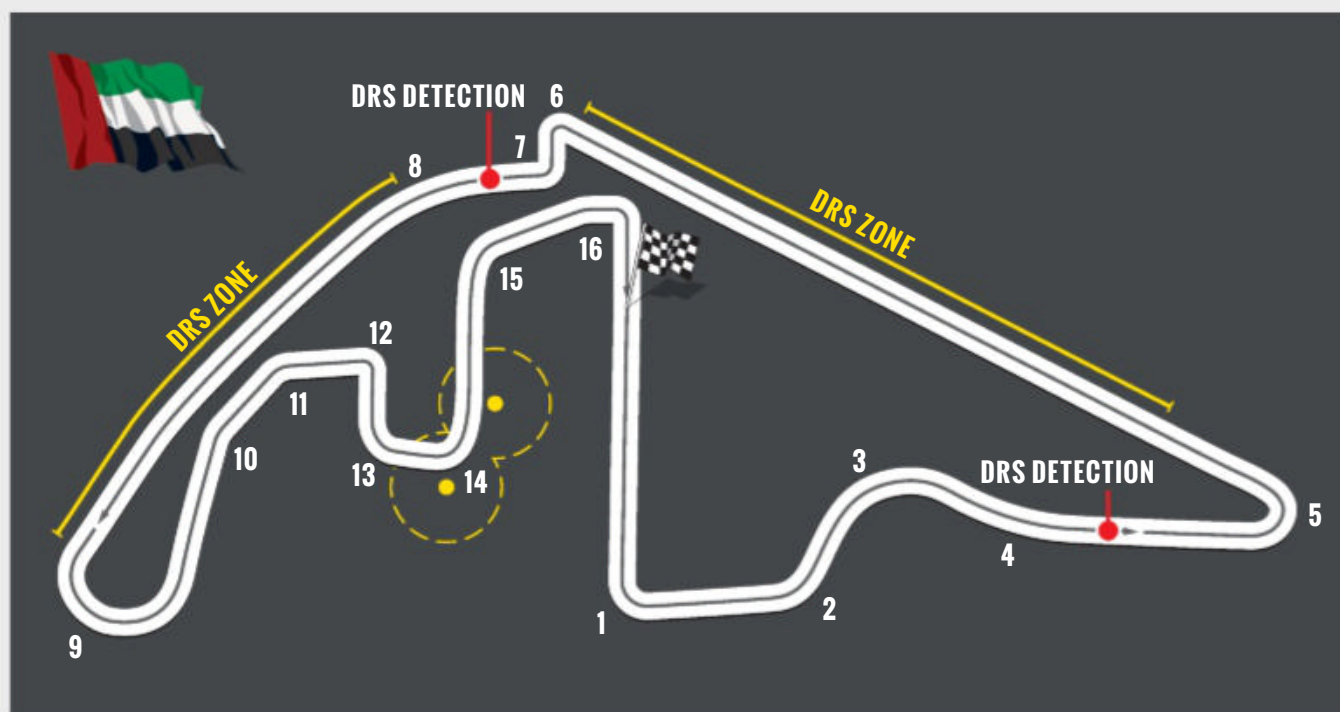
TRACKSIDE VIEW

Rob Wilson is the revered driver coach that Formula 1 teams have on speed dial. Many of those racers in this paddock have ventured to a bitterly cold Bruntingthorpe Aerodrome to have the Kiwi tutor them in a humdrum Vauxhall hatchback. This writer did too a couple of years ago, but is still awaiting his grand prix debut...

Something Wilson regularly reminds his students of is the 'flat car'. In essence, he breaks corners and steering inputs into distinct entry, apex and exit segments. It's not one fluid motion. This helps the car settle to mitigate weight transfer and maintain grip. An amble in the scorching heat to the 90-degree Turn 14 left-hander (site of Nicholas Latifi's 2021 safety car-inducing shunt) under the W hotel shows this tuition is being put to good use.

While the Yas Marina track is largely flat, the apex here is noticeably off camber. The car is desperate to break free where the asphalt falls away. To avoid these costly slides, drivers seem to lock their sights on the outside barrier to keep pointing in a straight line

"VERSTAPPEN IS SO AGGRESSIVE IT LOOKS AS THOUGH HE'S LEFT IT TOO LATE TO TURN"



as long as possible. It's only once they're well past the slanted apex that the car violently rotates the rest of the way to avoid a brush with the perimeter. It makes for a brilliant, brain-tricking spectacle.

Max Verstappen is the expert proponent of this. The temptation to take a step back when his Red Bull approaches is considerable. He is so aggressive that it looks as though he's left it too late to turn during his FP3 qualifying simulations and is about to create a mess of carbonfibre. This never comes. Lewis Hamilton does similar, but not quite as often or as viciously. By contrast, Carlos

Sainz is buttery smooth while Alex Albon and Daniel Ricciardo appear to be hanging on as their cars are on the cusp of a four-wheel drift.

Given the tight confines, this part of the track is also a pinch point for traffic. Blue and white flags are constant. The Mercedes and Ferraris alternate accidentally delaying one another's preparation for their next flying lap into the final corner just up the road. One way to get around this is to take borderline evasive action, as does Esteban

Ocon. He suddenly parks on the slender strip of Tarmac between the bollard denoting the apex and the inside barrier to let rivals flash past. Eventually, the Alpine starts rolling again, only to pogo when Ocon rejoins over the kerbs. It looks uncomfortable. It's worse for Pierre Gasly, who soon passes with a front-right puncture and a shower of sparks. This is a legacy of his wheel fairing flying off. The red flags are soon waved.

MATT KEW



Fine work by
Leclerc and Ferrari
to beat Perez
rewarded with title
runner-up spot



Verstappen's title triumph here last year. On the next lap, Perez opted not to attack at Turn 6 and instead used DRS to Turn 9 to dive to Hamilton's inside and finally move back into third place. Now he was 9.6s behind Leclerc but, after homing in at nearly a second per lap in the first 10 laps of his third stint, Perez's botched move on Hamilton had cost him 0.7s and a critical lap to complete the charge.

With 11 laps left, Perez's challenge continued. But while his pace matched the lap times he'd been putting in after his third stop until the final few tours, he lost more time being held up at Turn 6 (where else?) on lap 56, having got the gap down to 2.8s as Leclerc's rubber also got to the point where he was concerned that "front-locking started to become a problem" and it was "very easy to do a mistake".

At this point, with two and a half laps left to run, Perez encountered Pierre Gasly and Alex Albon battling over 13th. He had blue flags to lap the AlphaTauri first, but Gasly waited until he was well on the run to Turn 9 before pulling over, which earned a furious gesture from the Red Bull driver. Perez simply never got a chance to mount a move to rescue second, and Leclerc hung onto the position by 1.3s at the flag, having

never even been in DRS threat from the charging Red Bull.

"It was really tricky," Leclerc concluded. "Especially at the end of the stint on the hard, even though we did really good management. It was a really perfect [strategy] execution from our side. I don't think we had the pace of the Red Bulls still and our goal from the beginning was to try and push Checo do something different, which we did perfectly."

And so, it can be said that five critical factors ended up sealing Leclerc's second place in F1 2022. By altering its wing level, Ferrari found the "very good balance of the car", according to Binotto, while his charge "did very well" to execute the delicate tyre-management exercise required across the tense-but-not-spectacular conclusion to this campaign. Then there was Perez's time lost to his errors passing Vettel and Hamilton, plus the mess with now-ex-stablemate Gasly.

But Perez felt one final factor was overriding. "It was that second stint, while I was behind Max," he explained. "Max was on a one-stop, I was on a two-stop, and then I ended up not being able to maximise this stint. I couldn't push as much as we should have pushed on that second stint. We probably left two seconds on the table there."

For all Ferrari's fine work to beat Perez — and indeed that should be important momentum for both Maranello and Leclerc heading into 2023, given the manner of how this result was collected with solid strategic work and masterful driving — Verstappen still dominated.

In fact, there was one final late-race consideration — would the leader fall back to push Leclerc properly into Perez's clutches as payback for the Brazil team-orders angst?

Perez asked where his team-mate was entering the final five laps, and was told "Max can't give Leclerc DRS — [it] would just make it easier for Leclerc to defend against you" by Bird. In any case, Verstappen felt "that is quite a tricky call to make" — of a request that never came.

"You can possibly block but is that fair racing?" Verstappen asked in his 15th post-race press conference as a GP winner this year, extending the record he set in Mexico. "I think that's not the nicest way going out of the season like that."

"Like Checo said, that second stint, because the deg was quite high on the medium, in hindsight, probably as a team we could have pushed a bit more on that middle stint for Checo. But that's always easy to say afterwards. At the time, we thought that we had to be a little bit careful on the tyres." ❄

"YOU CAN BLOCK BUT IS THAT FAIR RACING? THAT'S NOT THE NICEST WAY GOING OUT OF THE SEASON LIKE THAT"



Third-place Perez frustrated at time lost not being able to maximise race's second stint

THOMPSON/GETTY IMAGES/RED BULL CONTENT POOL

116-PAGE FORMULA 1
SEASON REVIEW SPECIAL

15 DECEMBER ISSUE

NORRIS PIPS OCON BUT ALPINE ENDS SEASON AHEAD

Lando Norris took the final 'Class B' honours of the season in sixth place, but the McLaren driver had the hard-charging Esteban Ocon breathing down his neck during the closing stint.

Norris qualified an impressive seventh behind the usual suspects, and inherited a place late on when Lewis Hamilton was forced to call it a day due to a loss of hydraulic pressure. He ran a two-stopper and was five seconds clear of fourth-row rival Ocon shortly before a switch to mediums on lap 42. But after chewing through his new rubber, he lacked pace against the hard-shod Alpine, which had pitted a lap previously and brought the gap down to just 1s at the flag.

Norris still waxed lyrical: "I'm very happy I wasn't P7 – I've finished there enough this year [six times]! It was close, a tough race. Esteban was a lot quicker and in the last few laps, almost two seconds a lap quicker. I just shot my mediums too quickly, and [Ocon's] medium-hard-hard seemed a better strategy."

Norris also gained a fine bonus point for smashing the fastest lap. Little wonder that he took too much life out of his tyres, since the Briton posted a 1m28.391s – 0.445s quicker than the next-best effort recorded by George Russell.

Despite the result, Alpine beat McLaren to fourth in the constructors' table by 14 points.



Strategy thwarts Vettel in finale as Alfa beats Aston

Sebastian Vettel ended his final Formula 1 race with a point for 10th place. He should have walked away with even more to help Aston Martin climb the constructors' table at the finale, but the four-time world champion was hurt by his squad's questionable strategy.

A one-stop run plan had plenty of merit, as Max Verstappen and Charles Leclerc showed. But when the undercut proved so strong, ninth-starting Vettel was hurt by stretching his medium tyres to lap 25 – four tours longer than anyone else in the opening stint – before running a set of scrubbed hards to the flag.

Prior to pitting, Vettel had been all over the back of seventh-place finisher Esteban Ocon. But the call to nurse his rubber meant he was dropped behind Daniel Ricciardo and fell 0.63s short of the Australian at the line.

"It was absolutely the wrong

strategy, so it was a shame," said Vettel. "We were going backwards. I was really trying; I gave it all I could... it was a shame I was stuck behind Esteban in the beginning, because I felt I had better [degradation]. But then we stayed out way too long and lost so much time."

Team-mate Lance Stroll made good use of a more conventional two-stop strategy to climb from 14th to eighth. That involved scrapping with Zhou Guanyu (12th) and Valtteri Bottas (15th). The Alfa Romeo pair deployed "borderline" defensive moves in the view of Aston boss Mike Krack.

Even though the Alfas failed to score and Stroll collected four points, it was not enough to lift his team to sixth in the constructors' standings. Both squads tied on 55 points, to leave it to Bottas's best result of fifth in the Emilia Romagna Grand Prix to hand the rebadged Sauber squad the standings advantage on countback.

"I'M HAPPY THAT IT'S FINISHED"

Fernando Alonso is ready for life at Aston Martin after his sixth retirement of the year. A water leak curtailed his Alpine swansong on lap 27 of 58





SCHUMACHER PENALISED IN FINAL HAAS OUTING

Mick Schumacher’s final Formula 1 race with Haas ended in ignominy when he was penalised for crashing with Nicholas Latifi, who also now exits the championship. The pair were fighting over 16th place as the Abu Dhabi race approached its closing stages when two-stopping Schumacher turned Latifi’s one-stopping Williams around at the Turn 5 hairpin. Both were able to drive out of the barriers, but Latifi had to then pit for repairs. His final F1 race ended two laps early when an electrical issue that arose following the crash left him with an intermittent dash display and Williams decided to retire the car. When asked about the crash post-race, Schumacher said: “You don’t really have a big overview of what is happening in your surroundings [with the new F1 cars]. He outbraked himself a bit, went wide, and then came back onto the track. I didn’t expect that to be fair. And I just simply didn’t see him.”

Ricciardo takes points in his last race for McLaren

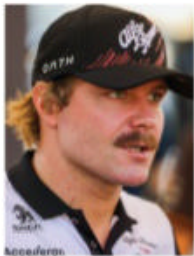
McLaren team principal Andreas Seidl was left to reflect that Daniel Ricciardo’s Abu Dhabi Grand Prix performance “exemplifies the unflagging enthusiasm and determination he’s shown this year” as the Australian leaves the team. After being edged out by former Red Bull team-mate Sebastian Vettel in Q3 to qualify 10th, Ricciardo started 13th due to a grid penalty for spinning Kevin Magnussen in the previous week’s Sao Paulo GP. Ricciardo recovered to pip Vettel to ninth. Both drivers were set on the one-stop strategy, but Ricciardo stopping to go from the mediums to the hards six

tours earlier on lap 19 meant he was on the edge for tyre life when Vettel came up behind him late in the race. Under pressure from the Aston Martin all the way to the line, Ricciardo held on to seal ninth in his final McLaren race by 0.6s, which pleased Seidl. Ricciardo, who is expected to rejoin Red Bull at its reserve driver for approximately 12 races in 2023, said he was “happy and relieved also that the season finished like this and not like the race in Brazil”. He added: “To see the chequered flag, to finish in the points, it just makes me a little more at peace with how this year has ended.”



Q&A

VALTTERI BOTTAS ALFA ROMEO DRIVER



How was your race from 18th to 15th?
Ultimately we didn’t have that much pace, but also my strategy was very defensive. So, I was just always trying to be good towards the end of my first stint, and when the green cars came through we wanted to play with them. In the end it was too close with the [constructors’] points but I’m so glad we got it.

Alfa Romeo secured sixth as Aston Martin didn’t score enough points – what does that mean for the team?
Well, for the team it’s big. If you look at the last two years where the team has been it’s a big step, even the prize money. It’s really going to help us so I’m so glad that we got it. It was so nerve-wracking on the in-lap waiting for the results and I had a deja vu to last year [with Mercedes] when everything changed in the last lap and now it was luckily all good.

Why did you start on the hard tyres for the contra-strategy?
To wait for the Astons to stop and come through and then we make their life difficult.

Was the team keeping you informed of positions?
Yeah, they were keeping me updated and I was like, ‘Oh my God not again!’

Why doesn’t Abu Dhabi produce better races?
I think a lot of it is this is the last sector. It’s still, even with slight modifications, so difficult to be

close and be within one second. It’s tricky. I think most of the overtakes are because of a tyre delta.

What are your main takeaways from year one at Alfa?
Overall, I’m pleased but also we know as a team there is a lot of work to do. We still want to be more consistent and get better results. At least we have some millions more now to spend on the car development and hopefully some more people. But overall it’s a good step. We go from here.

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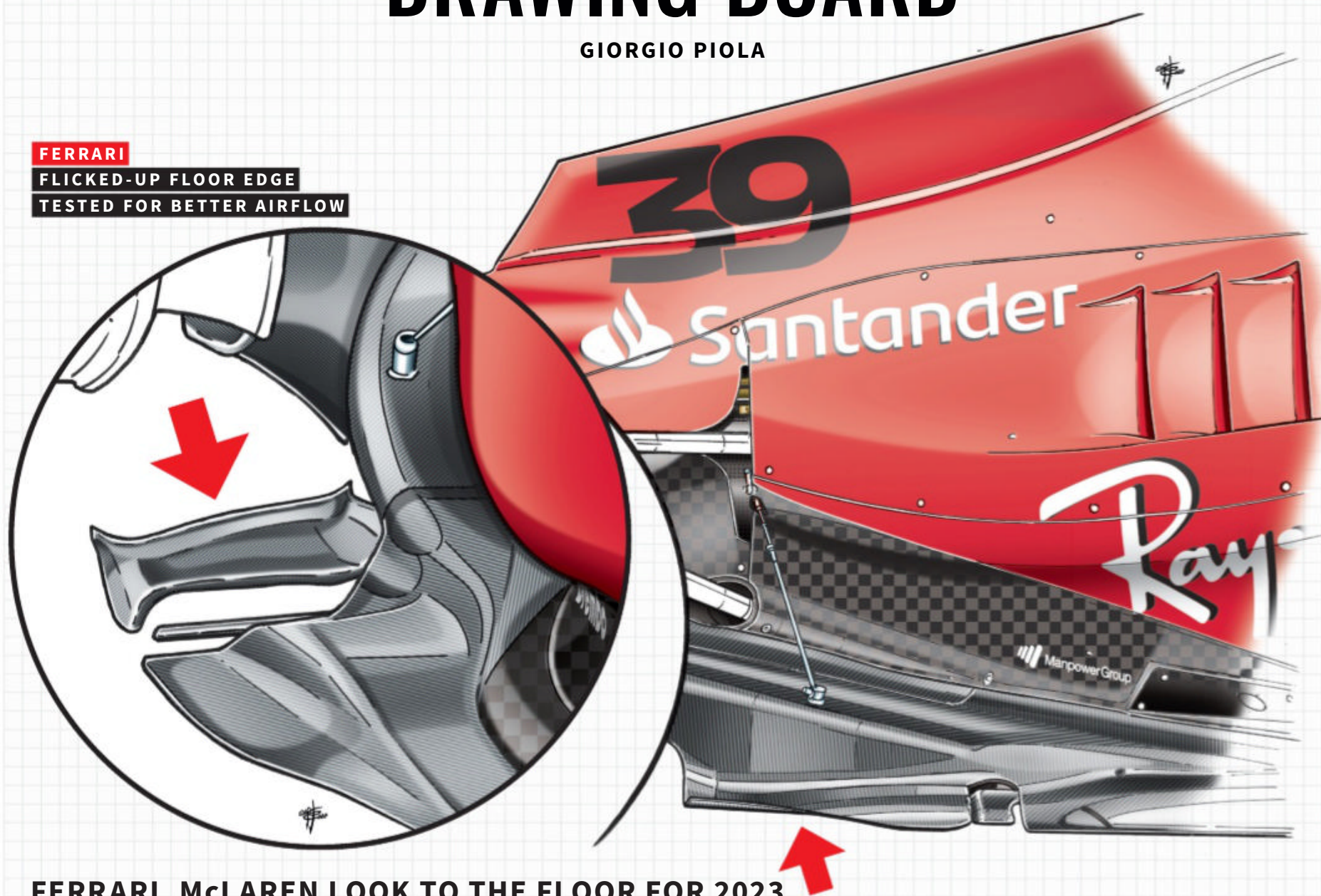
DRAWING BOARD

GIORGIO PIOLA

FERRARI

FLICKED-UP FLOOR EDGE

TESTED FOR BETTER AIRFLOW



FERRARI, McLAREN LOOK TO THE FLOOR FOR 2023

Thanks to their timing, only one of the Abu Dhabi free practice sessions are of any real relevance as a data gathering exercise: the twilight FP2 running on Friday evening. As such, FP1 has been traditionally employed as a prelude test to the following season, where teams can test parts that might be of interest in the new year.

Ferrari had an eye on 2023 with a revised floor

design, featuring an upturned flick at the trailing edge ahead of the rear tyre. The overall structure of the floor edge in this area is not dissimilar to the segmented design run this season, but Ferrari planted those tweaks on the car Robert Shwartzman borrowed from Carlos Sainz for his FP1 running. The team characterised it as a “new floor edge component [that is] a very localised and minor update in front of the tyre cutout.

Regarded as a test item, it aims at improving flow quality/topology into the rear diffuser across the entire car operating envelope.”

McLaren also introduced a revised floor to test out in FP1, with its floor-edge wing removed in place of the ‘skate’ design used by other teams – and with the intent to test its effect on the rideheights run on the car by the team.

JAKE BOXALL-LEGGE

OUR BUMPER F1 2022 REVIEW



116-PAGE SPECIAL
ALL THE STORIES
OF A RECORD-
BREAKING SEASON

INCLUDING

- Red Bull vs Ferrari
- The Mercedes fightback
- Top 10 drivers
- Tech review
- And much more

AVAILABLE ON 15 DECEMBER





FREE PRACTICE 1

POS	DRIVER	TIME
1	Hamilton	1m26.633s
2	Russell	1m26.853s
3	Leclerc	1m26.888s
4	Perez	1m26.967s
5	Lawson	1m27.201s
6	Vettel	1m27.268s
7	Shwartzman	1m27.429s
8	Ricciardo	1m27.619s
9	Bottas	1m27.655s
10	Albon	1m27.840s
11	Gasly	1m27.845s
12	Ocon	1m27.891s
13	Tsunoda	1m27.991s
14	Kubica	1m28.064s
15	Sargeant	1m28.098s
16	Magnussen	1m28.142s
17	Fittipaldi	1m28.204s
18	O'Ward	1m28.350s
19	Doohan	1m28.484s
20	Drugovich	1m28.672s

WEATHER Sunny, air 35-37C track 44-48C

FREE PRACTICE 2

POS	DRIVER	TIME
1	Verstappen	1m25.146s
2	Russell	1m25.487s
3	Leclerc	1m25.599s
4	Hamilton	1m25.761s
5	Perez	1m25.852s
6	Sainz	1m25.932s
7	Ocon	1m26.038s
8	Alonso	1m26.043s
9	Ricciardo	1m26.124s
10	Bottas	1m26.300s
11	Norris	1m26.377s
12	Vettel	1m26.395s
13	Zhou	1m26.479s
14	Stroll	1m26.547s
15	Tsunoda	1m26.680s
16	Albon	1m26.750s
17	Schumacher	1m26.839s
18	Magnussen	1m26.915s
19	Gasly	1m27.036s
20	Latifi	1m27.262s

WEATHER Twilight, air 30-32C track 36-39C

FREE PRACTICE 3

POS	DRIVER	TIME
1	Perez	1m24.982s
2	Verstappen	1m25.134s
3	Hamilton	1m25.222s
4	Russell	1m25.395s
5	Norris	1m25.518s
6	Leclerc	1m25.571s
7	Sainz	1m25.605s
8	Ricciardo	1m25.950s
9	Vettel	1m26.012s
10	Albon	1m26.051s
11	Ocon	1m26.073s
12	Alonso	1m26.076s
13	Tsunoda	1m26.170s
14	Bottas	1m26.189s
15	Gasly	1m26.239s
16	Stroll	1m26.298s
17	Magnussen	1m26.356s
18	Schumacher	1m26.473s
19	Zhou	1m26.482s
20	Latifi	1m26.646s

WEATHER Sunny, air 31-34C track 40-42C

SEASON STATS

DRIVERS' CHAMPIONSHIP	PTS	BEST FINISH	BEST QUAL
1 Verstappen	454	1	1
2 Leclerc	308	1	1
3 Perez	305	1	1
4 Russell	275	1	1
5 Sainz	246	1	1
6 Hamilton	240	2	3
7 Norris	122	3	3
8 Ocon	92	4	5
9 Alonso	81	5	2
10 Bottas	49	5	5
11 Ricciardo	37	5	6
12 Vettel	37	6	9
13 Magnussen	25	5	1
14 Gasly	23	5	6
15 Stroll	18	6	7
16 Schumacher	12	6	6
17 Tsunoda	12	7	8
18 Zhou	6	8	9
19 Albon	4	9	9
20 Latifi	2	9	10
21 de Vries	2	9	13
22 Hulkenberg	0	12	17

CONSTRUCTORS' CHAMPIONSHIP		
1 Red Bull		759
2 Ferrari		554
3 Mercedes		515
4 Alpine		173
5 McLaren		159
6 Alfa Romeo		55
7 Aston Martin		55
8 Haas		37
9 AlphaTauri		35
10 Williams		8

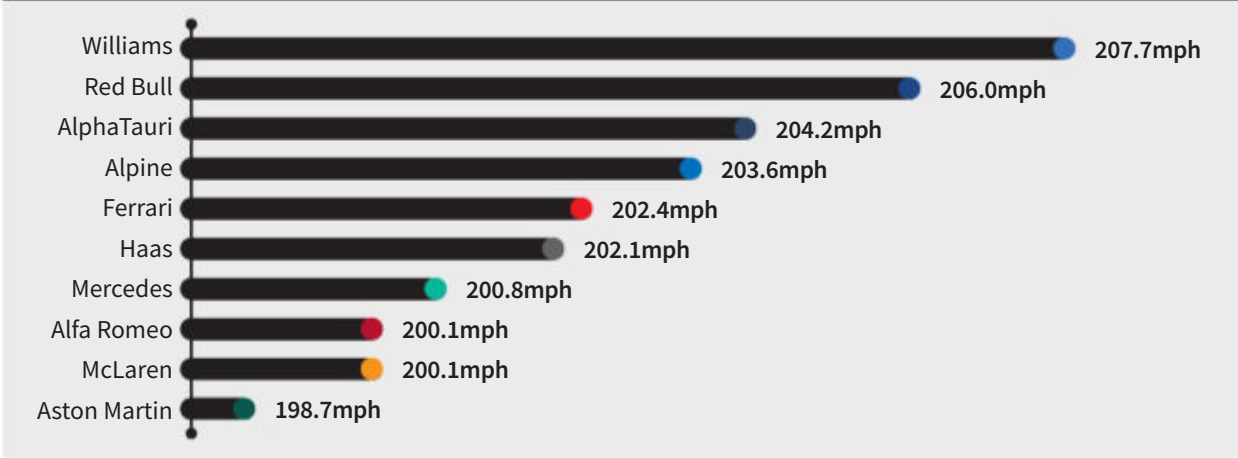
QUALIFYING BATTLE			
Hamilton	12	8	Russell
Verstappen	18	3	Perez
Leclerc	14	5	Sainz
Ricciardo	1	20	Norris
Alonso	9	10	Ocon
Gasly	11	9	Tsunoda
Vettel	13	7	Stroll
Stroll	1	1	Hulkenberg
Latifi	2	18	Albon
Latifi	0	1	de Vries
Zhou	7	14	Bottas
Magnussen	16	6	Schumacher

WINS		Based on Q1/Q2/Q3 sessions. Sessions ignored when a driver could not set a representative lap time
Verstappen	15	
Leclerc	3	
Perez	2	
Russell	1	

FASTEST LAPS	
Verstappen	5
Russell	4
Leclerc	3
Perez	3
Hamilton	2
Norris	2
Sainz	2
Zhou	1

POLE POSITIONS	
Leclerc	9
Verstappen	7
Sainz	3
Perez	1
Russell	1
Magnussen	1

SPEED TRAP (QUALIFYING)













QUALIFYING 1 QUALIFYING 2 QUALIFYING 3

POS	DRIVER	TIME	POS	DRIVER	TIME	POS	DRIVER	TIME
1	Verstappen	1m24.754s	1	Perez	1m24.419s	1	Verstappen	1m23.824s
2	Perez	1m24.820s	2	Leclerc	1m24.517s	2	Perez	1m24.052s
3	Sainz	1m25.090s	3	Sainz	1m24.521s	3	Leclerc	1m24.092s
4	Leclerc	1m25.211s	4	Verstappen	1m24.622s	4	Sainz	1m24.242s
5	Norris	1m25.387s	5	Hamilton	1m24.774s	5	Hamilton	1m24.508s
6	Vettel	1m25.523s	6	Norris	1m24.903s	6	Russell	1m24.511s
7	Russell	1m25.545s	7	Russell	1m24.940s	7	Norris	1m24.769s
8	Hamilton	1m25.594s	8	Vettel	1m24.974s	8	Ocon	1m24.830s
9	Zhou	1m25.594s	9	Ocon	1m25.007s	9	Vettel	1m24.961s
10	Tsunoda	1m25.630s	10	Ricciardo	1m25.068s	10	Ricciardo	1m25.045s
11	Schumacher	1m25.711s	11	Alonso	1m25.096s			
12	Ocon	1m25.735s	12	Tsunoda	1m25.219s			
13	Stroll	1m25.741s	13	Schumacher	1m25.225s			
14	Ricciardo	1m25.766s	14	Stroll	1m25.359s			
15	Alonso	1m25.782s	15	Zhou	1m25.408s			
16	Magnussen	1m25.834s						
17	Gasly	1m25.859s						
18	Bottas	1m25.892s						
19	Albon	1m26.028s						
20	Latifi	1m26.054s						

WEATHER Twilight, clear, air 28-29C track 32-33C




STARTING GRID									
	9 Vettel #5 1m24.961s		7 Norris #4 1m24.769s		5 Hamilton #44 1m24.508s		3 Leclerc #16 1m24.092s		1 Verstappen #1 1m23.824s
10 Alonso #14 1m25.096s		8 Ocon #31 1m24.830s		6 Russell #63 1m24.511s		4 Sainz #55 1m24.242s		2 Perez #11 1m24.052s	


RACE RESULTS ROUND 22/22 58 LAPS – 190.25 MILES					
POS	DRIVER	TEAM	FINISH TIME	LED	TYRES
1	Max Verstappen (NLD)	Red Bull	1h27m45.914s	57	Mn, Hn
2	Charles Leclerc (MCO)	Ferrari	+8.771s	1	Mn, Hn
3	Sergio Perez (MEX)	Red Bull	+10.093s		Mn, Hn, Hn
4	Carlos Sainz (ESP)	Ferrari	+24.892s		Mn, Hn, Hn
5	George Russell (GBR)	Mercedes	+35.888s		Mn, Hn, Mn
6	Lando Norris (GBR)	McLaren-Mercedes	+56.234s		Mn, Hn, Mn
7	Esteban Ocon (FRA)	Alpine-Renault	+57.240s		Mn, Hn, Hn
8	Lance Stroll (CAN)	Aston Martin-Mercedes	+1m16.931s		Mn, Hu, Mu
9	Daniel Ricciardo (AUS)	McLaren-Mercedes	+1m23.268s		Mn, Hn
10	Sebastian Vettel (DEU)	Aston Martin-Mercedes	+1m23.898s		Mn, Hu
11	Yuki Tsunoda (JPN)	AlphaTauri-Red Bull	+1m29.371s		Mn, Hn, Sn
12	Zhou Guanyu (CHN)	Alfa Romeo-Ferrari	-1 lap/+19.050s		Mn, Hn, Sn
13	Alexander Albon (THA)	Williams-Mercedes	-1 lap/+19.930s		Mn, Hn, Mn
14	Pierre Gasly (FRA)	AlphaTauri-Red Bull	-1 lap/+20.549s		Sn, Hn
15	Valtteri Bottas (FIN)	Alfa Romeo-Ferrari	-1 lap/+29.703s		Hn, Mn
16	Mick Schumacher (DEU)	Haas-Ferrari	-1 lap/+44.070s		Mn, Hn, Mu
17	Kevin Magnussen (DNK)	Haas-Ferrari	-1 lap/+50.728s		Hn, Mn
18	Lewis Hamilton (GBR)	Mercedes	55 laps/hydraulics		Mn, Hn
19	Nicholas Latifi (CAN)	Williams-Mercedes	55 laps/electrical		Mn, Hn, Mn
R	Fernando Alonso (ESP)	Alpine-Renault	27 laps-water leak		Mn, Hn


WEATHER Twilight, partial cloud, air 28-30C track 31-34C
WINNER'S AVERAGE SPEED 130.065mph **FASTEST LAP AVERAGE SPEED** 133.648mph


TYRES


KEY: H - Hard M - Medium S - Soft I - Intermediate W - Wet n - New set u - Used set


C1


C2

C3

C4

C5

INTERMEDIATE

WET

FASTEST LAPS				
POS	DRIVER	TIME	GAP	LAP
1	Norris	1m28.391s	-	44
2	Russell	1m28.836s	+0.445s	48
3	Sainz	1m28.879s	+0.488s	50
4	Perez	1m28.972s	+0.581s	52
5	Ocon	1m29.333s	+0.942s	45
6	Verstappen	1m29.392s	+1.001s	54
7	Tsunoda	1m29.489s	+1.098s	40
8	Zhou	1m29.600s	+1.209s	53
9	Stroll	1m29.620s	+1.229s	42
10	Leclerc	1m29.719s	+1.328s	48
11	Hamilton	1m29.788s	+1.397s	42
12	Schumacher	1m29.833s	+1.442s	39
13	Albon	1m29.939s	+1.548s	40
14	Latifi	1m30.309s	+1.918s	45
15	Vettel	1m30.312s	+1.921s	35
16	Bottas	1m30.352s	+1.961s	47
17	Alonso	1m30.579s	+2.188s	24
18	Ricciardo	1m30.785s	+2.394s	45
19	Gasly	1m31.081s	+2.690s	16
20	Magnussen	1m31.158s	+2.767s	40

RACE BRIEFING

FP1

LIAM LAWSON replaced **VERSTAPPEN** at Red Bull

ROBERT SHWARTZMAN replaced **SAINZ** at Ferrari

ROBERT KUBICA replaced **ZHOU** at Alfa Romeo

LOGAN SARGEANT replaced **LATIFI** at Williams

PIETRO FITTIPALDI replaced **SCHUMACHER** at Haas

PATO O'WARD replaced **NORRIS** at McLaren

JACK DOOHAN replaced **ALONSO** at Alpine

FELIPE DRUGOVICH replaced **STROLL** at Aston Martin

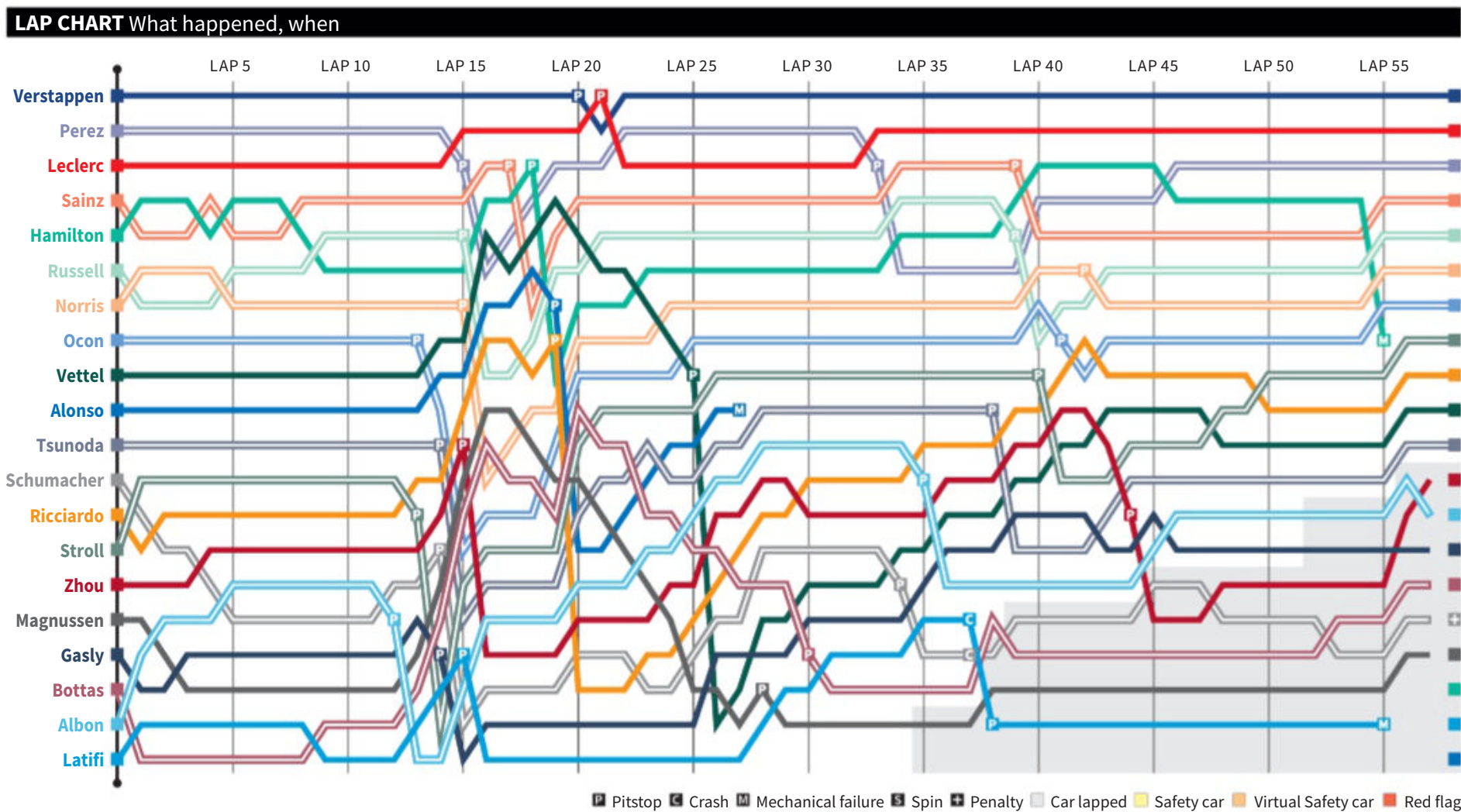
GRID PENALTIES

RICCIARDO Three-place penalty for causing a collision in previous race

RACE PENALTIES

RUSSELL Five-second penalty for unsafe release

SCHUMACHER 5s penalty and and two licence points for causing a collision with Latifi



TOP TWO SHINE AS SCHUMACHER SLUMPS AT EXIT

Perfect scores for the champion and runner-up, but Haas driver fluffed his lines in what might be his last grand prix

MATT KEW

MERCEDES



LEWIS HAMILTON

Started 5th — Result 18th

6 Did well to nip past Sainz at the start, but it came at a cost. The Ferrari fightback into the chicane put the Merc over the sausage kerbs and damaged its floor. Russell could then catch and pass with ease. Pitstop wing adjustments helped before loss of hydraulics pressure led to retirement.



GEORGE RUSSELL

Started 6th — Result 5th

7 Mercedes struggled with bouncing and drag. He was pipped by Hamilton in qualifying, then his team-mate was hobbled in the race. Russell also struggled for speed after pitting and, by his own reckoning, was at least a tiny bit to blame for the unsafe release that earned a 5s penalty.

RED BULL



MAX VERSTAPPEN

Started 1st — Result 1st

10 Eight. Not his score, but the number of times we've given Verstappen full marks this season. He crushed his rivals yet again for 15th win of the year from seventh pole by 0.228s over Perez. Only blemish was slightly poorer launch, though he had any lunge covered into Turn 1.



SERGIO PEREZ

Started 2nd — Result 3rd

7 Verstappen showed what the Red Bull RB18 was capable of. Perez didn't. He missed pole by two tenths and allowed a Ferrari to split the pair. Also loses marks for a few costly lock-ups and, by his own admission, leaving too much on the table in second stint to finish 1.3s adrift of Leclerc.

FERRARI



CHARLES LECLERC

Started 3rd — Result 2nd

10 Q3 lap wasn't quite perfect. But Ferrari was slower than Red Bull, so missing a front-row start wasn't exactly an opportunity wasted. Then overpowering Perez in an inferior car by managing his tyres expertly, and having the measure of Sainz all weekend, mean he earns a 10.



CARLOS SAINZ

Started 4th — Result 4th

7 Bogged down off the line to fall behind Hamilton for fifth. Move at the chicane was robust, lunging from a long way back. While he eventually met expectations with fourth – the second of the slower Ferraris – he was outshone by his team-mate across the weekend to earn only a sound rating.

McLAREN



DANIEL RICCIARDO

Started 13th — Result 9th

7 Ended McLaren (and possibly F1) tenure with a couple of points. Despite struggling with degrading front tyres, defended well against Vettel to keep ninth. Qualifying was the major weak spot relative to Norris, but at least he made it into Q3. A more competitive way to bow out earns a seven.



LANDO NORRIS

Started 7th — Result 6th

9 Other than not losing time to Ocon in final stint to finish ahead by just a second, it's tough to ask any more of Norris given the McLaren wasn't even close to challenging off-colour Mercedes ahead. Deserves a high mark, especially given he lacked confidence with the brakes.

ALPINE



FERNANDO ALONSO

Started 10th — Result R

6 A suspected water leak spelled his sixth retirement of the year. He was at risk in Q1 before a late climb, but was then bumped out in Q2 for the first time since September's Dutch GP. A couple of wide apexes didn't help. Early race pace was better to pressure Vettel and fight with Tsunoda.



ESTEBAN OCON

Started 8th — Result 7th

8 Ocon was red (not white) hot in qualifying. He had Alonso well-beaten and only just ceded to Norris. Also impressive in the GP at the close when he was quicker than the McLaren. But a couple of untidy moments in Q3 and obtaining par result for Alpine mean it's not a nine or 10.

ALPHATAURI



PIERRE GASLY

Started 17th — Result 14th

4 Starting on softs didn't help, neither did getting passed by Schumacher on a slower compound. All stemmed from a bad qualifying and being well off Tsunoda's pace. In his final race in Red Bull's stable, holding up Perez by focusing on scrapping with Albon wasn't the smartest move either.



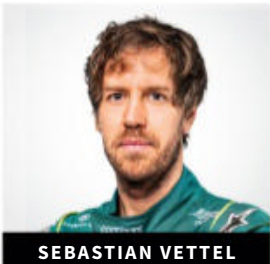
YUKI TSUNODA

Started 11th — Result 11th

8 Converting 11th might not be exceptional, but Tsunoda did so despite being hurt by the team copying Albon's late pitstop. That dropped him out of points scrap with Vettel and Ricciardo. Top score is lost to a Turn 6 lock-up on Saturday to ruin his run through chicane and cost a Q3 shot.



ASTON MARTIN



Started 9th — Result 10th

8 His Saturday was pretty much perfect as he kept improving to place inconsistent Aston towards the front of the midfield. A league ahead of Stroll, then raced brilliantly, in keeping with his late form, but was on a suboptimal one-stop strategy to fall short in his late pursuit of Ricciardo.



Started 14th — Result 8th

7 Did very well to recover after struggling starkly against Vettel in qualifying, considering he lapped in ideal conditions on warm tyres, with a clear road ahead. Still nowhere near Q3, unlike his team-mate. But a day later he was the faster Aston, even if he was sometimes too scruffy when fighting others.

WILLIAMS



Started 20th — Result 19th

5 Delivered a cute first-lap pass on Bottas but didn't have the pace thereafter. He was innocent when spun by Schumacher before retiring with an electrical glitch. This came after qualifying last, which he managed without an obvious error or falling foul of traffic. Never a match for Albon.



Started 19th — Result 13th

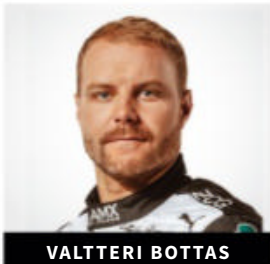
8 Had Alonso and Hamilton made the finish, he would have been 15th – still higher than the slowest car should be. His first five laps were the highlight, as he climbed four spots. Just about kept on top of his degrading tyres. Q1 was the low point: ran with underheated rubber to barely beat team-mate Latifi.

ALFA ROMEO



Started 15th — Result 12th

7 A fine way to sign off his rookie season. Had Bottas on toast over one lap – despite a scruffy Q2 effort – and with his race pace. The conservative team strategy to nail sixth in the teams' standings let the McLarens and Alpines run away. But Zhou worked well regardless to notch a good mark.



Started 18th — Result 15th

4 Alfa says it gave Bottas a defensive strategy to cover off the Aston Martins. But Bottas wasn't near them all weekend before the one-stop left him on a hiding to nothing after being mugged by Latifi on lap one. Also, he was a painful 0.3s down on Zhou in Q1 after finding out-lap traffic.

HAAS



Started 16th — Result 17th

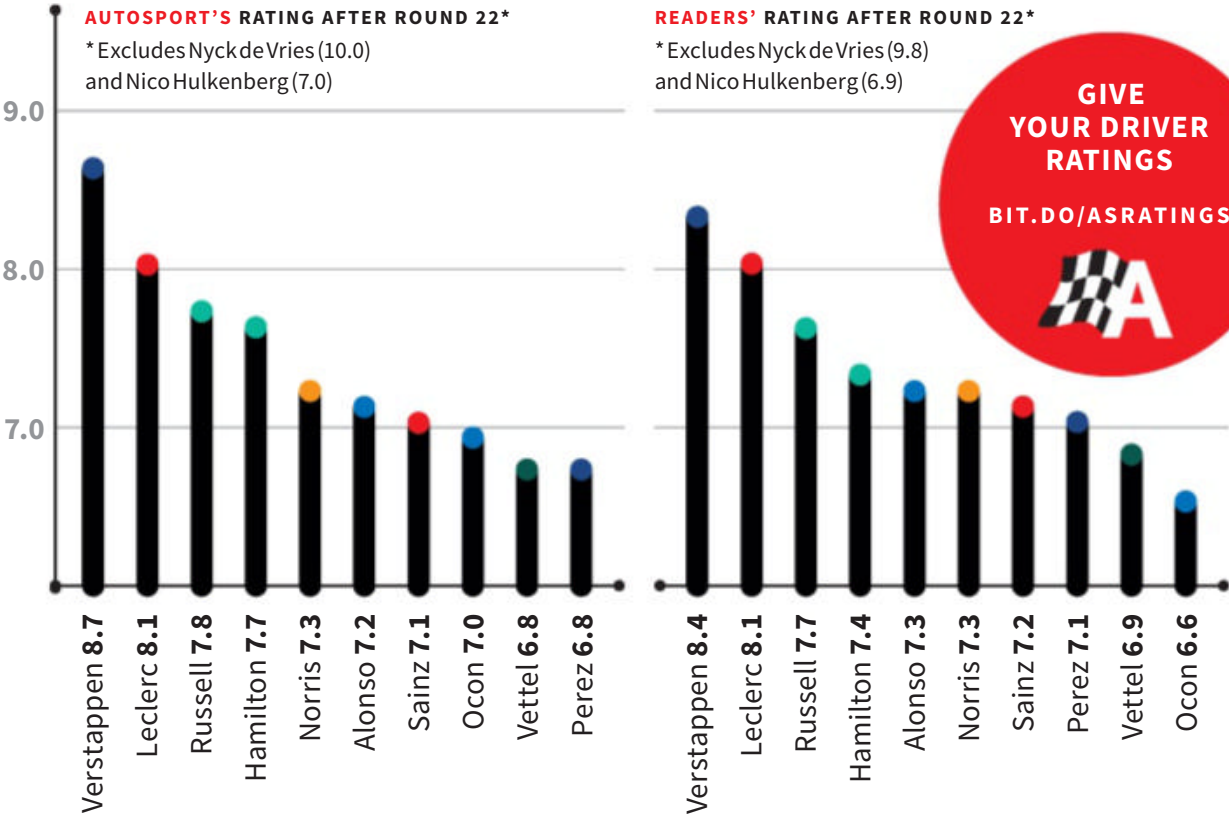
4 Disappointing. Not close to Schumacher in qualifying, even if he was a victim of bad track position that left him stationary to let his tyres cool. Race pace was the worst of anyone's so, despite two cars retiring, still managed to drop a position. At least he didn't crash, so he isn't the worst scorer...



Started 12th — Result 16th

3 Only driver to commit a major error. Arrived way too hot into Turn 5 to catch the rear of Latifi's Williams and punt him into a spin. It was really poor and rightly earned a 5s penalty. A shame that's how he ended his Haas tenure, especially after he beat Magnussen in qualifying.

TOP 10 AVERAGE RATINGS



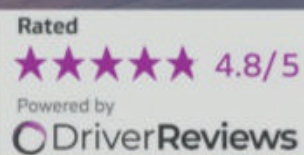


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6

Clark (1965)
Fangio (1954)
Ascari (1952)

7

Clark (1963)

13

Vettel (2013)
Schumacher (2004)

15

Verstappen (2022)

11

Hamilton (2014, 2020)
Vettel (2011)
Schumacher (2002)

HOW VERSTAPPEN'S RECORD-BREAKING SEASON COMPARES TO THE GREATS

KEVIN TURNER

PHOTOGRAPHY  motorsport
IMAGES

Max Verstappen has pointed out that Formula 1 seasons are longer now than they used to be and, like most active sportspeople, he's not too bothered about breaking records. But his new benchmark of 15 wins from a single world championship season is still remarkable and deserves to be compared to some of the finest campaigns in F1 history.

Working out the strike rate is an easy way of minimising the impact of the ever-growing F1 schedule. Verstappen's tally from 22 races gives a 68% success rate. Yes, Ferrari's strategy blunders and unreliability have boosted this figure, but Verstappen still had to get the job done. And he did that despite various challenges along the way, such as grid penalties at Spa and Monza.

The bald statistics are impressive, but what makes Verstappen's season stand out is that, in raw performance, the Red Bull RB18 had a smaller advantage than most machines that have racked up similar successes. Taking a look at the supertimes is one way of demonstrating this.

Supertimes are based on the fastest single lap by each car at each race weekend, expressed as a percentage of the fastest

single lap overall (100.000%) and averaged over the season. There are some limitations to this approach because it's based on the best lap time of a weekend, which usually means qualifying. And qualifying pace does not, of course, always translate into race pace.

The Ferrari F2004 that Michael Schumacher took to 13 wins from 18 races (72%) in 2004 'only' had a supertimes advantage of 0.218%. In reality it was larger, mainly because Ferrari's Bridgestone tyres were

better race (and worse qualifying) tyres than the Michelins on the rival cars. The F2004's true domination was greater than the supertimes suggest.

The RB18 is similar in that it has tended to be a better race car than a qualifying car — or the rival Ferrari F1-75 was a better one-lap wonder than a GP contender. The Red Bull actually ended the season 0.017% *behind* the Ferrari, though it would take a very bold member of the tifosi to argue that the RB18 wasn't the best car of 2022...

Nevertheless, this approach does help provide a basis from which we can compare some of F1's greatest seasons. >>

STRIKE RATES AND SUPERTIMES

YEAR	CHAMPION	WINS	PERCENTAGE	SUPERTIMESADV
1952	Ascari	6	75/86	3.70%
2004	Schumacher	13	72	0.218%
1963	Clark	7	70	0.474%
2022	Verstappen	15	68	-0.017%
2013	Vettel	13	68	0.105%
1954	Fangio	6	67/75	0.158%*
2002	Schumacher	11	65	0.283%
2020	Hamilton	11	65/69	0.594%
1965	Clark	6	60	0.089%
2011	Vettel	11	58	0.489%
2014	Hamilton	11	58	0.881%

* Estimated


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Ascari's 1952 strike-rate record remains intact



One of the most obvious things to jump out from the table is Ferrari's enormous advantage in 1952, when the world championship was run to F2 regulations. As well as the Ferrari 500's pace, Alberto Ascari also didn't have to deal with the other standout of the era, Juan Manuel Fangio, who missed the whole season through injury. Ascari still had some good team-mates to beat and his strike rate (75%, or 86% if the Indianapolis 500 is excluded) is outstanding, but the level of opposition was not as high as in subsequent eras.

Fangio's 1954 crown can be thought of in similar terms, even though the supertimes advantage is much smaller. The figures are clouded by the late arrivals of Mercedes and then Lancia, but it's fair to say that Fangio usually had the best machinery, not only when he started the season in a Maserati 250F but after he switched to the Mercedes W196. When the as-yet-undeveloped



Prost took 1986 title against odds

Lancia D50 arrived for the Spanish GP finale, the Argentinian did face a faster car, but the title had already been secured and neither he nor the Lancia won the race. The fact that chief rival Ascari missed most of the campaign means that Fangio's less-dominant 1951 and 1957 seasons should probably be held in higher regard than 1954.

One of the smallest supertimes advantages translated into domination came from Red Bull in 2013. The RB9 that Sebastian Vettel took to 13 wins from 19 GPs (68%) was only 0.105% clear of the pack. Partly that's because the rapid Mercedes F1 W04 often ate its tyres in races, but it also underlines the reliability and efficiency of Red Bull – the team's pitstops and strategy rarely gave wins away, just as in 2022. That must be factored into Verstappen's success – it's no coincidence that Red Bull was won the Fastest Pit Stop Award five years in a row.

It's a similar story for the Ferrari team of 2002 and 2004. Although the pace advantage is understated by the supertimes, the sheer reliability and strategic nous of Jean Todt/Ross Brawn's squad left rivals standing. Like Verstappen, Schumacher also did not have to worry about a consistent challenge from a team-mate, Rubens Barrichello rarely on his pace and occasionally asked to move aside when he was, such as in the infamous 2002 Austrian GP.

Jim Clark's two world titles stand out. The combination of the Scot and Colin Chapman's ground-breaking Lotus designs was often the pacesetter in the 1960s, and Clark's seven wins from 10 (not to mention numerous non-championship F1 race wins) in 1963 set a new

Schumacher and Ferrari dominated during 2004



SCHLEGELMILCH



benchmark. But his six from 10 races in 1965, against strong BRM opposition and a revived Ferrari, is perhaps even more impressive given Lotus's pace advantage was just 0.089% compared to 0.474% in 1963. Considering Clark missed the 1965 Monaco GP to win the Indy 500 and hit mechanical trouble in the other three championship races he didn't win, his 1965 performance has to be considered as one of the greatest.

Given his many F1 records, Lewis Hamilton features less than you might expect. He didn't really get his hands on a car dominant enough to challenge this list until 2014, then had a strong team-mate in Nico Rosberg at that point and the next two seasons. That and the clashes between the two limited the Briton's strike rate to the 48-58% range.

Few would argue against the point that Hamilton became a better driver following his 2016 defeat, but the new rules that brought wider, faster cars also eroded Mercedes' advantage.

The exception was 2020, when the W11 moved Mercedes comfortably clear. Its advantage was usually bigger than the 0.594% show in the supertimes – the team stopped developing the car before the halfway mark of the campaign, allowing Red Bull to close.

Hamilton still took 11 wins; 65% of the season's events, but 69% of the races he started because he missed the Sakhir GP with COVID.

There were moments in 2020 when Hamilton was arguably performing at his best, most obviously in his sublime Belgian GP qualifying lap and victory in Turkey.

But perhaps his most impressive overall campaign remains 2018, when Ferrari had a faster package for a significant portion of the season and yet Hamilton wrestled the title initiative from Vettel even before Mercedes' upgrades moved the Silver Arrows clear of Ferrari.

That also raises another point – that record-breaking seasons aren't necessarily the greatest in F1 history. Close battles or even failed campaigns need to be considered. Aside from Hamilton in 2018, the efforts of Jackie Stewart in 1973, Alain Prost in 1986 and Fernando Alonso in 2012 have to come into the debate, even though they 'only' scored five (33%), four (25%) and three (20%) wins respectively. In all three cases the drivers were fighting against a machinery disadvantage, made few mistakes and regularly maximised the result. Stewart and Prost were rewarded with titles, while Alonso lost out by three points.

There have also been some titanic battles between team-mates that would be worthy of mention, such as Nigel Mansell-Nelson Piquet at Williams in 1986-87 and Prost-Ayrton Senna in 1988-89. Senna fans would understandably point to his 1991 and 1993 seasons, too.

Verstappen has arguably made more mistakes in 2022 – the off in Spain, spin in Hungary, escape-road escapade in Singapore and clash with Hamilton in Brazil – than many of those campaigns, but that's still impressively few over such a long season. And he is the only driver on our table with a supertimes disadvantage, even if the reality was a little different and Ferrari failed to make the most of its performance.

If not quite at the top of the tree, the Dutchman's 2022 stands up as one of the greatest seasons in F1 history, ahead of most of the others in our table, and is a well-deserved record. The only question now is, can Verstappen reach even higher? 🏆



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Iwasa fends off the champion

FIA FORMULA 2
YAS MARINA (ARE)
19-20 NOVEMBER
ROUND 14/14

As if Red Bull's domination of the Abu Dhabi Grand Prix wasn't enough, two of its junior drivers secured wins in the supporting FIA Formula 2 season finale. Ayumu Iwasa held off a fierce challenge from Felipe Drugovich to secure his second win of the season in Sunday's feature race, a day after Liam Lawson won the sprint, while Williams's Logan Sargeant secured enough points to qualify for his F1 superlicence.

DAMS driver Iwasa took pole on Friday, beating team-mate Roy Nissany late in the session. Once the Japanese had seen off a feisty Nissany over the first few corners, he faced little pressure in the early stages, while MP Motorsport's already-crowned F2 champion Drugovich battled past the Israeli

at Turn 9 on the seventh lap.

Iwasa remained ahead of the Brazilian following their pitstops for medium-compound tyres but, rather than focus on Drugovich behind, he had to spend the middle portion of the race maintaining the gap to Jack Doohan, who had assumed the lead of the race after starting on the alternate strategy. The Virtuosi driver had built a commanding lead over Marcus Armstrong while Iwasa led those who had pitted, and the gap between Doohan and Iwasa remained relatively static.

Doohan finally pitted for soft tyres with eight laps remaining and looked set to use his advantage to cut through the pack but, as he rejoined, his front-left wheel detached, rolling back across the track and forcing several drivers to take evasive action. It forced the Australian to drag his car back to the support pitlane to retire, dropping him to sixth in the standings behind Iwasa.

The VSC was briefly deployed for marshals to recover the wheel and, once racing resumed, Drugovich looked set to jump Iwasa, but had to shed speed to meet his minimum arrival time and was unable to find a way through with DRS, despite looming large in the leader's mirrors. Another VSC, after Olli Caldwell came to a stop on track, punctuated the final laps. Drugovich attacked Iwasa as racing resumed, but an attempted move around Turn 9 proved fruitless.

Lawson (Carlin) claimed the final podium position ahead of Dennis Hauger (Prema Racing), who had been battling with Theo Pourchaire throughout the race before the Frenchman suffered a terminal mechanical issue, ending his ART squad's chances of beating MP to the teams' title. Sargeant's graduation to F1 with Williams was firmed up when fifth place in his Carlin car secured him fourth in the standings to score the necessary superlicence points.

Lawson took victory in Saturday's race, scoring his fourth win of the season in a red-flagged sprint race. The Kiwi ran patiently behind Richard Verschoor for the first nine laps, biding his time after a long delay due to a first lap crash between Enzo Fittipaldi and Jehan Daruvala.

Lawson passed the Trident driver on the 10th lap at Turn 6, and Verschoor failed in his bid to reclaim the advantage three corners later. Lawson went on to cross the line 7.9s clear of Verschoor, with a late charge from Drugovich taking him past Amaury Cordeel for third two laps from the end, Hauger also passing the Belgian.

MEGAN WHITE



Iwasa and Lawson were winners, while Drugovich claimed two podiums



Engel on top as stars return

**MACAU GRAND PRIX
MACAU (CHN)
19-20 NOVEMBER**

Maro Engel took his third Macau GT Cup victory as big international names finally returned to the Guia circuit. The German was one of a number of stars to brave quarantine for a shot at glory along with Raffaele Marciello and Edoardo Mortara. These three were the main protagonists, with Audi pilot Mortara leading the two Mercedes drivers in qualifying. But ‘Mr Macau’s’ weekend took a turn for the bizarre at the start of Saturday’s qualifying race when he took off for the formation lap before the lights went green. He completed a lonely lap on his own before he was forced to start from the pitlane. That left the Mercs to battle it out alone out front, Engel leading Marciello, while

a big startline crash involving Min Heng, Adderly Fong, Darryl O’Young and Cheng Cong Fu helped Mortara work his way back to fourth. He unable to wrest third from the Lamborghini of Kang Ling. Sunday’s main race got off to a thrilling start with Engel and Marciello running side by side – and rubbing – through Mandarin as they battled for critical track position. Marciello won out, but his lead only lasted until the Melco Hairpin on lap two when a mechanical issue sent him down the escape road and out of the race. A lengthy safety car to retrieve Leong Ian Veng’s stranded BMW then made it a two-lap shootout to the flag, Engel comfortably claiming a third crown ahead of Mortara and Alex Imperatori (Porsche).

In the Macau Grand Prix for Formula 4 cars, Andy Chang finally broke through for victory. After consecutive second places in 2020 and 2021, the Macanese was in a league of his own on home soil. He stormed to pole, and the only blot in Chang’s copybook was a slow start to the qualifying race, which led to him being forced down the escape road at Lisboa. That left impressive Macau rookie Gerrard Xie to win ahead of Charles Leong, as Chang fought back to third. In the GP itself Chang was unstoppable, passing Leong and Xie by half-distance before gapping Xie by nearly six seconds. Macau specialist Rob Huff added to his long list of wins in the qualifying race for the Touring Car Cup, his MG5 leading home Lynk & Co pair David Zhu and



WEEKEND WINNERS

**FORMULA 2
YAS MARINA (ARE)**
Race 1 Liam Lawson
Carlin
Race 2 Ayumu Iwasa
DAMS

**MACAU GT CUP
MACAU (CHN)**
Races 1 & 2 Maro Engel
Craft-Bamboo Racing
(Mercedes-AMG GT3 Evo)


**MACAU GRAND PRIX
MACAU (CHN)**
Race 1 Gerrard Xie
Smart Life Racing Team
Race 2 Andy Chang
Champ Motorsport

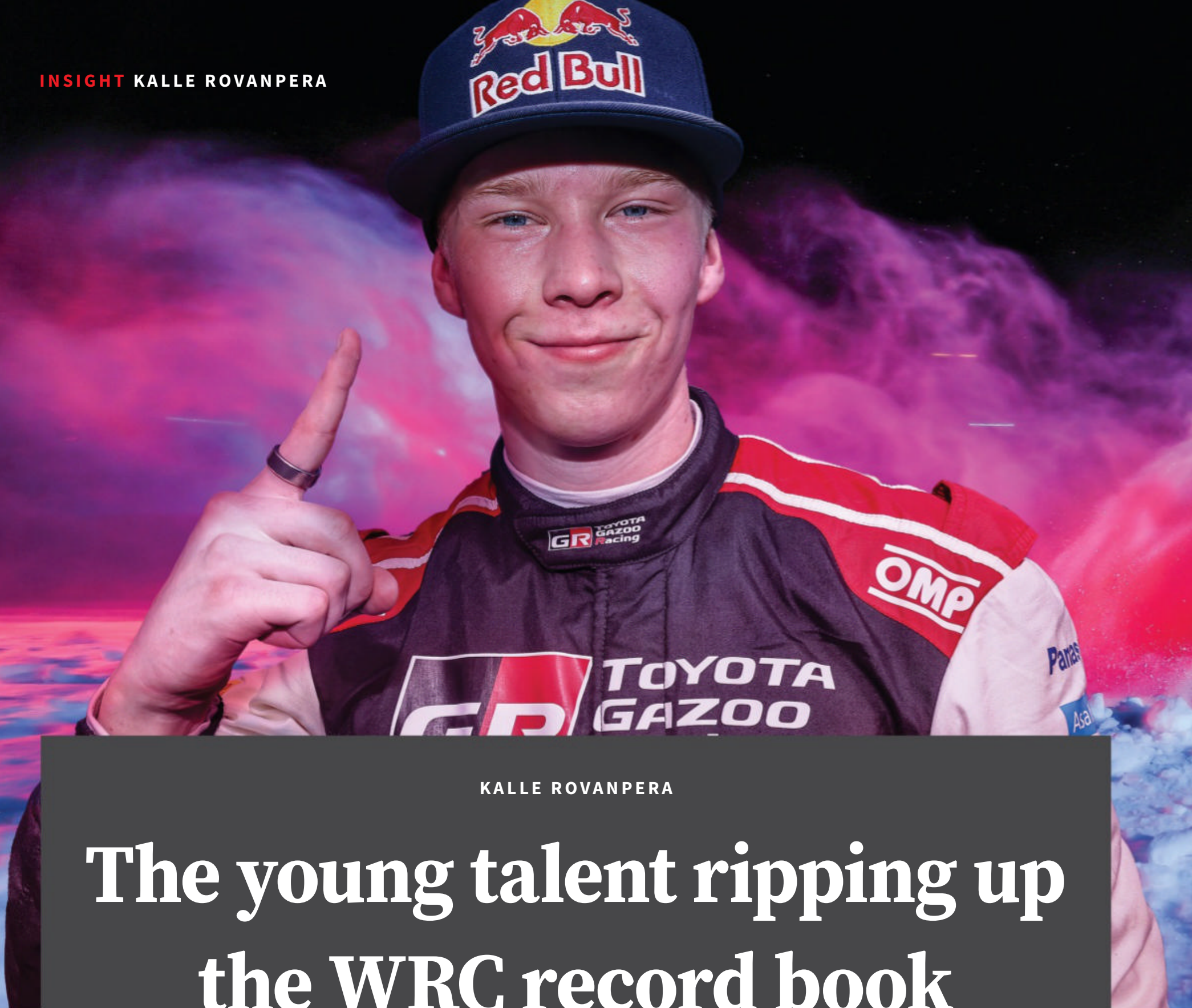
**MACAU TOURING CAR CUP
MACAU (CHN)**
Race 1 Rob Huff
MG XPower (MG5 XPower)
Race 2 Jason Zhang
Teamwork Racing (Lynk & Co 03)

**MACAU GUIA
MACAU (CHN)**
Races 1 & 2 Filipe de Souza
Champ Motorsport (Audi RS3 LMS)

Sonny Wong. In Sunday’s race, which started with a partially reversed grid, Jason Zhang (Lynk & Co) came from sixth to win ahead of Huff and Gao Hua Yang. Audi RS3 driver Filipe de Souza, meanwhile, made history as the first Macanese to win a Guia Race on Saturday, which he then backed up with victory in a crash-affected second race on Sunday.

ANDREW VAN LEEUWEN

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KALLE ROVANPERA

The young talent ripping up the WRC record book

Twenty-two-year-old Kalle Rovanpera is redefining what's possible to achieve in rallying and inspiring a new legion of fans as a result

TOM HOWARD

PHOTOGRAPHY MCKLEIN

Dubbed a talent that comes along once in a generation, Kalle Rovanpera has not only rewritten the World Rally Championship record books but has already changed rallying forever.

It has previously been perceived that to conquer the WRC requires a wealth of wisdom and experience of competing at the top level. Arguably the sport's two greatest drivers, nine-time world champion Sebastien Loeb and eight-time title winner Sebastien Ogier, claimed their first crowns aged 30 and 29 respectively. The previous youngest world champion was Colin McRae, who scaled the heights of the WRC aged 27 in 1995. Ironically, 27 years later, Rovanpera has now broken the mould, smashing that record by claiming his maiden world title aged 22 and one day, after a dominant 2022 campaign that yielded six wins.

While Rovanpera has achieved success at an unthinkable age, the first Finnish world champion for 20 years was seemingly destined to be a record-breaker and a game-changer. According

to his father, one-time WRC rally winner and former factory SEAT, Peugeot and Mitsubishi driver Harri Rovanpera, "the water Kalle was baptised with might have had gasoline in it".

He may have claimed rallying's top prize in only his third full season in top-level machinery, but this journey to stardom began at the tender age of eight. Rovanpera Jr was tearing around frozen Finnish lakes in a specially designed rally car built by his father, honing the art of car control, before many of his rivals had perhaps even seen a rally car. Those formative years built the foundations for a superstar rally driver.

It has been suggested that Rovanpera is rallying's answer to Formula 1's Max Verstappen, and there are several comparisons that can be drawn. Both have quickly risen through the junior ranks to dominate their disciplines at the highest level. The nurturing of their talent has also been carefully managed by their parents, both of whom enjoyed professional careers at the pinnacle.

After claiming the WRC title with two rounds to spare this year,



Rovanperä was quick to acknowledge the role his parents played in his rise to success. “Of course, he [Harri] has been the biggest part of my career regarding rally,” says Rovanperä Jr. “It has been quite simple with us. We have always been really easy regarding rally, we always had fun when we went driving when I was smaller. It is not always the case with parents that it is easy to do sports. It was special and it was the same from mum’s side, she did exactly the same thing. The support of your parents is a big part and both of my parents did it quite well.”

“Quite well” is an understatement, but that sums up Rovanperä perfectly. He has been the model of understatement even when pulling off what appear to be rallying miracles that leave many perplexed to explain. Rovanperä often describes his mesmerising feats with a simple “that was quite OK” response while onlookers are picking up their jaws from the ground.

By the age of 12, he had competed in his first rally sprint in Latvia, and three years later he won the R2 class of the Latvian Rally Championship, before winning the outright title in 2016 and 2017. The records continued to tumble. Aged 17, he secured his driving licence with a special permit from the Finnish government three weeks before making his WRC debut at Rally GB. After becoming the youngest driver in the WRC, he became the youngest WRC2 event winner and champion come the end of 2019, before Toyota came calling and a move to the top tier beckoned.

A first WRC win arrived at the age of 21 at Rally Estonia last July, and since then he has won seven of the past 18 WRC rallies. The statistics from his 2022 title campaign make for rather ominous reading for his rivals, too. Never mind his six wins — Rovanperä

“It has been quite simple with us. We always had fun when we went driving when I was smaller”

finished outside the top five in just three of the 13 rallies. He claimed 70 stage wins — 27 more than nearest rival Ott Tänak — and perhaps the most telling stat is that 50 of his 255 points were accrued through powerstage points, which outlines his prodigious yet metronomic outright pace.

Rovanperä’s rise to the title can be pinpointed to three key areas that set him apart from the rest. In five of the six rallies where there was significant rain, he won, showcasing a sixth sense for finding grip and car control, unmatched by his peers. This, added to a persona that appears unaffected by pressure, and maturity beyond his years, has created a formidable driver.

Four-time world champion Tommi Mäkinen is among those impressed by what Rovanperä is achieving, highlighting his superior mental strength as one of his key assets. “Incredible performance and it is amazing how quickly he learned the new car,” says Mäkinen of Rovanperä’s season. “He was really quick to be fast and not struggling, and reliable. He seems to be able to concentrate whatever is happening.

“He had a couple of good full seasons already but he started with the previous-generation car and that is quite advanced, and all the other drivers were far more experienced with it. He had to learn »



The McRae take on Rovanperä's success

Before Kalle Rovanperä's record-breaking run to become the youngest World Rally champion, the mantle had previously been held for 27 years by the late Colin McRae. The Scot lifted his maiden and only world title in 1995, driving for the factory Subaru operation, in what proved to be a tense and at times controversial campaign that has gone down in rallying folklore.

Interestingly, both drivers were at similar points in their fledgling WRC careers when success arrived. McRae won two rallies, compared to Rovanperä's six, in his title year, but the season comprised just eight events compared to the 13 in 2022. In contrast to Rovanperä, McRae was constantly playing catch-up after retirements on the opening two rounds of 1995 in Monte Carlo and Sweden.

But like Rovanperä this year, McRae too was victorious in New Zealand. That victory triggered a title charge thanks to a second in Australia, before the infamous trip to Spain, where a team-orders row forced McRae to cede victory to his title rival, team-mate Carlos Sainz.

After the acrimonious scenes in Spain, McRae won a title shootout against Sainz in Great Britain to seal the crown on home soil.

While the record has been passed on to Rovanperä, McRae's younger brother Alister believes that Colin, who died in 2007, would have been impressed by the new record holder's talent. "I'm sure Colin would be looking in a bit of amazement at how good he actually is at such a young age," says Alister. "I think it's a worry for everybody else in the championship.

"We knew he [Rovanperä] was quick, but the maturity and the ability this year has got a lot of people wondering how he's able to do it at that age. It's pretty amazing to have that composure and the ability to push and set the times he sets, when at times he doesn't need to do it.

"He just seems so comfortable in the car and in his own driving. He is doing things, having just turned 22, that's just not normal."

"I'm sure Colin would be looking in amazement at how good he is at such a young age"



WRC debut came in 2017 when Rovanperä was 17

the aero and many, many things, but when we went to the new car and everyone was starting afresh, you could see how quickly he was learning everything.

"Of course, he has been driving since a young age. He has driven many different cars and he understands many different cars very well. But then of course his mental strength is so strong."

Outgoing world champion Ogier, Rovanperä's team-mate since 2020 at Toyota, felt the 2022 title was never in doubt. "First of all, I don't think many young guys will have the same opportunity he has had so early in his career," says Ogier. "His season has been really impressive, he has been really dominant this year. Watching from afar there was no doubt he would win the championship.

"This [age] record will be hard to beat but never say never. It is never easy to stay on top, and now he will become a target,



Young Finn is attracting new fans to rallying, at home and abroad



Rovanperera took WRC2 success with Skoda in 2019



First of many: maiden WRC victory in Estonia last year

so pressure is always there, but it doesn't seem to be a problem for him. The future looks bright."

If Rovanperera continues in the same manner, he *could* match Loeb's nine world titles by the time he's 30, the same age Loeb was when he secured his first world crown in 2004 – a frightening thought. And what about Loeb's benchmark of 80 WRC victories?

But Rovanperera's first title is perhaps more important for rallying in general. The 'Rovanperera effect' is already being felt in the sport. In Finland, a rallying heartland, the discipline is reaching new heights in popularity that can be traced back to Rovanperera. Although he was beaten by Tanak on his home round, 5.5million hours of Rally

Finland coverage was consumed via national broadcaster YLE's online streaming platform, which equates to the country's entire population watching at least one hour of coverage.

Of course, Finland is a rally stronghold that boasts six previous world champions in Ari Vatanen (1981), Hannu Mikkola (1983), Timo Salonen (1985), Juha Kankkunen (1986–87, 1991, 1993) Makinen (1996–99) and Marcus Gronholm (2000–02), who have claimed 13 titles between them. But after 20 years a winner was long overdue and Rovanperera's success has sparked new life into the country's WRC enthusiasm.

"Drivers like that don't come around that often, someone that special," says one-time F1 race winner and sometime rally driver Heikki Kovalainen. "You have got Max Verstappen and Lewis Hamilton in Formula 1 and then you have Kalle, who is one of those drivers like Ogier and Loeb.

"It's great for the whole nation of Finland, it's a big thing. Rally fans have kind of been hibernating a bit because it has been such a long time since the Finns have been fighting for the championship, and now Kalle has come on

the scene the whole nation is crazy about rallying.

"Motorsport has always been popular in Finland but rallying now has really taken over. He is a great guy and super-down to earth and he is just awesome to watch."

According to Rovanperera's Toyota boss Jari-Matti Latvala, the impact of a young world champion is being felt outside of Finland through an increase in the fanbase for rallying in general. "I haven't noticed any changes [in Kalle since he has won the world title] – he has been really cool and calm as normal," says Latvala. "But I can tell you what has changed is the amount of people we had at Rally Legend [a special non-championship event in Italy in October]. I have never seen so many people in the service park, everything was packed and they were very excited to see Kalle.

"This is clear after winning the championship he has brought a lot more audience and enthusiasm to the sport. There was more than 70,000 tickets sold at Rally Legend. There was no time to do photos and signatures for everyone, there were so many requests."

There is no doubt Rovanperera is one of those special talents that could challenge many of the sport's records. He could also be the force to galvanise not only a new WRC fanbase, but also inspire the next wave of talent, people who now believe that success in rallying is achievable at a younger age. ✎



Ogier has handed over WRC supremacy and is impressed by Rovanperera



Ex-racer Marks (centre, with Chastain) is all-in on his commitment to the team

BAKER



Trackhouse's Suarez (right) and Chastain lead the pack at Las Vegas

HOW TRACKHOUSE FLIPPED THE NASCAR SCRIPT

They say if opportunity doesn't come knocking, build a door. Instead, Justin Marks built a house around the Next Gen car that rocked NASCAR's establishment

CHARLES BRADLEY

PHOTOGRAPHY



VINLOVE

America's biggest form of motorsport, NASCAR, is very traditional. There's a staid way of doing things and, even if the unexpected occurs every now and then, the rule of thumb is that the powerhouse teams always win. What doesn't happen is a start-up operation arrives at its top level, bragging a co-owner who's a Grammy Award-winning megastar. It then buys an entire team from one of American racing's most successful owners, just a matter of months into its debut NASCAR Cup season, and puts both its cars into the Playoffs at the first proper attempt a year later.

Subsequently, it makes the Championship 4 decider thanks to its driver Ross Chastain deliberately driving into a wall at top speed and creating an internet sensation that even Formula 1 champions were wowed by — and it found time to run Kimi Raikkonen in a one-off third car!

None of this should happen. But, as they say at Trackhouse Racing, 'Why not us?'

Its leader is Justin Marks, the son of a tech company guru who was an early investor in GoPro digital cameras. Marks Jr is a decent road racer — he scored a win for Chip Ganassi Racing in NASCAR's second-tier Xfinity Series at Mid-Ohio in 2016, and he was a winner too in IMSA Sports cars with Meyer Shank Racing's Acura NSX GTD squad in 2019.

But his business calling is sports marketing, which Marks studied at California State University, and his passion project has quickly taken NASCAR's Cup Series by storm. He brought music star Pitbull (Armando Perez, aka Mr Worldwide) on board to join industry veteran Ty Norris, and together they've played the NASCAR game like nobody else.

"I love it," eulogises Marks. "I love this company, I love Trackhouse, and I want it to be successful. The story that we've been writing this year, we've had great moments. We've had dramatic moments. We've brought great partners on. We've got two great race car drivers sitting in our race cars.

"I wanted this more than I've wanted anything professionally in my life ever, and I've taken massive personal risk to start this company. I believe in it more than I've believed in anything." »

“NONE OF THIS SHOULD HAPPEN. BUT, AS THEY SAY AT TRACKHOUSE, ‘WHY NOT US?’”

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Suarez turned heads leading 58 laps of 2021 Bristol dirt race



Both Chastain (left) and Suarez qualified for the Playoffs

It's clear from talking to leading lights around the sport that newcomer Marks, 41, is highly regarded. Rick Hendrick says he's "done an unbelievable job"; Joe Gibbs believes Trackhouse's rise has been "fantastic"; perhaps the most telling commendation came from Roger Penske's trusted lieutenant, Walt Czarnecki: "I've never seen a team come into the sport as well prepared as Trackhouse. When I listen to [Marks], he's all about business. I think he's not unlike us in that respect."

Trackhouse made its debut in the 2021 Daytona 500 as a single-car effort run out of a corner of Richard Childress Racing's shop. Its driver, Daniel Suarez (the former Xfinity champion and only non-American regular in the series), ended his race after just 13 laps with the front of his Chevrolet Camaro torn up by the muddy infield after he couldn't avoid the first big wreck of the day. Marks shrugged it off as "the first step of a thousand-mile journey".

Mexican Suarez, who previously drove with powerhouse teams Joe Gibbs Racing and Stewart-Haas Racing, admits his career had "hit rock bottom" before Trackhouse came calling. But he immediately connected with Marks's ambition.

"In reality, it doesn't matter about the team you're with — if you don't have the right people pushing you to be competitive, and having your best interests [at heart], it's very tough to be successful in NASCAR," says Suarez. "Having a four-car team, being a part of a powerhouse, has disadvantages as well as advantages."

"In those teams, there are four steps of cars, and if you're not

in one of the best ones in terms of people pushing in the same direction, it can be tough. But from the outside, people only see the banner of the big-team name.

"When I came to Trackhouse, everything was just a piece of paper. Justin has been successful as a racing driver and a businessman, and he said, 'We're going to bring this to the next level and we're going to be the new strong racing generation in NASCAR.' When he looked me in the eyes and said, 'You have to trust me on this,' I got a gut feeling that it was the way to go."

Early-season results were as expected for a satellite RCR car — "It's no secret, we were their third priority," says Suarez — with regular top-20 results but nothing special. Then came the first-ever Bristol dirt race in March 2021, and opportunity knocked: Suarez led 58 laps and finished fourth. The NASCAR world was put on notice.

Despite his wealthy family background, Marks was taking a huge financial risk. He didn't have a NASCAR 'charter' — the ticket to an automatic starting spot at every Cup race within its franchise system. Marks reflects that time was "scary... I mean, uncomfortable, just not knowing if it was going to work. I don't have a big corporation, a big business behind me to where my race team can be kind of my fun project or anything like that. I come from a place where I have an opportunity, a very successful family, and I have a dream that I can chase. Just about everything that is available to me in my life because of those circumstances, I pushed into Trackhouse."

"This was it. This was all the chips in. If this didn't work, to be honest with you, there wasn't a ton to fall back on. We didn't have much sponsorship. I didn't know where I was going to get my charter from or how I was going to make this work."

What he did have was a smart plan: NASCAR was bringing its all-new car, the Next Gen, on stream in 2022 — and this was the true target for Marks. It promised to level the playing field, forcing the big teams (and their manufacturers) to throw away their years of notes and data, while bringing cost containment to help with the business model of fielding cars.

This was spawned by the failure of NASCAR's last small hero story: Furniture Row Racing. Against the odds, it won the title as a Gibbs satellite team, with Martin Truex, in 2017. But this fairytale had a nightmare ending: Gibbs ratcheted the price tag for its equipment and, as the bills piled high, owner Barney Visser fell ill and shuttered the team just a year later.

It sent shockwaves around NASCAR HQ — the sport's costs were out of control and FRR's death was a very public one. Next Gen was its legacy, so it's fitting that Trackhouse has jumped into that underdog role.

"Honestly, Trackhouse is a thing because of this Next Gen car," says Marks. "I know that obviously we've got some growing pains. But the parity that it's allowed in this sport is why Trackhouse has this opportunity. So if I go back to the day that I decided to start this thing, it was really because of this race car, because if we're all playing with the same ball, then it truly becomes about the team. »

"THE PARITY THE NEXT GEN CAR ALLOWED IS WHY TRACKHOUSE HAS THIS OPPORTUNITY"



Demise of Furniture Row Racing was massive wake-up call for NASCAR

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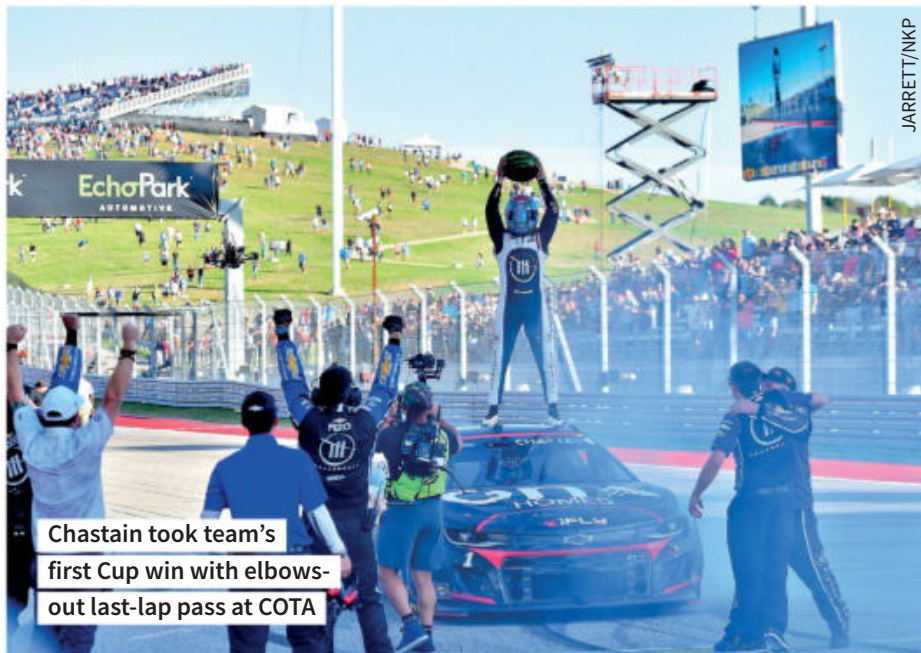
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“THERE’S UNCERTAINTY, DRAMA AND EXCITEMENT THAT THIS SPORT HASN’T SEEN IN A LONG TIME”

“I believed in my ability and the management of Trackhouse’s ability to cultivate a workforce culture where we could take advantage of a car that is the same as everybody else’s and go compete with teams that have more money than us, that have more depth than us, that have more people than us, and this is proof of concept for the whole vision of the Next Gen car.

“NASCAR deserves a tremendous amount of credit, because there’s no denying that it has added an element of uncertainty, drama and excitement that I think this sport hasn’t seen in a long time, and Trackhouse is here for all of it.”

As well as Next Gen, Marks grabbed another opportunity after he balked at the cost of NASCAR charters — which topped eight figures each. Heck, for huge numbers like that he could... buy an entire team! He called Chip Ganassi, his old team boss, and they struck a deal. Trackhouse now had a home, the two charters that came with it, plus an extra hundred or so staff to play its hand properly as a two-car effort.

“I have a tremendous amount of respect for Chip,” says Marks. “There’s a tremendous element within Trackhouse that was built under his leadership. We have 65% of our workforce [that] was at Chip Ganassi Racing. Chip built this building that we’re in. So he’s taken the ride with us.”

And what a ride it was this year: Chastain, who Trackhouse retained from Ganassi, took the team’s first Cup win at COTA after a typically ballsy and contact-packed last-lap pass, and repeated at Talladega in another thrilling last-gasp finish. Suarez scored his first career win at the top level at Sonoma, and both qualified for the Playoffs, exceeding Marks’s target of one car making it.

Between them they scored 21 top-five finishes. While Suarez dropped out in agonising fashion at Charlotte, due to a power-steering failure when well placed to transfer, Chastain made the Championship 4 with his wild Martinsville divebomb that went viral. Third place in the season finale at Phoenix was good for second in points, with both cars inside the top 10 — the only non-powerhouse team to do so.

“I wouldn’t want to be doing this with anybody else,” says Chastain. “Trackhouse is exactly where I’ve wanted to be. I feel like we hit our stride early with the speed, but it just didn’t falter. This is just the beginning. I’m genuinely happy — for some reason, it’s not that I’m complacent in second, but I feel good.”

It’s been the feel-good story that NASCAR was looking for. Now Trackhouse’s sustained challenge at the very top of the sport will be the next real test. 🏆



DOES THE ICEMAN RETURNETH?

Trackhouse Racing made more headlines in the summer when it gave Kimi Raikkonen his Cup Series debut in its ‘Project 91’ third car at Watkins Glen.

Raikkonen, who raced almost 100,000km in Formula 1, hadn’t driven a racing car in anger in the 251 days since the 2021 Abu Dhabi Grand Prix. The 2007 F1 world champion only got a couple of hours in a Next Gen test car at Virginia International Raceway beforehand, so the fact that he qualified back in 27th was no surprise. In a wet/dry race, however, he charged up to 14th before pitting for slicks.

In the second stage, he peaked in eighth before pitting again, which put him back in the pack but on a promising fuel strategy to contend for a top 10. Sadly, he got caught up in someone else’s crash and whacked the tyre wall, ending his day and injuring his wrist.

“I was very impressed with Kimi,” says team-mate Daniel Suarez, who helped him through the testing process. “I wasn’t surprised. I was actually expecting him to do well, but it was good to see how disciplined he was.

“HE CAME HERE TO BE COMPETITIVE AS WELL AS HAVING A GOOD TIME”

“He didn’t come here in vacation mode to have fun; he came here to be competitive as well as having a good time. He studied hard, we spent some good time together in the simulator, he was getting bold with the car. He’s a very talented race car driver, I knew he’d get up to speed, but that takes a little bit of time with these cars. For the amount of time that he did in the car, he did a very good job.”

Justin Marks has gone on record as saying the ride is Raikkonen’s “until he tells me otherwise”. After his debut, the Finn said “we’ll see”.

“I hope he comes back,” adds Suarez. “I think he will, just for the challenge. He didn’t finish the race the way he wanted to, or how he deserved to. If I was him, I’d do it again.”



SEASON
REVIEW

A TITLE WON BY BAGNAIA OR LOST BY QUARTARARO?

The reigning world champion built up a lead but struggled for pace with his Yamaha as Ducati's Francesco Bagnaia stormed back into contention

LEWIS DUNCAN

PHOTOGRAPHY GOLD AND GOOSE

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Quartararo (left) led early on with three wins, but could not hold off Bagnaia, who scored seven victories

It's 10 rounds into the 2022 MotoGP season, and Francesco Bagnaia has retired from a grand prix for the fourth time this year. While running second, he has slid out of the German Grand Prix at the Sachsenring before chief title rival Fabio Quartararo goes on to register the third – and final – win of his campaign.

He's crashed out of the season-opener in Qatar while racing Pramac Ducati counterpart Jorge Martin; he's gone out while battling Gresini's Enea Bastianini for victory in France; and he's been wiped out by Takaaki Nakagami at the first corner of the Catalan GP. After Germany, it seems that Bagnaia's title hopes are already gone.

After four breakthrough wins in the second half of 2021 repositioned him as a title favourite for 2022 aboard his factory team Ducati, Bagnaia went into the winter full of optimism, and the first tests of the new bike at Jerez at the end of the previous season showed his squad had made steps forward, while Yamaha had yet to find the horsepower gains Quartararo sorely needed.

The winter proved difficult for both Bagnaia and Quartararo. Ducati's new engine for its GP22 was far too aggressive on acceleration, while Bagnaia struggled to find the feeling he'd had with the 2021 bike on the front end. At Yamaha, a more powerful engine had to be scrapped due to reliability concerns, and Quartararo was forced to campaign the 2022 season on a bike with a similar power output to the machine with which he'd won the 2021 title.

Ninth in the Qatar GP offered a glimpse at the difficulties Quartararo would face as 2022 unfolded. Ahead of that first round, Bagnaia elected to ditch the full 2022-spec engine and run a hybrid 2021-22 version for the year.

It wasn't a quick fix. Following his retirement in Qatar, Bagnaia was 15th in a wet Indonesian GP, fifth in both legs of the Argentina/US double-header, and eighth in Portugal, where he raced from the back of the grid after a crash in qualifying almost left him with a broken collarbone.

Quartararo's year hadn't been much easier following his opening-round labours, the Frenchman second in Indonesia but eighth and seventh in the Americas trek. But a victory in Portugal put him to the top of the points table along with Suzuki's Alex Rins, who had a blinding run of back-to-back podiums in the Americas and fourth from 23rd in Portugal. Bagnaia, meanwhile, was 38 points down on the pair.

Suzuki's year could well have been different had it not been for the bombshell announcement after May's Spanish GP that the Japanese marque had elected to quit MotoGP at the end of 2022. Thus started a downward spiral as Rins and 2020 world champion team-mate Joan Mir each tallied up three DNFs in four starts,

while Rins pulled out of Germany with a wrist injury. Two more retirements at Silverstone and the Red Bull Ring gave way to a five-race spell on the sidelines for Mir due to injury. Victories for Rins at Phillip Island and Valencia gave the team an emotional send-off, albeit one that makes Suzuki's decision even more baffling.

By contrast, Bagnaia won at Jerez, to kickstart the beginning of his championship turnaround. To this point, both the Italian's and Quartararo's campaigns were holding similar paths. From the arrival in Europe, both made mental switches. Quartararo felt he had complained too much about the Yamaha's lack of power, and decided instead to focus on the good points of the bike. Bagnaia reckoned he was trying too many things to find the feeling he needed, and from Spain decided to work smarter. He won at Jerez and Mugello, but only just, as Quartararo shadowed him on both occasions. At this stage it seemed that Quartararo, despite the Yamaha's deficiencies, was heading for a second title as his main rivals kept making errors.

Following his title win at the Valencia finale earlier this month, »



“BAGNAIA ELECTED TO DITCH THE FULL 2022-SPEC ENGINE AND RUN A HYBRID 2021-22 VERSION”

ROUND BY ROUND

Qatar GP

1 Bastianini

2 B Binder

3 P Espargaro

Bastianini stuns with his maiden MotoGP victory as Gresini emotionally returns to the top of the podium a year on from team founder Fausto Gresini's death. Pol Espargaro scores his only podium of the year, trailing KTM's Brad Binder, while reigning champion Quartararo struggles to ninth. A crash for Bagnaia while racing Martin is the first of five in 2022 for the factory Ducati rider.

Indonesian GP

1 Oliveira

2 Quartararo

3 Zarco

MotoGP's first visit to Mandalika is overshadowed by track-surface problems, while a massive rainstorm on race day forces a lengthy delay to the first Indonesian GP since 1997. Marc Marquez doesn't start the race after a huge crash in the warm-up leaves him with a concussion and vision problems. KTM's Oliveira storms to victory ahead of Quartararo and Zarco. Bagnaia struggles to 15th and has just one point after the first two rounds.

Argentinian GP

1 A Espargaro

2 Martin

3 Rins

MotoGP's return to Argentina almost doesn't happen after freight delays due to technical issues with one of the planes forces Friday practice to be cancelled. After a tense battle with Pramac rider Martin, Aleix Espargaro converts pole into a maiden MotoGP victory for himself and Aprilia. Rins completes the podium, with Bagnaia fifth and Quartararo eighth. After his Indonesia crash, Marquez is a non-starter.

Americas GP

1 Bastianini

2 Rins

3 Miller

Marquez returns to action at his beloved Circuit of The Americas, but an issue at the start drops him from ninth to the back of the pack, forcing him into a recovery ride to sixth. Bastianini scores his second win of the season to lead the championship standings, while Quartararo continues to battle his underpowered Yamaha in seventh spot. Bagnaia is fifth, with Rins fighting to second and Miller completing the podium.

Portuguese GP

1 Quartararo

2 Zarco

3 A Espargaro

MotoGP's first stop in Europe of 2022 is won dominantly by Quartararo, with Bagnaia forced to ride from last on the grid to eighth after almost breaking his collarbone in a crash in qualifying. Rins storms from 23rd on the grid to fourth to take a joint lead in the championship with Quartararo, while Miller's Ducati wipes out Mir. Aleix Espargaro makes his second podium appearance of the year in third.



“FROM THAT MOMENT I
RECOGNISED I HAD A PROBLEM
AND I TRIED TO IMPROVE MYSELF”



Bagnaia admitted he only “lost faith in the championship for half an hour, one hour” in Germany.

“I think credit goes to Pecco, who cleared his mind after Sachsenring and said, ‘Let’s do it’ with his working group race by race,” says Ducati sporting director Paolo Ciabatti. “If you think about the championship, it’s wrong. So, let’s do what we can do, what we know what we can do from race to race, let’s work on Friday and Saturday to try to win on Sunday’, which he managed to do four times in a row.”

From the Dutch TT in June through to September’s San Marino GP, Bagnaia roared back into contention. The Assen success was a crucial turning point. An uncharacteristic collision with Aprilia’s Aleix Espargaro — a surprise title contender after a breakthrough victory for rider and team in Argentina, followed by four other podiums — netted Quartararo a long-lap penalty for the British GP.

Quartararo was eighth after serving his penalty at Silverstone, the lack of power from the Yamaha meaning he couldn’t overtake. And this would become a common theme, Quartararo forced to override the M1. Second in Austria was a crucial result for Quartararo, but a fifth at Misano and a DNF after a collision with Marc Marquez in Aragon left him just 10 points ahead of Bagnaia going to the final five rounds.

“He [Quartararo] is very similar to Marc Marquez, he’s riding around the problem,” explained Yamaha test rider Cal Crutchlow, who made a six-race cameo replacing the retired Andrea Dovizioso following the San Marino GP. “He understands the problem, he gets the problem. But he’s making the time in a different way. But there’s only so long that can last.”

That astute observation rang true in the late overseas races. Eighth in Japan while Bagnaia crashed again offered Quartararo hope, but a tyre-pressure error in a wet Thailand left him 17th while Bagnaia was third. The points gap was now down to two.

A crash trying to recover from an early mistake as Bagnaia tallied up third meant the Ducati rider was 14 points ahead after the Australian GP, with two rounds to go. Victory in Malaysia for Bagnaia only denied him clinching the championship early by two points as Quartararo valiantly fought to third.

Needing to win in Valencia, Quartararo couldn’t advance on his fourth place qualifying position to keep his hopes alive. Bagnaia, enduring “a nightmare” after early contact with his rival, was ninth, but it was enough. Fifteen years had passed between Ducati’s first title with Casey Stoner in 2007 and Bagnaia’s success. Never has a rider overturned a 91-point deficit to win a championship, or claimed the title with five DNFs in a single season.

The question at the end of 2022 is: did Bagnaia win the

ROUND BY ROUND

Spanish GP

1 Bagnaia
2 Quartararo
3 A Espargaro
After struggling with the Ducati GP22 at the start of the season, Bagnaia makes a breakthrough with set-up at Jerez to open his account for 2022. He narrowly fends off Quartararo for the fifth victory of his career, with Alex Espargaro firming up his title credentials in third after beating Marquez. A mistake drops Rins to 19th, and Suzuki informs its team it will be quitting MotoGP competition at the end of the 2022 campaign.

French GP

1 Bastianini
2 Miller
3 A Espargaro
Quartararo’s Le Mans homecoming ends with him in fourth place as Bastianini and Bagnaia go toe to toe for victory and edge clear of the rest. Bagnaia crashes out of the battle, leaving 2023 team-mate Bastianini to record his third win of the season ahead of the rider he’ll replace: Miller. Aleix Espargaro makes a fourth podium visit of the year in third and remains second in the points, while neither Suzuki finishes.

Italian GP

1 Bagnaia
2 Quartararo
3 A Espargaro
The Mugello round should be a painful experience for Quartararo, but he guides the underpowered Yamaha to second behind Bagnaia. Shock rookie poleman Fabio Di Giannantonio fades to 11th and Gresini team-mate Bastianini crashes. Aleix Espargaro is once again third, and Marquez finishes 10th before he heads to the US for a fourth major operation on his right arm and a six-race spell on the sidelines.

Catalan GP

1 Quartararo
2 Martin
3 Zarco
An unfortunate incident at Turn 1 triggered by Nakagami leads to Bagnaia and Rins getting wiped out at the start of the race, the Spaniard suffering a fractured wrist. Quartararo profits from the chaos to extend his championship lead with victory, while Aleix Espargaro throws a podium away after miscounting how many laps he has left and dropping to fifth on the final tour. Pramac Ducati duo Zarco and Martin thus complete the podium.

German GP

1 Quartararo
2 Zarco
3 Miller
A fourth retirement of the season while running in second for Bagnaia leaves him 91 points behind Quartararo at the halfway stage, as the Yamaha rider eases to his third and final win of the campaign. Second for Zarco and third for Miller is scant reward for Ducati, which faces *another* title defeat, as Bastianini struggles to 10th. Fourth for Aleix Espargaro keeps him as Quartararo’s closest rival in the championship.



Rins gave Suzuki two farewell wins, including here in Australia

championship, or did Quartararo lose a title that was his to win?

Quartararo's season was incredible when you analyse his performance on the machinery he had. As far as Crutchlow is concerned, because of that fact, "Fabio is the best rider on the grid at the minute". Had Quartararo not crashed out of third at Assen and netted himself a penalty for Silverstone, perhaps the outcome would have been different. In doing so, he left himself exposed to the massive damage Bagnaia would go on to inflict upon him in the second half of 2022.

After the German GP, Bagnaia "realised my weak point was I was a rider with a lot of ups and downs, with good speed but not the consistency. And to accept that was not easy. So, from that moment I recognised I had a problem and I tried to improve myself."

As hockey legend Wayne Gretzky says: "You miss 100% of the shots you don't take." And after Germany, Bagnaia took his shots and made them count.

So, while Quartararo was hampered by the problems of the >>



Aleix Espargaro starred for Aprilia

Dutch TT

- 1 Bagnaia
- 2 Bezzecchi
- 3 Vinales

An uncharacteristic collision nets Quartararo a long-lap penalty for the subsequent British GP, while a second crash at Assen leads to his first DNF of 2022. Bagnaia wins from VR46 rookie Bezzecchi, while Vinales completes the podium for the first time as an Aprilia rider, a year on from his acrimonious Yamaha split. Aleix Espargaro recovers to fourth after being knocked off track by Quartararo and is still a clear second in points.

British GP

- 1 Bagnaia
- 2 Vinales
- 3 Miller

MotoGP's visit to Silverstone provides Bagnaia with his second win on the trot as his championship bid is offered a glimmer of hope. A massive crash for Aleix Espargaro in FP4 leaves him with a damaged ankle, and he struggles to ninth in the race. Quartararo can only salvage eighth after his long-lap penalty. Vinales registers a second podium ahead of Miller. RNF rider Dovizioso announces he will retire after the San Marino GP.

Austrian GP

- 1 Bagnaia
- 2 Quartararo
- 3 Miller

Red Bull Ring undergoes a revamp to add a chicane at Turn 1. But this doesn't rob Ducati of its unbroken Austrian GP record, and Bagnaia claims a third successive win. Quartararo chases him to score a crucial second, and Miller completes the podium again. A first-lap crash for 2020 world champion Mir leaves him with a broken ankle and a four-race stint on the sidelines. Aleix Espargaro finishes sixth.

San Marino GP

- 1 Bagnaia
- 2 Bastianini
- 3 Vinales

The San Marino GP revives the Bastianini/Bagnaia duel from Le Mans, with Bagnaia seizing the upper hand on this occasion to take a fourth consecutive victory. A difficult race to fifth means Quartararo's championship lead is further cut by the Ducati rider, while former team-mate Vinales is third. Dovizioso ends his time in MotoGP with 12th on home soil. He will be replaced by Cal Crutchlow for the rest of 2022.

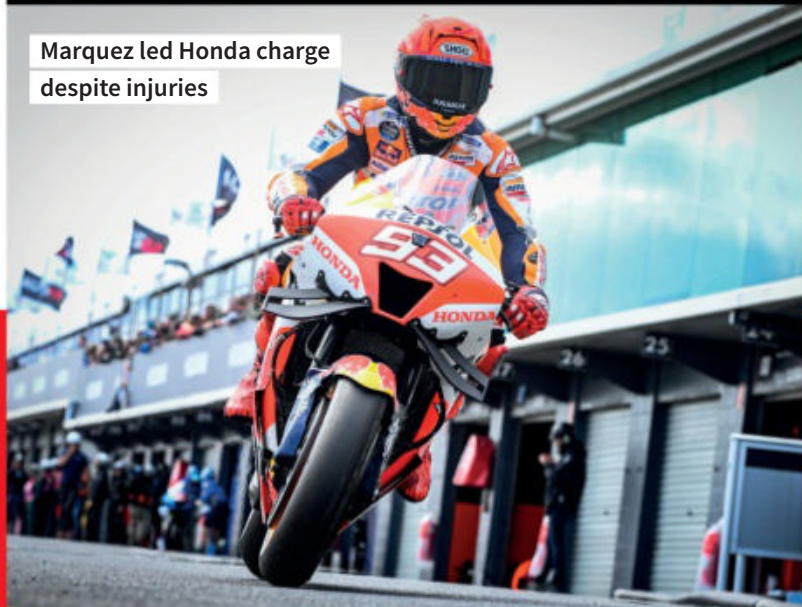
Aragon GP

- 1 Bastianini
- 2 Bagnaia
- 3 A Espargaro

Bastianini and Bagnaia lock horns again and a last-lap pass nets Bastianini his fourth win of the season. Bagnaia moves to 10 points off Quartararo after the Yamaha rider is taken out on the opening lap when he runs into the back of the returning Marc Marquez. The Honda rider retires on lap one after a second clash with Nakagami, while Aleix Espargaro puts the Aprilia on the podium in third. It's still a three-horse race.

HONDA'S TROUBLES

Marquez led Honda charge despite injuries



“THE BIKE BAGNAIA WON THE TITLE ON IS ARGUABLY THE BEST MOTORCYCLE ON THE GRID”

Any hopes of 2022 representing an end to Marc Marquez's injury woes were dashed at round two in Indonesia when he crashed heavily in the warm-up and suffered the same vision problems that had ruled him out of the final two races of 2021.

A quick recovery meant he was back for the Americas Grand Prix, but it was clear in those early rounds that Marquez wasn't himself. The radical overhaul that Honda had made to its bike to try to find more rear grip robbed Marquez of his front-end confidence. But the right arm he badly broke in 2020 was still the biggest limitation. A fourth surgery to rebreak the arm and rotate the bone back over 30 degrees to its original position following May's Italian GP forced him out for six rounds. There was one pole and a podium in Japan and Australia respectively, after his return for the Aragon race, as glimmers of the old eight-time world champion appeared.

Such was Honda's miserable 2022 that Marquez, despite missing eight races and crashing out of two, was still its top rider – 57 points clear of a demoralised Pol Espargaro.

Honda has scooped up ex-Suzuki stars Joan Mir and Alex Rins for its factory squad and LCR, with Espargaro returning to KTM with Tech3 and Alex Marquez going to Gresini Ducati.

While Marquez Jr beamed after his first ride on the Ducati at the Valencia post-season test, his brother warned he could not fight for the title on the 2023 prototype Honda he tested...

Yamaha, several key errors from the rider and the team contributed to his dethroning as Bagnaia and Ducati hit a stride that few would be able to counter.

On the Monday after the season-closing race in Valencia, Ciabatti said that the Valentino Rossi 2011-12 nadir of the Ducati team “left a lot of wounds”. Because of everything that happened then, Ducati is now champion again a decade later – ironically with a product of Rossi's VR46 Academy. The circle is complete.

Back in 2007, when Stoner was champion, the Ducati was a handful. The bike Bagnaia won the title on is far more useable, arguably the best motorcycle on the current grid. Across 2022, it won 12 races, 16 poles and 32 podiums with six of its eight riders, with two of its runners – Bagnaia and Bastianini, who won four times on a year-old bike to earn a promotion to the factory squad next season – occupying two of the top-three championship spots.

Yamaha and Aprilia clearly have work to do to sustain a title challenge. Honda, after a second winless campaign in three years, must make two steps during the coming winter – according to Marquez – to get on a par with its rivals, while KTM arguably needs to do the same despite two wins.

Those are numbers that will be hard to overturn for all in 2023 as Ducati now looks genuinely capable of total domination in MotoGP. 🏆

ROUND BY ROUND

Japanese GP

1 Miller

2 B Binder

3 Martin

Marquez takes his first pole for three years in the wet and the chequered flag in fourth, as Miller puts in a dominant performance to claim the best win of his career. Bagnaia crashes out trying to overtake Quartararo for eighth, while a technical issue on the warm-up lap forces Aleix Espargaro to change bikes, on which he struggles to 16th. Brad Binder registers a second podium of 2022 and Martin completes the rostrum.

Thai GP

1 Oliveira

2 Miller

3 Bagnaia

Heavy rain forces the start of the Thailand race to be delayed for an hour, with Oliveira splashing his way to a second win of the season on the KTM after beating Miller. Bagnaia completes the podium after Zarco obeys Ducati's instructions to avoid dangerous moves on its title hopeful. A front-tyre-pressure error for Yamaha means Quartararo is 17th and his points lead is cut to two.

Australian GP

1 Rins

2 M Marquez

3 Bagnaia

Bagnaia takes a 14-point championship lead, moving ahead for the first time in 2022, with a third-place finish after Quartararo crashes out while trying to recover from an early off. In a thrilling race, Rins comes from 10th on the grid to take an emotional first win of the season for Suzuki. Marc Marquez finishes second after he chases Rins hard on the last lap. Aleix Espargaro and Bastianini keep their title hopes alive in ninth and fifth.

Malaysian GP

1 Bagnaia

2 Bastianini

3 Quartararo

Ducati lets Bastianini and Bagnaia battle for victory despite the title permutations, with Bagnaia seizing the seventh and most important win of his season after starting ninth and jumping up to second at Turn 1. Quartararo completes the podium, having qualified in 12th, to keep the championship going to the final round. Aleix Espargaro struggles to 10th to end his and Aprilia's title aspirations.

Valencia GP

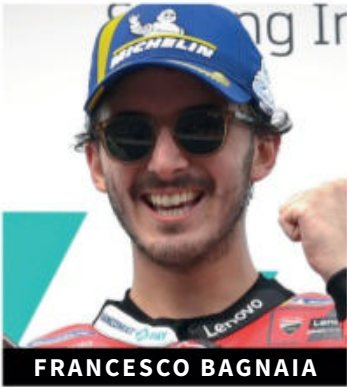
1 Rins

2 B Binder

3 Martin

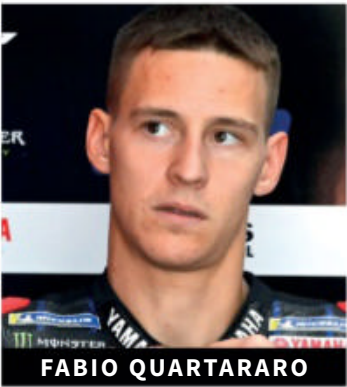
Rins takes a second win in three races to end Suzuki's tenure in MotoGP with a result that makes the marque's decision more baffling. Quartararo gives his all but can do no more than fourth, while ninth is enough for Bagnaia to win the championship and end a 15-year drought for Ducati. Brad Binder and Martin round out the podium, while Marquez crashes to ensure a winless campaign for Honda.

AUTOSPORT'S TOP 10 RIDERS



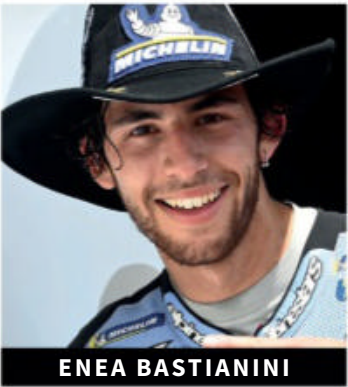
FRANCESCO BAGNAIA

1 Made too many early-season errors, but the way he rebounded in the second half of 2022 – and his race management of the final two rounds – make him a worthy champion. Needs to eradicate those mistakes though.



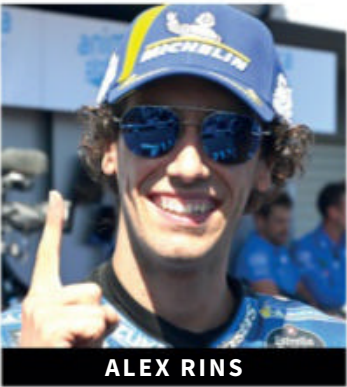
FABIO QUARTARARO

2 Outscoring Yamaha counterparts (combined!) by 169 points shows how much better he was than his bike. Generally better than rivals, he paid for Assen mistake dearly and can't repeat it if the bike doesn't improve.



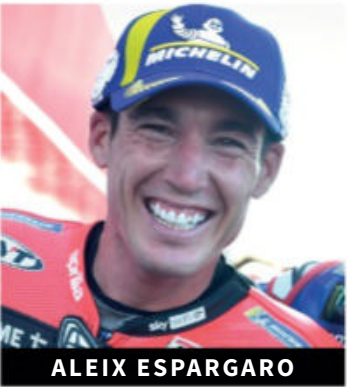
ENEA BASTIANINI

3 Was easily the fastest Ducati rider early-season on the fully developed 2021 bike. His battles with Bagnaia hint at a fun 2023, but Bastianini cannot be as inconsistent as he was this year if he has title ambitions next season.



ALEX RINS

4 What Rins could have done without the mental anguish of Suzuki's exit remains unknown, but early-season form and late-campaign surge on the best GSX-RR yet suggests he would have achieved more than seventh in the rankings.



ALEIX ESPARGARO

5 Espargaro's results on the vastly improved Aprilia were just reward for his years of toil on the RS-GP. His title tilt was valiant, but he still doesn't have the tools to prove how genuine a championship challenger he is.



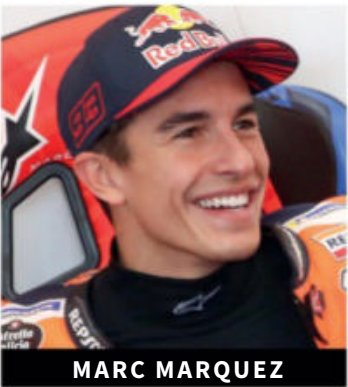
JACK MILLER

6 Scored his best win in Japan and was a pivotal part in Ducati retaining the constructors' crown. But a factory Ducati rider eight years into his MotoGP career should be achieving more than one victory and a very meek title challenge.



BRAD BINDER

7 KTM underwhelmed again after breakout 2020. But Binder's consistency and late-season podiums helped it to fourth in the manufacturers' table. Qualifying is still the key weakness stopping his Sundays from being stronger.



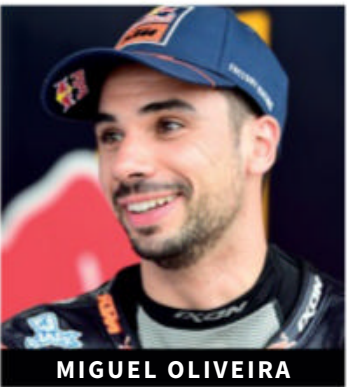
MARC MARQUEZ

8 Despite missing eight races through injury and retiring from two more, Marquez took a bad Honda to a podium, beating the other HRC riders by 57 points. With his arm better than ever post-2020, the bike is the missing link now.



MARCO BEZZECCHI

9 Though beaten by his team-mate in the standings, Bezzecchi was effortlessly 2022's top rookie with a podium and a pole on a year-old bike. More consistency could mean him mirroring Bastianini's sophomore year in 2023.



MIGUEL OLIVEIRA

10 Is firmly MotoGP's wet-weather specialist as he stormed to victories twice in the rain. Solid dry results when the bike allowed were not enough to get on a par with his team-mate. Regular top sixes must be 2023 target.

RIDERS' CHAMPIONSHIP

POS	RIDER	TEAM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	PTS
1	Francesco Bagnaia (ITA)	Ducati	R	15	5	5	8	1	R	1	R	R	1	1	1	1	2	R	3	3	1	9	265
2	Fabio Quartararo (FRA)	Yamaha	9	2	8	7	1	2	4	2	1	1	R	8	2	5	R	8	17	R	3	4	248
3	Enea Bastianini (ITA)	Gresini Ducati	1	11	10	1	R	8	1	R	R	10	11	4	R	2	1	9	6	5	2	8	219
4	Aleix Espargaro (ESP)	Aprilia	4	9	1	11	3	3	3	3	5	4	4	9	6	6	3	16	11	9	10	R	212
5	Jack Miller (AUS)	Ducati	R	4	14	3	R	5	2	15	14	3	6	3	3	18	5	1	2	R	6	R	189
6	Brad Binder (ZAF)	KTM	2	8	6	12	R	10	8	7	8	7	5	11	7	8	4	2	10	10	8	2	188
7	Alex Rins (ESP)	Suzuki	7	5	3	2	4	19	R	R	R	NS	10	7	8	7	9	R	12	1	5	1	173
8	Johann Zarco (FRA)	Pramac Ducati	8	3	R	9	2	R	5	4	3	2	13	R	5	R	8	11	4	8	9	R	166
9	Jorge Martin (ESP)	Pramac Ducati	R	R	2	8	R	22	R	13	2	6	7	5	10	9	6	3	9	7	R	3	152
10	Miguel Oliveira (PRT)	KTM	R	1	13	18	5	12	R	9	9	9	9	6	12	11	11	5	1	12	13	5	149

11 Maverick Vinales (Aprilia) 122; 12 Luca Marini (VR46 Ducati) 120; 13 Marc Marquez (Honda) 113; 14 Marco Bezzecchi (VR46 Ducati) 111; 15 Joan Mir (Suzuki) 87; 16 Pol Espargaro (Honda) 56; 17 Alex Marquez (LCR Honda) 50; 18 Takaaki Nakagami (LCR Honda) 48; 19 Franco Morbidelli (Yamaha) 42; 20 Fabio Di Giannantonio (Gresini Ducati) 24; 21 Andrea Dovizioso (RNF Yamaha) 15; 22 Raul Fernandez (Tech3 KTM) 14; 23 Remy Gardner (Tech3 KTM) 13; 24 Darryn Binder (RNF Yamaha) 12; 25 Cal Crutchlow (RNF Yamaha) 10; 26 Stefan Bradl (Honda) 2; 27 Michele Pirro (Ducati) 0; 28 Lorenzo Savadori (Aprilia) 0; 29 Tetsuta Nagashima (LCR Honda) 0; 30 Danilo Petrucci (Suzuki) 0; 31 Kazuki Watanabe (Suzuki) 0. **CONSTRUCTORS** 1 Ducati 448; 2 Yamaha 256; 3 Aprilia 248; 4 KTM 240; 5 Suzuki 199; 6 Honda 155.

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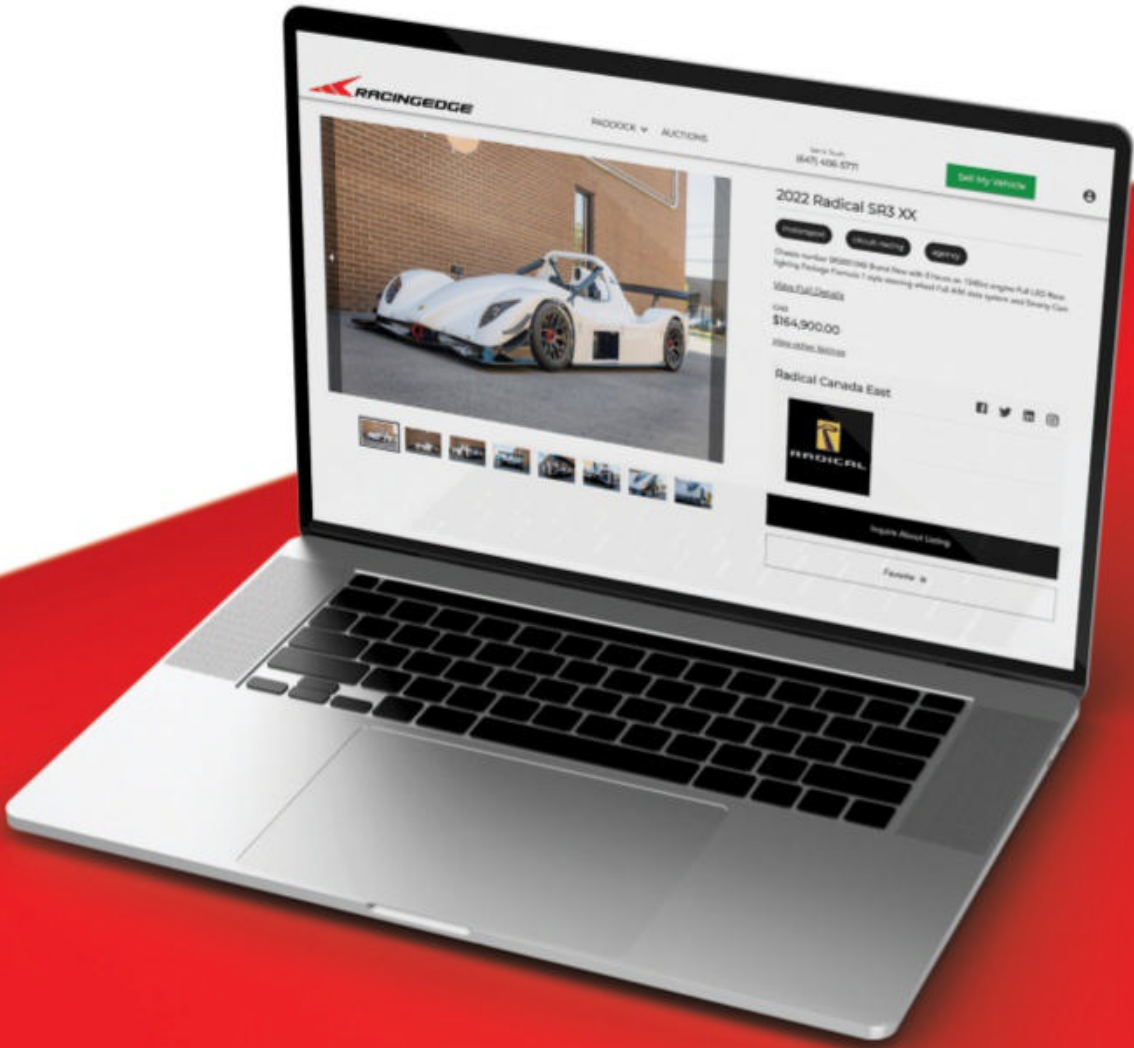


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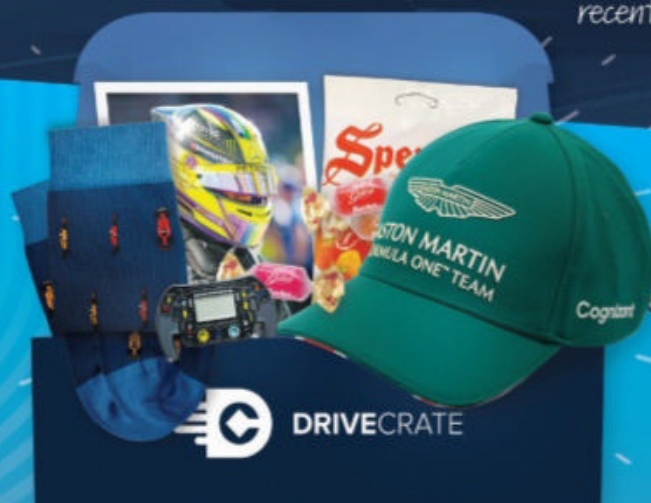
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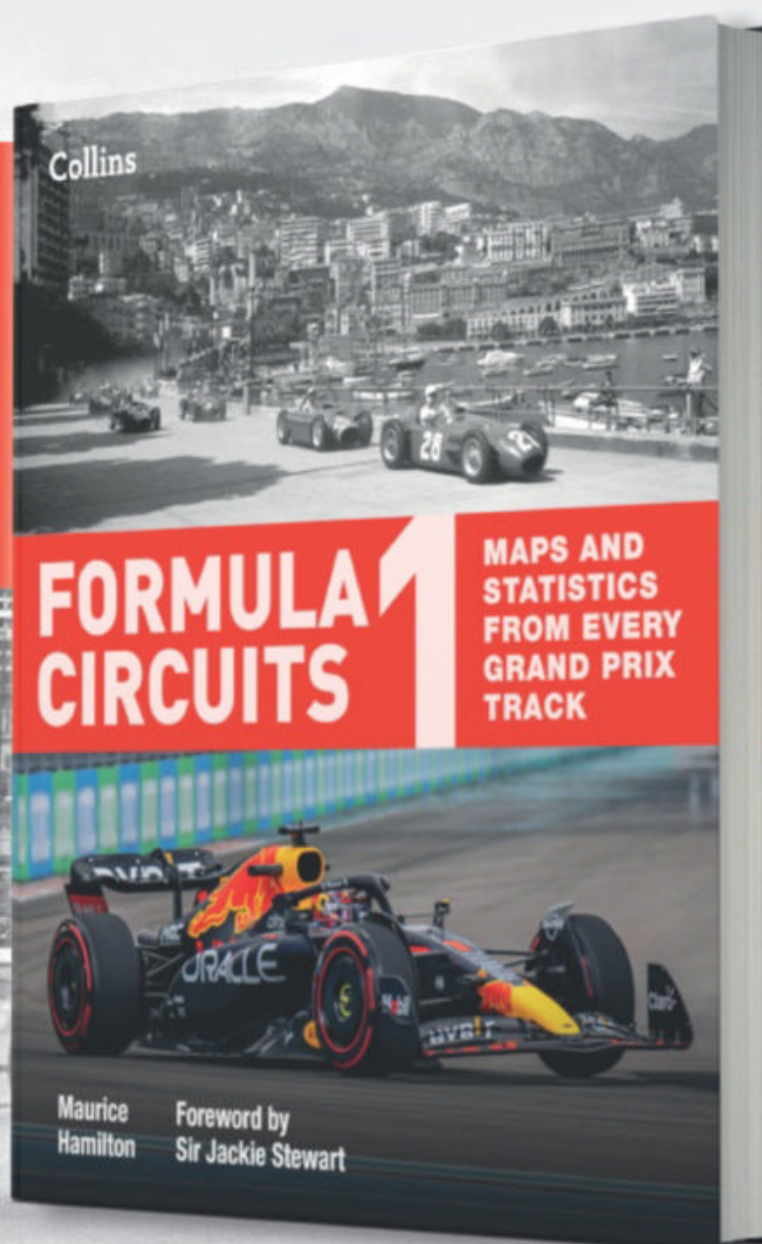
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Masters expands modern offering with GT4 series

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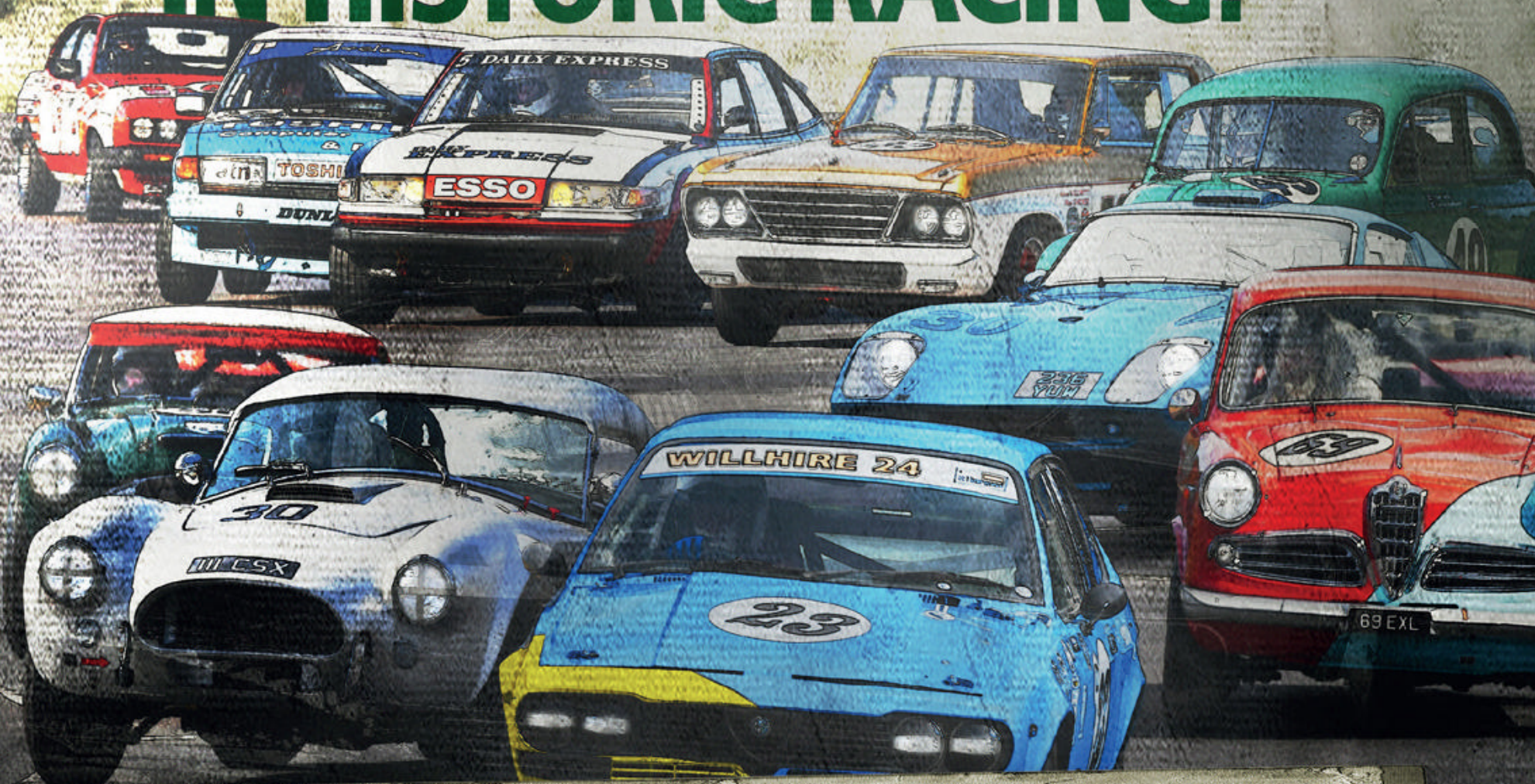


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APRIL	29-30	DONINGTON HISTORIC FESTIVAL	RACE	HRDC JACK SEARS TROPHY	GERRY MARSHALL GP.1	HRDC ALLSTARS & ALFAS	
MAY	28	MASTERS FESTIVAL BRANDS HATCH GP	RACE		GERRY MARSHALL GP.1		
JUNE	25	HRDC HISTORICS ON THE HILL LYDDEN HILL	RACE	HRDC JACK SEARS TROPHY		HRDC ALLSTARS & ALFAS	PRE-'66 MINIS
JULY	29-30	OULTON PARK GOLD CUP	RACE	HRDC JACK SEARS TROPHY	GERRY MARSHALL GP.1		
AUGUST	13	BRANDS HATCH INDY / FESTIVAL ITALIA	RACE			HRDC ALLSTARS & ALFAS	
OCTOBER	21-22	SILVERSTONE GP MRL MEETING	RACE	HRDC JACK SEARS TROPHY	GERRY MARSHALL GP.1	HRDC ALLSTARS & ALFAS	

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Autosport Three Hours to return

HSCC

The Autosport Three Hours endurance race is due to return for the first time in eight years in 2023 after the Historic Sports Car Club reintroduced the contest for its Snetterton season opener.

The Autosport name will be in the title of the race over the 22-23 April weekend, as it was when the sports-racing and GT car contest ran annually from 1957-64 on the original East Anglian airfield circuit.

Its winners' list is topped by Jim Clark, who triumphed in 1959 and 1963, in Lotus Elite and 23B respectively. Motorsport luminaries Ken Rudd (AC Ace), Mike

Salmon (Jaguar D-type), Mike Parkes (Ferrari 250 GTO) and ultimately Jack Sears (AC Cobra coupe) were also among those who took the chequered flag in the race.

The HSCC reintroduced the three hours – run to the same regulations as its Guards Trophy championship – in 2007. After nine editions, it was scaled back to an hour in 2016, but discontinued thereafter. Next year's race is due to be open to teams of two or more drivers of pre-'66 GT cars, and a widened choice of tyres is being considered.

"Post-pandemic there appears to be an appetite among competitors for longer races," said HSCC CEO Andy Dee-Crowne. "The logistics and precise class structure

have yet to be finalised, but we are aiming to attract a big grid of cars – hopefully with a strong Lotus contingent on home soil – to honour the memory of Jim Clark's second victory 50 years on."

In addition to Guards Trophy competitors, drivers from a range of other series with eligible cars will be welcomed and, where required, day membership of the HSCC is set to be included in the entry fee.

Meanwhile, it has been revealed that Guards Trophy races will be lengthened from 45 minutes to one hour next year. A round at Mondello Park is also under consideration.

MARCUS PYE

Brands quadruple-header for FF2000

HISTORIC FF2000

A quadruple-header spanning Brands Hatch's Indy and Grand Prix circuits will form a centrepiece to next season's Historic Formula Ford 2000 championship.

Following the twinning of the Kent venue's Historic Sports Car Club meetings for 2023 over 14-16 July – the separate Indy circuit

fixture had been dropped in a rationalisation drive due to the financial climate – registered competitors voted for this option over a Donington Park double-header.

Running qualifying and two races on Brands' 1.2-mile track on the Friday, then repeating on the 2.4-mile layout on the Saturday offers track time benefits and



maximises the opportunity for social gatherings.

In addition to the Brands races, the Thruxton Historic event in June also appears on the category's 2023

calendar. Races as part of the Snetterton, Cadwell Park, Croft and Silverstone HSCC fixtures complete the planned schedule.

MARCUS PYE

New GT4 series planned by Masters

MASTERS GT TROPHY

Masters Historic Racing will further develop its modern offering in 2023 with the creation of the Masters GT Trophy. The new race series, for GT4 cars from 2007 to 2018 along with suitable one-make challenge cars, builds on the two pilot races run at the Silverstone Classic in August. These attracted 16 entries for the half-hour contests.

The GT Trophy will have six rounds in 2023, three in the UK – at Donington Park, Brands Hatch and the Classic – and three in continental Europe, and will sit beneath Masters Endurance Legends, which is for similar-generation sports-prototypes and GT3 machines. Different race durations are set to be trialled.

Rachel Bailey from Masters said: “We want to focus on the GT4 cars that aren’t running to current homologation, so that’s pre-2018. We’ve also been approached by

people with things like Ferrari Challenge cars and saw a series coming along with lots of interesting cars in it. Quite a lot of teams with Endurance Legends cars have already got GT4 cars or are looking for cars.”

Masters research suggests that a number of suitable cars are in Europe and not being used, hence the three continental dates.

“That’s one of the reasons that we wanted to extend it to European events,” said Bailey. “Obviously, it sits very nicely alongside

Endurance Legends, which is not open to GT4 cars. The two series will complement each other nicely.”

In terms of the overall state of both the new series and Masters’ established historic categories, Bailey is optimistic for next season. “I think everybody is hopeful about 2023,” she said. “We appreciate that it could be a tough year, but we’re hopeful that we’ll have some good racing.”

PAUL LAWRENCE



Optimum eyes British GT return with Artura

BRITISH GT

Successful GT squad Optimum Motorsport is eyeing a full-time return to British GT next year with the new McLaren Artura GT4.

The team powered Jonny Adam and Flick Haigh to the overall British title in 2018 at the wheel of an Aston Martin Vantage GT3 and has been a fixture in the series for

over a decade. Optimum has not competed regularly in the GT4 class since 2019, when it ran the Artura’s predecessor, the 570S GT4. Its most recent British GT outing came with a GT3 McLaren entry in this year’s Silverstone three-hour event.

Optimum has been active in international GTs of late, running Brendan Iribe’s

Inception Racing squad. “The new Artura GT4 is an exciting addition to the fleet and having enjoyed many successful years in British GT, a championship that is very close to my heart, we’re really happy to announce our intent to be back next year,” said team boss Shaun Goff.

“We were a prominent British GT entrant between 2012 and 2020, and are now

looking forward to the prospect of racing on home soil full-time next season with the Artura GT4s.”

Entries for the 2023 British GT Championship do not open until 2 December and there will be the regular maximum of 36 full-season entries across the GT3 and GT4 classes available, but with more cars accepted at circuits with larger pitlanes.



MGCC to appear at two-day Equipe Classic Racing events

MG CAR CLUB

The MG Car Club will organise two standalone single-day meetings next year, while the rest of its calendar will comprise fixtures alongside Equipe Classic Racing.

After previously appearing at MGCC events – and with various other clubs – Equipe decided to branch out for 2022 and promote its own race meetings, leaving a significant gap in MGCC timetables. It opted to largely run single-day events this season but will now take track time at Equipe's two-day Brands Hatch and Snetterton dates, and the organisers will collaborate on the blue-riband June Silverstone meeting.

"After discussions during the year, we've decided to come back together for 2023,"

said MGCC race competitions secretary Mark Baulch. "We've also got Oulton Park and we're very pleased to be going back in May – we had an Oulton meeting a couple of years ago in May and it was very popular. After a successful Cadwell Park this year, we will go back there as well.

"We've got some anniversaries coming up with it being the 100th anniversary of the marque being founded, 35 years of the MG Cup and 40 years of the Midget & Sprite Challenge, so we're very much looking forward to 2023."

Equipe Classic Racing partner Rob Cull added: "I've raced with the MG Car Club for over 20 years and have got a good relationship with those guys. It helps us fill some of our days and it helps them."

STEPHEN LICKORISH



MGCC categories will be at Equipe Snetterton meeting

RICHARD STYLES

Chadwicks back driving Junior car

GINETTA JUNIOR

W Series champion Jamie Chadwick and her Ginetta GT5 Challenge title-winning brother Ollie were reunited with the Ginetta Junior racer in which they began their careers last month.

The Chadwick family and the siblings' Ginetta Junior engineer Nick Hart began attempting to

track down the G40 in 2020 before restoring it, and the car was presented as a Christmas present to the pair last year. They were then able to get behind the wheel at Castle Combe.

Ollie Chadwick had competed in the car first and, during a three-year Ginetta Junior spell from 2011, won three races before claiming the GT5 Challenge crown in 2016. Jamie was selected as the Ginetta Junior scholar for 2013 and took five podiums the following year, before enjoying success in British GT and W Series.

"It's eight years since I last drove a Ginetta – in fact this one, but with only 100bhp," said Jamie Chadwick. "I'd forgotten how edgy and analogue these are, but it all came flooding back. We're hoping to have a lot more fun in it next year – time permitting."

Ollie Chadwick added: "I've raced G40s pretty extensively, and love the feel and involvement they provide. This one now puts out about 220bhp and is under 800kg, so it's fast."



Chadwicks were regular Ginetta podium finishers

IN THE HEADLINES

FAIRBAIRN TO GB4 WITH KMR

American Jeremy Fairbairn will compete with Kevin Mills Racing in the GB4 Championship next season. The 18-year-old raced with the squad, which took the inaugural GB4 teams' title this season, in the Formula Festival Festival at Brands Hatch, finishing ninth in the curtailed final. He previously raced in United States Formula 4 in 2020.

MINI CHALLENGE CHARITY

The Mini Challenge has launched a new charity initiative that it intends will raise £10,000 over the course of the next year. Drivers who enter the series for 2023 will be able to vote for the organisation they would like to receive the money, with the three most popular charities set to benefit. The fundraising kicked off at the annual awards ceremony, when series promoter Antony Williams, title contenders Sam Weller and Alex Denning and team boss Lawrence Davey danced on the stage and a total of £1300 was donated.

LOTTERER ON DUBAI ENTRY

Three-time Le Mans winner Andre Lotterer is among the drivers set to take part in this week's Historic Dubai Grand Prix Revival event at Dubai Autodrome. Other endurance racing stars on the entry list include fellow Porsche factory drivers Michael Christensen, Matt Campbell and Mathieu Jaminet. Briton Oliver Webb, a winner at the event last year, is set to again be behind the wheel of a Hesketh 308.

SHARPLES IS BRANDS CHAMP

Former Historic Sports Car Club chairman and regular Historic Formula Ford racer Chris Sharples took the Champion of Brands title last weekend with his Palliser WDF1 (below). It took a late-night effort from the PA Motorsport squad, and just a little help from Jan Magnussen, to get Sharples onto Saturday's grid following an engine failure in testing the previous day.



GARY HAWKINS



A MERCEDES BLAST FROM THE PAST

RAM Racing will return to the Gulf 12 Hours next month with a famous retro livery on its Mercedes-AMG GT3. The car, which will be driven at Yas Marina by 2022 British GT champion Ian Loggie and fellow Am racer Morgan Tillbrook, as well as Pro Mikael Grenier, will sport the colours of the D2 mobile phone company. The livery was used on the CLK GTR that competed in the FIA GT Championship during the GT1 era of the late 1990s, and the CLK DTM of the early 2000s.

Photograph by RAM Racing

Sharp stars on F1 support bill with a double

UAE F4

British Formula 4 race winner Louis Sharp put in an impressive performance to win both of the non-championship UAE F4 Trophy contests held in support of the Abu Dhabi Grand Prix last weekend.

The Carlin Kiwi was on a charge at the start of the first race as he took the fight to British F4 champion Alex Dunne, who had started on pole. Sharp closed in on the Hitech GP racer and was



able to squeeze ahead on lap four of 13 before pulling five seconds clear. Dunne held onto second from local driver Keanu Al Azhari.

Fastest lap from the opener netted Sharp pole for race

two, but Dunne was in determined mood and the pair made light contact into the first corner. Sharp held on, despite being forced slightly wide, but there was to be a more significant clash

at the hotel section, which caused Dunne to lose his front wing and have to pit.

Worse was to come for the Irishman when he lost his front wing for a second time with further contact in the pack, while Sharp controlled proceedings through two safety-car periods. Hitech's new British F4 signing Kanato Le passed Al Azhari for second late on, while Briton Will Macintyre was fourth. Dunne was classified 10th after picking up a penalty for the Sharp clash.

ANGELO R. DRIVE

IT'S COMING HOME... IT'S COMING HOME...

WHAT'S COMING HOME ANGELO?

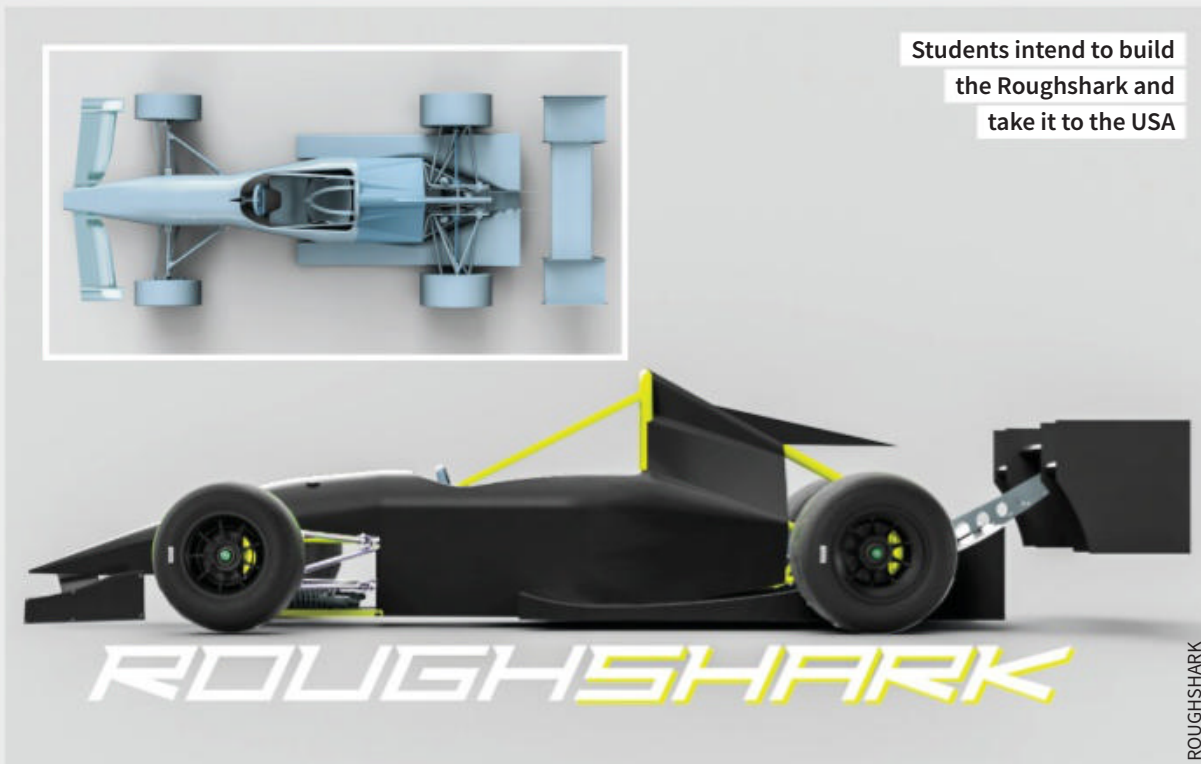
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Students intend to build the Roughshark and take it to the USA

New electric single-seater to be created with Pikes Peak target

HILLCLIMB

Students from Oxford Brookes University are set to build an electric hillclimb single-seater that they intend to take to Pikes Peak as part of a three-year plan.

Oscar McEntee has previously run cars in hillclimbs and sprints and, after joining up with fellow students, has spent the past couple of years planning the new Roughshark car, which is based upon a design from former Red Bull and Mercedes engineer Callan Trump. McEntee Racing has since secured funding and is now almost at the stage of beginning to build the first example, which it is hoped will be ready for testing by next April.

"Motorsport has always been a passion of mine," said McEntee. "I bought my first racing car when I was 18, a 600cc single-seater hillclimb car. I ran that as a hobby

with my mates and found a driver who paid us a little bit of money to run the team for him. I then came to uni in 2020 and I met [fellow student] Louis Mao and discussed how can we make this a bit more serious and make it into a living?"

After running more cars in events, the students then decided to launch a car of their own. The Roughshark is due to be powered by a 150kW electric motor that produces 180bhp, while the car is intended to weigh less than 400kg.

"Our philosophy hasn't been to make an electric car but to make a race car that happens to be electric – we wanted to make something that was innovative and special," McEntee added. "We've got an electric motor and are also trying to build the whole bodywork out of plant-based carbonfibre."

STEPHEN LICKORISH

Prize fund for Scottish frontrunners

SMRC

The Scottish Motor Racing Club has announced it will offer a new prize fund exceeding £13,000 to help competitors racing in its championships.

Drivers who finish first, second and third in each main championship will receive discounts of 100%, 50% and 25% respectively

on registration and race entry fees for the following season. The initiative will apply for the championship positions this season as well as in 2023.

SMRC chairman Vic Covey Jr said: "Scotland has a long history of producing talented competitors and, as a club, we want to do everything we can to support our up-and-coming drivers, particularly

in the hard economic times we are facing.

"I hope this new initiative will help to ensure some of our top drivers can return to defend or challenge for titles next year and beyond, and perhaps even progress onto a new championship within the SMRC stable.

"With the new-look calendar, 2023 is shaping up to be a fantastic season."

CADWELL WIN FOR GRIFFITHS AND MORRISON

CIRCUIT RALLYING

John Griffiths and Emma Morrison won the Cadwell Park Stages, round two of the MGJ Engineering Circuit Rally Championship, after their Ford Fiesta R5 (below) led from the second stage of the day to win by 28 seconds.

The similar car of Paul Murro and Callum Cross had been quickest on stage one, and managed to retain second until the final test, when they were pipped by Andy Scott/Laura Connell (Fiesta S2000T).

Class 3 leaders Josh Payton/Jamie Vaughan had battled to hold off the Hyundai R5 of 2007 British Rallycross champion Ollie O'Donovan/Ashleigh Morris for fourth, until a penultimate stage roll put them out.

Ex-bike racer Kiaran Hankin sealed fifth in his Peugeot 208 T16 R5 on his first visit to Cadwell on four wheels alongside James Swallow. A final stage alternator problem robbed Martin Hodgson/Tony Jones of sixth place and a Class 4 victory, which then went in favour of fellow Ford Escort Mk2 crew Steve/Jack Tilburn.

Former British Touring Car racer Nick Whale was heading for a top finish too, until his Fiesta R5 found the barrier at Coppice Corner, before retiring with a damaged radiator.

Tony Robinson/Paul Spooner therefore moved up to secure seventh in their Skoda Fabia R5, with Andy Corner/Ade Camp (Peugeot 205) taking eighth and the Class 3 spoils following Payton's exit.

PETER SCHERER



BEN LAWRENCE



Giving untapped talent a chance

The latest episode of Top Gear highlighted an important concept that national racing needs to embrace

STEFAN MACKLEY

No matter how talented you might be, the simple truth is that, without the right connections and a whole heap of cash, it's nigh on impossible to crack." Paddy McGuinness's introduction to the most recent episode of *Top Gear* highlighted a simple truth about motorsport. The popular BBC programme has used national racing as a playground before (see *Finishing Straight*, Autosport 14 July), but it did something different last Sunday – taking two drivers and two mechanics who would normally have no possible means of reaching the heights in UK racing, and throwing them in at the deep end. Essentially trying to prove that talent is out there in all walks of life, even if they don't have the money to realise their ambitions.

The lucky four were selected from more than 800 applicants and put through their paces across an eight-week period, which included racing/working on a Mazda MX-5 in the British Racing & Sports Car Club's Supercup category at Cadwell Park. There was a visit to the McLaren Technology Centre (with a cameo appearance from Formula 1 driver Lando Norris) leading up to competing with a McLaren 570S GT4 in the GT Cup at Donington Park.

That's one hell of an experience, not to mention a jump in performance, and it's a credit to drivers Louis Smithen and Ollie Hall, as well as mechanics Callum and Lillie, that they not only survived, but thrived.

"If you want it enough there are ways and means to be able to break into the sport"

"In reality, they came through it all and they [Smithen and Hall] weren't just circulating, they were actually mixing it up and beating some of the guys who have been racing for a few years," says British GT driver Martin Plowman, whose Paddock Motorsport squad ran the cars and tutored the youngsters.

Smithen in particular impressed greatly, the 19-year-old from Croydon having only ever competed in arrive-and-drive rental karting previously, after saving money from his job working at Heathrow Airport as a ramp agent. His ability was clear despite a lack of experience, emphasising the untapped talent out there.

Hall's dad Nigel summarised it best when he stated: "The opportunity he's had here is something that is unobtainable to the working man – you can't afford to race a McLaren, you can't afford to sit in a McLaren!"

While the chance to race a McLaren GT4 is unobtainable for a large majority in national racing, the overarching point is a valid one. Many times on these pages the words 'affordable' and 'low-budget' have been used to describe new series aimed at bringing fresh blood into the sport. Many of them prove to be successful and they undoubtedly serve a purpose, but even entry-level circuit racing requires thousands of pounds to just make it onto the grid, with licence, equipment, car and parts making it unattainable to many young people.

While this writer would never pretend to be from an underprivileged background, there's no doubt that, without my role at Autosport, just making my own way onto a racing grid would have been almost impossible. It's a disposable income most just don't have, and even fewer will with the cost of living only getting higher – hitting the poorest the hardest.

So, what's the answer to getting more young people from low-income backgrounds into racing? Motorsport by its very nature is never going to be accessible to all in the same way that football is, for example. But more initiatives can be created to help those from minority or unprivileged backgrounds.

It's already started to come from the very top with seven-time F1 champion Lewis Hamilton's Mission 44 programme, which aims to increase diversity in F1 and the wider motorsport world. There's also the Girls on Track initiative between the FIA and Motorsport UK that aims to get young girls into racing with the goal of ultimately getting a woman to the pinnacle of the sport.

But we need more of these ideas from championships and teams in the UK, with the work of Paddock highlighting that it is possible. "I really hope it has inspired people who maybe think motorsport isn't accessible or is elitist and, while that still may be true, I think if you want it enough there are ways and means to be able to break into the sport," says Plowman. "I feel like there are opportunities out there but coming from a less fortunate background you just have to work extremely hard and break down those barriers. For myself and Paddock, we would love to try and be the team that gives young men and women the chance to get into the sport."

Since filming stopped in October, mechanic Callum has been employed by Paddock as a tyre technician, while Plowman has been in contact with Anthony Hamilton, Lewis's father, about incorporating Smithen into the Mission 44 programme.

More still needs to be done with regards to greater investment and opportunities for young people, who ultimately are the future of the sport. Falling race licence holder numbers and an ageing demographic among officials is a sign of how fragile motorsport's future might be unless more is done.

But, as McGuinness states at the end of the *Top Gear* programme, "the talent's out there, all they need is a chance".

IP Racing machine leads excluded AxiaMetrics challenger during gruelling 500-minute race

IP Racing takes IndyKa 500 win as podium finishers excluded

**BRANDS HATCH
MSVR
19-20 NOVEMBER**

After more than eight hours of action in both wet and dry conditions, the fourth running of the EnduroKa IndyKa 500 at Brands Hatch was won on the road by just 0.590 seconds on Sunday.

The two most successful teams of the season fought a late duel, Adam Blair bringing IP Racing's car to the flag just ahead of Chris Weatherill in AxiaMetrics' example. Tense final laps might have been even closer but for a late caution period, which allowed Blair to build a buffer before Weatherill could pass a backmarker at the green flag. Blair was supported by co-drivers Daniel Silvester and Scott Parkin, while Weatherill shared the cockpit with Dominic Jackson and Chris Dovell.

Third place, one lap behind, was taken by Nick Tandy, Lewis Selby and Elliot Mason for NAPA Racing. The car was a favourite for victory until a pitstop refuelling mistake handed them a two-lap penalty, followed by another stop to replace a rear lightbulb.

But in a shock development long after the podium celebrations, the second and

third-place cars were both disqualified. The cylinder head on the AxiaMetrics car was found to be machined beyond normal tolerances, and the NAPA team did not comply with an official request to remove its cylinder head. This promoted Sukaru Racing (Tristan Judge/Peter Dignan/Chris Hilson) and Ferguson Motorsport (Lee Deegan/Damon Astin/Michael Winkworth) to the podium.

Past winners Octane Junkies were among many with hard luck stories. Pole position and an early lead were highlights, but the car shared by Adam and Martyn Smith with Bazza Ward needed a jump start at one pitstop and a new battery at another, before stopping for good with a failing alternator that couldn't keep the lights on.

Two Formula Ford 1600 wins for Lucas Romanek in a repeat of last year's meeting weren't enough to prevent Morgan Quinn claiming the United Formula Ford Championship. Alex Walker won the opening race on the road under pressure from Romanek, but a dodgy clutch earned Walker a jumped-start penalty and dropped him to third, with Quinn second. Walker took until lap three to move into second in the sequel, but couldn't unseat Romanek,

while Quinn was a distant third.

Another driver taking a last-gasp title was Darren Goes, the 2021 MSVT Supercup champion adding the inaugural Turismo X title to his CV. Goes won both of Saturday's races in his Audi RS3 TCR to snatch the crown from Adam Blair, who brought a handy points lead to the finale. The engine in Blair's SEAT Supercopa cut out in their first race and, although he moved from last to third in race two, he made little impression on Goes or Richard Clarke in his Honda Civic.

The guesting VW Golf of Alex Jones and Team Hard boss Tony Gilham won the Trackday Championship race, while the title was settled in favour of John Lyne. His BMW E36 finished second and his drive to the championship was made easier when leading rival Kevin Stirling (Renault Clio RS) was eliminated in an accident at the start.

The Golf GTI of Alex and Daniel Read led the Trackday Trophy until the pitstops, when the time difference between their stop and the shorter pit visit by Stewart Donovan's Toyota Celica created a winning margin for Donovan.

BRIAN PHILLIPS

WEEKEND WINNERS

ENDUROKA

IP Racing (Adam Blair/Daniel Silvester/Scott Parkin)

UNITED FF1600/CHAMPION OF BRANDS

Races 1 & 2 Lucas Romanek (Van Diemen JL13)

TURISMO X

Races 1 & 2 Darren Goes (Audi RS3 TCR)

MSVT TRACKDAY CHAMPIONSHIP

Alex Jones/Tony Gilham (VW Golf)

MSVT TRACKDAY TROPHY

Stewart Donovan (Toyota Celica)

For full results visit: [tsl-timing.com](https://www.tsl-timing.com)

Walker leads Romanek and Quinn in opening United FF1600 race



CELEBRATING 20 YEARS OF FUN

Grahame Butterworth brought Fun Cup to the UK in 2002 and says it remains as popular as ever, with the car that won the first race claiming this year's title

As I flashed past the chequered flag at Oulton Park and saw my team leaning over the pitwall, arms raised, it came home to me what a remarkable achievement we had just pulled off.

It was remarkable for many reasons. Firstly, having started the UK Fun Cup race series 20 years ago, I was now back racing in it and managing a team that had just won the highly competitive 2022 championship. Who would have thought it?

Also, because our little private team had just beaten a pitlane boasting many highly skilled professional teams and plenty of super-quick drivers over 34 hours of racing. Then, finally, it was remarkable because the car we had just won the championship with was the same car that won the very first Fun Cup race when it kicked off at Snetterton back in 2002.

And it all came about because my son Craig and university friend Ian Wood had met up over a couple of beers in London five years ago. Having raced in Fun Cup a few times when I first set it up, they decided they wanted to return for a bit of fun. And that's where it all started – again.

As I reflected on that Oulton slowing-down lap waving to the marshals, it underlined to me that the basic concept of Fun Cup was bang on: to provide close, quality racing at sensible costs and combine it with a genuine friendly camaraderie in the pitlane. It's working brilliantly.

It was back in 1997 that Fun Cup first appeared in Belgium and quickly spread to France, Germany and Italy. It used a unique tubular steel chassis of enormous strength married with uprated Volkswagen suspension and brakes from a Golf. A modified and sealed 1.8-litre Golf engine was fitted with a VW H-pattern gearbox and using Uniroyal road-spec tyres. All of that covered with a fibreglass VW Beetle lookalike body. The races ran from three hours up to 25 hours.



RICHARD STYLES



Title winners (l-r):
Butterworths and Wood

It grew rapidly and, with sponsorship from Uniroyal, the company wanted to bring the concept to the UK – hence I got the call having previously used its tyres in the successful Slick 50 Road Saloon championship I ran. I went to Spa to get a taste for the racing and quickly found it was great fun but, worryingly, that in Belgium just about anything was possible without the control of regulations. For example, I was out in the race at Spa with no applicable licence, no sign-on, no nothing. Interesting!

The ethos of the series was excellent, but many of its features



GCI crew claimed the title after
successful Fun Cup campaign

Fun Cup still attracts a wide range of drivers and could even have an electric future



The endurance races often feature very close finishes



First race winners Phil Leech and Lance Robson

were entirely new to UK racing so I was acutely aware of the need to get it all agreed with the then Motor Sports Association and rewrite chunks of the rulebook. Fortunately, Bob Armstrong of the British Racing & Sports Car Club (now sadly not with us) was a great ally in understanding the principle and helping me make it happen.

After a big launch at Rockingham and then at Autosport International we had our first race at Snetterton in May 2002 with 11 cars on the grid, guaranteed TV coverage and a page in Autosport after each round.

From there, it grew and, thanks to Uniroyal inviting dealers to race, we had to create our own special efficient way of dealing with the dozens of novice drivers we put through ARDS tests every year.

Later, with Uniroyal's parent company switching its focus to World Cup football, I sold my interests and moved on – but not before having a victory in the series with son Craig at Snetterton, and a podium at Spa in the Fun Cup 25 Hours race with 155 cars on the grid. Mayhem!

I had brought in experienced racer Paul Rose of JPR to look after running the cars and being the UK agent. He then took on the role of developing Fun Cup and subtly fine-tuning it to the highly successful series it is today. He has done a great job.

Undoubtedly, the level of competition these days is so much more intense, often with four or five cars battling on the last lap for podium positions after four hours of racing. And there are a high number of very experienced drivers – the likes of British Touring Car stars Tom Ingram and Anthony Reid have sampled the series over the years, too.

The cars are much the same, but better. Cheap Belgian components

have been replaced with quality, long-lasting items. The suspension has better wishbones and the brake discs last for a season as opposed to the Belgian ones that lasted about five minutes!

The engine is still the strong VW unit, cared for and built at JPR, then dyno tested to 130bhp and sealed. Gearboxes have been switched to the excellent Sadev five-speed sequential unit coupled to flappy paddles. The wheels have been changed from steel to lighter and stronger alloys. And they are dressed with Giti track-inspired tyres, which work well in both wet and dry conditions.

Testament to the longevity of the cars is the race and championship victory of our GCI (Grahame Craig Ian) Racing car #111, which still has the same chassis and centre body unit as the day it first rolled out, of course with updates to the suspension, engine, gearbox and brakes as you would expect along the years.

We are a small private team run from my home double garage. But, since we first prepared the car five years ago, we have not had one single unscheduled pitstop in a race caused by a mechanical failure. How many can say that? It underlines the potential reliability and value of the cars, which are worth more these days than when first built.

The spirit of friendship in the pitlane is such that, despite the closeness of battle on-track, off track in the JPR-supplied hospitality awning the friendship is so warm. When we won the title with a race to go, we were inundated with congratulations from fellow competitors.

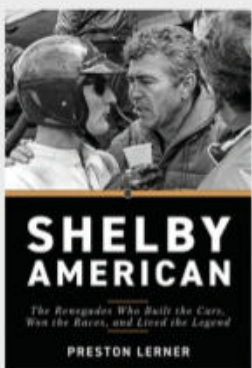
So, will the car (and chassis number) 111 be back winning 20 years from now? It could well be since someone is already experimenting fitting a Tesla electric power pack! 🏆

FINISHING STRAIGHT



SUTTON

The American racing dream that swiftly



BOOK REVIEW
SHELBY AMERICAN
Preston Lerner
RRP £35.00

Best known for its role in delivering Ford endurance racing's biggest prize by beating Ferrari at Le Mans, Shelby

American's story is a remarkable one.

The speed of its rise in becoming a winner on the international stage, just one year after its first production cars were sold in 1962, was matched by its sudden decline as founder Carroll Shelby became increasingly worn down by Ford corporate interference and exited the car business altogether by the end of the decade.

To mark 60 years since Shelby founded his company with a view to knocking

Corvette off its perch as America's top sportscar builder, prolific author Preston Lerner has teamed up with Octane Press to release a new book that aims to tell its full story. And *Shelby American: The Renegades Who Built the Cars, Won the Races, and Lived the Legend* does just that.

Lerner zeroes in on each season of the company's sparkling but brief eight-year existence as it became "the biggest, baddest, most successful motorsports-cum-higher performance automotive operation in the country", until the boss wound racing operations down at the end of 1969. This came about as he petitioned Ford to stop production of the GT350 and GT500 Mustangs that had become the "antithesis of what Shelby had gone into business to create".

From humble beginnings, as Shelby hustled to make something out of nothing and played AC Cars and Ford off each other

to secure a chassis and a hulking V8 engine that would form the basis of his trailblazing Cobra, the company went from success to success. Its initial mission complete – by the end of 1963 Corvette "were no longer rivals; they were fodder" – it ran Ferrari close in the 1964 International Championship for GT Manufacturers with the Daytona Coupe. Shelby got his revenge in 1965, and in addition to its GT40 success in 1966 and 1967 also delivered titles in SSCA, the USRRC and Trans-Am.

Lerner is clear about the significance of Shelby American in this period – "it helped liberate sportscar racing from the snobby amateur straightjacket that had prevented it from finding a wider audience" – but its dependence on investment from Ford had its own problems. The tight-knit group of independent-minded hot-rodders operating out of the old Scarab workshop in Venice soon swelled to become an increasingly corporate machine in which Shelby's vision and influence was significantly reduced. Powerless to stand up for Ken Miles in the contrived finish at Le Mans in 1966 (above), he became increasingly disengaged.

Ford's decision to curtail its factory GT40 programme at the end of 1967 caused Shelby American to focus purely on domestic competition, but it was unable to develop its own Mustangs for Trans-Am and, plagued by reliability problems, lead driver Jerry Titus and programme manager Chuck Cantwell quit. As Shelby put it, "you have to have a relationship with





ALL PHOTOGRAPHY
motorsport
IMAGES

turned sour



Gurney sprays the bubbly
for 1967 Le Mans victory

a big company to really get anything done, but you pay a tremendous price for it”.

But the story isn’t just about Shelby. Lerner describes it as a chronicle that tells “the saga of the men and women who brought Shelby American to life”, and utilises several first-hand interviews with key figures. These include “virtuoso fabricator and quick-fix genius” Phil Remington, team manager Al Dowd – initially given the lowliest job on the shop floor because the toolbox he carried was deemed too small for its owner to be taken seriously – and Shelby himself, to humble mechanics and figures who rose from obscurity to play unlikely roles.

The story of future Le Mans regular John Morton, originally hired as a janitor, who blagged a ride as Miles’s relief driver at Sebring in 1964 despite the fact he’d never driven the track before, is one of the more surreal that underlines Lerner’s point that the Shelby American story “doesn’t require any Hollywood sweetening because, in this case, fact really is stranger than fiction”.

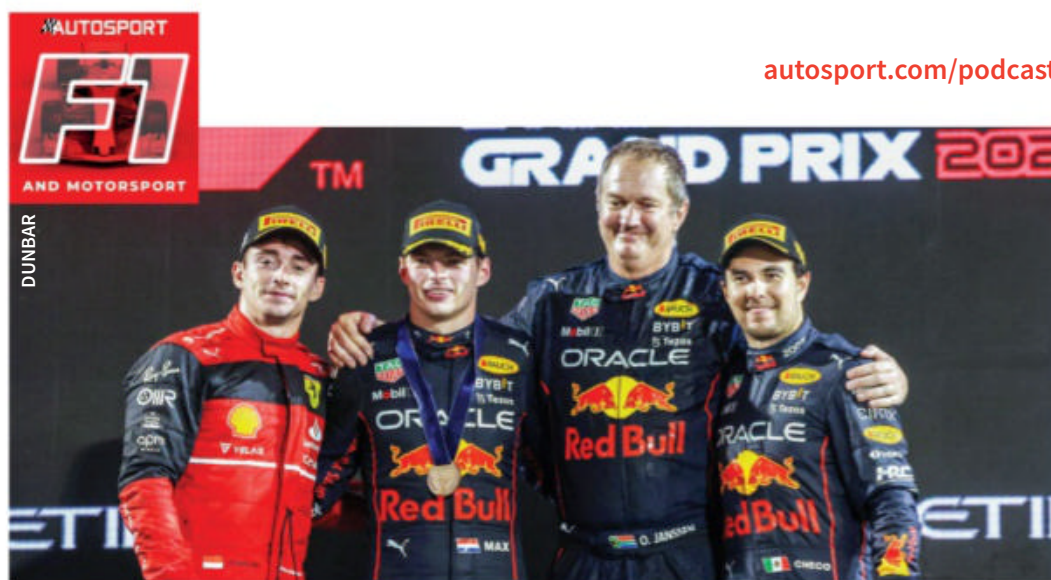
Refreshingly, Lerner doesn’t shy away from pointing out the inconvenient truths “expunged from official company histories”, such as the role played by Ed Hugus in building six of the first seven production Cobras. Or Shelby’s failed attempt to replace the Cobra with the overly expensive Lone

Star, a Can-Am car (the Len Terry-penned T-10) that was canned after a troubled gestation period, and embarrassing climbdown from an uncompetitive assault on the 1968 Indianapolis 500 with Ken Wallis’s turbine racer that contained an in-built cheat.

The book includes a handy timeline of the Shelby American history and a list of all its cars. It’s not the first to tackle the subject, but Lerner’s exhaustively researched and impeccably footnoted tome builds on what’s gone before to provide a complete picture that makes essential reading for fans of Ford and 1960s sportscar racing.

JAMES NEWBOLD

FINISHING STRAIGHT



autosport.com/podcast



F1 Abu Dhabi Grand Prix review

Max Verstappen capped his Formula 1 world title triumph with a record-extending 15th win in 2022 at the Abu Dhabi Grand Prix, as Charles Leclerc beat Sergio Perez to second in the standings. Luke Smith and Jess McFadyen dial in from Abu Dhabi to join Kevin Turner and podcast host Martyn Lee to pick apart the Abu Dhabi GP, which was also the final race for Sebastian Vettel before his F1 retirement.

WHAT'S ON

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Round 9/9

Jeddah, Saudi Arabia

26-27 November

TV Live Eurosport 1, Sun 1630,
Eurosport 2, Sun 1900

Extreme E

Round 5/5

Punta del Este, Uruguay

26-27 November

TV Live Eurosport Player,
Sun 1600



Extreme E – Energy X-Prix
Uruguay hosts electric off-
road series’ season finale



FROM THE ARCHIVE

The irresistible force that was Michael Schumacher in his pomp (here in a Ferrari F310B) gives Jean Alesi (Benetton-Renault B197) little option but to yield second place at

Spa's La Source hairpin on lap five – the first three having been run behind the safety car due to the sodden conditions – of the 1997 Belgian Grand Prix. Schumacher immediately set off after polestarter Jacques Villeneuve

(Williams-Renault FW19), mugged him for the lead and then disappeared into the distance. It was one of his greatest drives, characterised by insightful preparation, a smart gamble (starting on intermediates) and relentless pace.



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RICHARD ATTWOOD
MY FAVOURITE... CAR

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“I loved the cars that gave you an advantage. Unfortunately, whenever I had one of those something seemed to go wrong and we didn’t win anyway!”

Notwithstanding his 1970 Le Mans victory in a Porsche 917, Richard Attwood didn’t always have the best luck during a career that spanned Formula 1 and sportscar racing in the 1960s and early 1970s. And perhaps the best example is the story of the car that Attwood picks out when asked to select a favourite: the Ford F3L.

The Ford P68, or F3L as it was better known, was a svelte sports-prototype designed by Len Bailey and built and run by Alan Mann Racing. The Cosworth DFV-powered machine proved fast, qualifying second on its debut at the Brands Hatch BOAC 500, but suffered from aerodynamic instability and never finished a race in period.

“It had speed but reliability was poor,” confirms Attwood, who doesn’t believe the famous DFV vibrations were the cause of the issues. “I raced it twice, at the Nurburgring where it was completely unsuited but we still qualified fifth, and

the Oulton Park TT.”

The non-championship Tourist Trophy attracted a strong field, including Denny Hulme in Sid Taylor’s Lola T70, the similar car of Jo Bonnier, David Piper’s Ferrari P3/4 and Paul Hawkins in his Ford GT40.

Attwood outpaced them all, taking pole by 0.4 seconds from Bonnier. He then pulled clear of the pack over the first 10 laps of the race before being halted by differential problems.

“Denny was reigning world champion so that shows how good the car was,” says Attwood, who went on to finish second behind Hulme sharing Piper’s Ferrari. “But then it started steering all over the place.”

Before the problems were solved, the car morphed into the bewinged and unsuccessful P69 of 1969, which only appeared briefly before the project was canned. But Attwood is adamant that the programme should have continued. “I loved it, there was nothing wrong with it,” asserts the 82-year-old. “They should have persevered, but Ford didn’t want it. When you get a car with an advantage the job becomes a different game.”

KEVIN TURNER



IN NEXT WEEK’S ISSUE

Award winner’s F1 debut

ZAK O’SULLIVAN GETS
HIS ASTON MARTIN DRIVE



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17/18 JAN Portimao

19/20 JAN Portimao

21/22 JAN Monteblanco

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The road to convergence that led to LMDh



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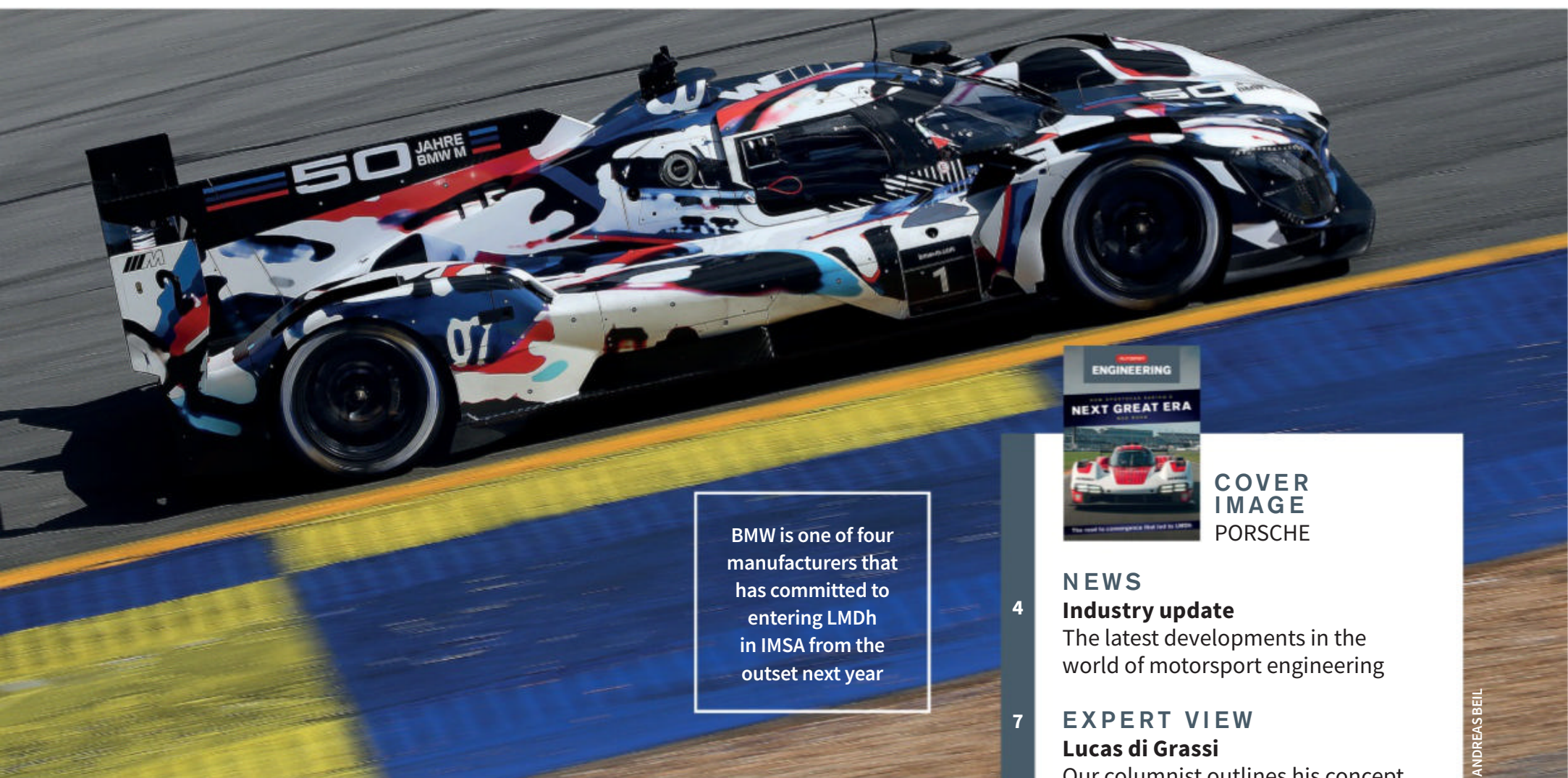
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THE BOLD NEW ERA FOR SPORTSCAR RACING IS FINALLY HERE (ALMOST)

Homologation papers have been submitted. Testing is well under way, with several manufacturers completing long-distance endurance runs having ironed out teething troubles. The wait, for what many anticipate will be a golden age of sportscar racing, is almost over.

LMDh may not immediately spur the same warm response from sportscar aficionados that the GTP nomenclature does, which goes some way to explaining why the IMSA SportsCar Championship revisited its past when it came to naming the class that replaces Daytona Prototype international. But the huge wave of manufacturer interest that the four-letter acronym has heralded, attracted by the prospect of competing for outright honours in major races on both sides of the Atlantic for a justifiable cost, surely means that will only be a matter of time.

When the green flag drops to start January's Daytona 24 Hours, new LMDh machinery from Acura, BMW, Cadillac and Porsche will be gunning for glory. The latter pair will also be taking on bespoke Le Mans Hypercars in the World Endurance Championship, to be joined in 2024 by Alpine, BMW and Lamborghini.

As Gary Watkins explains in our cover feature on page 10, the road to get to this point hasn't been straightforward. It has involved plenty of compromise both from LMH manufacturers that have the option to use four-wheel drive and LMDh participants using a spec rear-axle hybrid system. We delve into how that works on page 16.

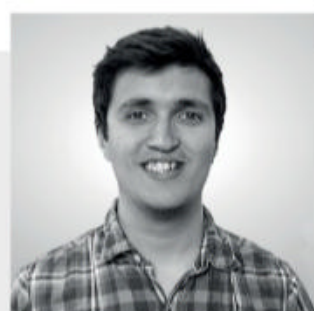
But the major parties are confident that parity between the two philosophies will be possible. And if that comes to pass, then the long hours of negotiating will have definitely been worth it.



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PORSCHE

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ANDREAS BEIL



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M-SPORT TO CONTINUE FIESTA BUILD

Ford Performance pledges ongoing support after popular production model is scrapped

M-Sport will continue producing Fiesta-based rally cars following the news that Ford will cease production of the popular hatchback next year.

The Cumbrian outfit currently produces Rally2, Rally3 and Rally4 specification Fiesta rally cars, which have become a core part of the World Rally Championship squad's business. Until the move to Rally1 rules this year prompted a switch to the Ford Puma body shape, M-Sport's top-level WRC cars from 2011 have employed the Fiesta body.

Ford announced last month that the Fiesta will be withdrawn from production next year, but this won't halt the production of Fiesta rally cars at M-Sport's Daventry HQ or at its Krakow site.

M-Sport recently developed an all-new Fiesta Rally3 model that forms the foundation of the Junior WRC, which is set to continue into 2023.

"The Fiesta is a core part of M-Sport's business activities and has been behind a lot of the company's success in the past two decades," said M-Sport boss Malcolm Wilson. "Thanks to our long and storied partnership with Ford, we were able to begin preparing for the end of the Fiesta's production well ahead of time."

"I would like to assure all of our customers that we will still be building Fiesta rally cars for years to come, both in the UK and Poland. The Fiesta was the very first customer-focused car M-Sport

developed, and I think 2000 overall victories speaks for itself. Development is under way across the board with our Fiesta-based cars as well, with the Fiesta Rally2, Rally3 and Rally4 currently enjoying thorough development programmes."

Mark Rushbrook, Director of Ford Performance, said the Fiesta's success in rallying was "largely thanks to the time and effort M-Sport has put into its comprehensive 'Ladder of Opportunity' for over a decade" and wants this to continue.

He added: "Ford Performance will continue supporting M-Sport with its various development programmes for Fiesta-based rally cars."

TOM HOWARD

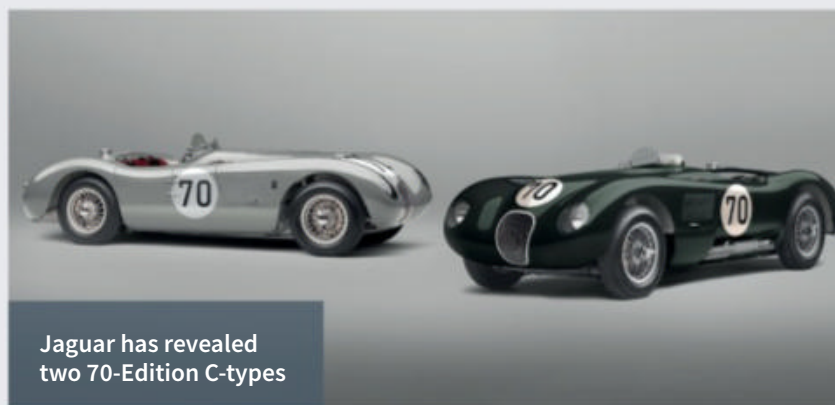


JAGUAR RELEASES NEW C-TYPE CONTINUATIONS TO MARK 1953 LE MANS TRIUMPH

Jaguar Classic has begun work on a limited run of continuation C-type sportscars to mark 70 years since its 1953 Le Mans 24 Hours domination.

Utilising revolutionary disc brakes that Jaguar introduced in 1952, Duncan Hamilton and Tony Rolt beat the sister car of Stirling Moss and Peter Walker by four laps to score the car's second win at Le Mans in three years, while a third C-type for Ian Stewart and Peter Whitehead took fourth.

The first two '70-Edition' continuations to be completed at the Jaguar Classic Works in



Coventry have been finished in Verbier Silver with Cranberry Red leather interior, and British Racing Green with a Suede Green leather interior respectively.

Jaguar Classic began building C-type Continuations in 2021 after almost two years of data gathering to inform its build process and verify the car's

specification, before producing a detailed CAD model to bring Malcolm Sayer's design to life.

Each new '70-Edition' C-type is being built to identical specification to the 1953 works cars, and requires 3000 man hours of specialist construction using identical methods to those of the period. Powered by the same 3.4-litre straight-six engine as the originals, the aluminium-bodied cars are priced at £1.5million apiece and will be eligible for historic competition in various series, including the Jaguar Classic Challenge.



ALPINE PICKS LMDh ENGINE, BENCH TESTING UNDER WAY

Alpine has selected the engine concept for the LMDh challenger it will race in the World Endurance Championship from 2024, and is already running it on the test bench.

Bruno Famin, executive director of Alpine Racing, explained it “never considered” taking the 1.6-litre V6 engine used in its Formula 1 car as the starting point for the LMDh hybrid’s internal combustion engine for reasons of cost and complexity. He said: “We can find the 500kW-plus in a much easier and much cheaper way, much easier in terms

design and maintenance as well”.

Famin revealed that the concept was “finalised quite a long time ago” and has been testing at Alpine’s Viry-Chatillon facility in Paris “for some time already”, but would not reveal any technical details of the engine, nor whether it is a bespoke racing unit or based on a production powerplant.

The 2024 start date was chosen, he added, because partner ORECA has only been working in earnest on the Alpine project since getting the Acura ARX-06 LMDh up and running in the summer.

GARY WATKINS

IN BRIEF



ZF HITS MILESTONE

German manufacturing giant ZF has reached a production milestone of two million electric motors, the company announced this month. The powertrain partner to Formula E squad Mahindra has continually expanded its capacity to meet demand since its first electric motor for commercial vehicles was released in 2008, with a new North American plant set to open in 2023.

SUPERCARS TEST DELAY

Plans for Supercars teams to begin testing their new Gen3 cars next month have been shelved. The off-season programme has been reorganised and the build phase extended into January. Teams will have six weeks from the shakedown of their new cars to the opening round of the season in Newcastle, with just two dedicated test days for each team in between.

SCHAEFFLER’S BUYOUT

Schaeffler Technologies AG has agreed to complete its buyout of sister company Schaeffler Paravan Technologie GmbH, purchasing the 10% stake held by the creator of its Space Drive system Roland Arnold. Created as a solution for road-users with disabilities, its steer-by-wire software has been developed in the DTM for the past two years by Mercedes outfit Mücke Motorsport.

HUNTER HYPERCAR DEMO

Prodrive has developed a road-going version of its Dakar Rally BRX Hunter and completed demo runs in Dubai earlier this month with prospective customers. Priced at £1.25m, the 600bhp machine is billed as an all-terrain hypercar and boasts a 50% increase in power from its 3.5-litre V6 twin-turbo engine. A limited number of cars will be built to the unique specification of each buyer.



MERCEDES HYPERCAR BREAKS ‘RING RECORD

The 1063bhp Mercedes-AMG ONE hypercar, which uses Formula 1 hybrid powertrain technology, broke the lap record for road legal production cars at the Nurburgring Nordschleife last month.

With DTM ace Maro Engel at the wheel, the car posted a 6m35.183s lap to beat the previous record held by a Porsche 911 GT2 RS by almost eight seconds – despite the track being damp in patches. Engel said that utilising the car’s DRS system and deploying its electrical energy from the F1-derived MGU-H and MGU-K units, which work together with a 1.6-litre V6 turbo engine developed with Mercedes High Performance Powertrains, was key to the four-wheel-drive car’s record lap as he peaked at 210mph on the Dottinger Hohe.

Mercedes-AMG CEO Philipp Schiemer said: “Even though the AMG ONE is certainly more at home on a grand prix circuit than on the Nordschleife, as is so often the case with this project we’ve simply gone one step further.”



FIA LAUNCHES SCHOLARSHIP WITH CRANFIELD UNIVERSITY

The FIA has launched a scholarship with Cranfield University to help an aspiring motorsport engineer who would otherwise be unable to study for a postgraduate degree.

Cranfield is a leading postgraduate research centre, whose FIA-approved Impact Centre for crash-testing and AXSIM company work with teams and suppliers across the motorsport spectrum, with notable alumni including Mercedes F1 strategy director James Vowles.

The scheme is part of a push to diversify the motorsport engineering scene, and the FIA will award the scholarship to the candidate who best fits its Equality, Diversity and Inclusion (EDI) commitments. They will have living costs and fees covered while studying for a Master’s in Advanced Motorsport Engineering. Applications close on 15 February 2023.

FIA president Mohammed Ben Sulayem said: “This scholarship will allow a young person who is facing financial challenges the opportunity to study motorsport engineering at the world’s leading university in the field and to bring that knowledge back to their country and community.”



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DRIVING CHANGE LUCAS DI GRASSI

WHAT MIGHT A BLANK-CHEQUE GARAGE 56 RACER LOOK LIKE?

With cars outside the Le Mans class structure permitted to enter in Garage 56 by the ACO, our columnist gets imaginative

Next year, a Chevrolet NASCAR will start the Le Mans 24 Hours in the Garage 56 invitational slot, which got me thinking about what I would do if I had an unlimited budget to design and build a clean sheet racer that doesn't conform to the rulebook.

Le Mans is probably the ultimate challenge for a vehicle because it requires very high energy density, so battery-electric powertrains won't make sense there until battery capacity is enormously increased. I was racing at Le Mans in 2014 when Nissan brought a Garage 56 project, the ZEOD RC, which completed the first lap of the Circuit de la Sarthe with electric power in the warm-up but retired 23 minutes into the race with gearbox problems.

We have to follow engineering and physics principles, and that leads me towards a biofuel turbine with a high level of autonomous controls.

Turbines have been used before in motorsport, admittedly with mixed success. The STP-Paxton Turbocar came close to winning the 1967 Indianapolis 500 with Parnelli Jones, but the organising body put restrictions on turbine engines after that. At Le Mans, the Rover-BRM Turbine did finish in 1963 and 1965 but wasn't close to leading pace, and the US-built Howmet TX had a disaster in 1968. My idea would

use a turbine as a baseline, but the concept would be very different.

The big advantage of turbines is they are so small; they are the lightest available power source. Nothing else has a power-to-weight ratio that is comparable. A helicopter turbine, for example, is around two feet in size and can generate 1000 horsepower. The downside is that a turbine needs constant RPM, because it doesn't like accelerating and decelerating. Therefore, it would need a super or hyper-capacitor to store energy from the turbine and drive the wheels. Still, with a motor on each wheel, plus a fifth generating electricity from the turbine, it would be fairly simple

“Turbines are almost a no-brainer in terms of power density and efficiency”

mechanically, have fewer moving parts compared to a piston engine and save hundred of kilos in weight that might otherwise be taken up by batteries.

Turbines also produce dynamic airflow that can be used for aerodynamic purposes, as the McMurtry fan car did at the Goodwood Festival of Speed, to create downforce at any level you need. That

way, wings aren't needed and you can have an efficient design that produces less drag so you can go faster on the straights – which at Le Mans you need. It could follow the same principle as the McMurtry, but instead using biofuel in the turbine. Soya-based biofuel is currently being tested in planes in the US, and is carbon neutral.

We could also add autonomous systems and a very interesting algorithm to control the energy flow between the turbine and electric motor, as well as movable aerodynamic devices. This would also manage the four-wheel torque vectoring and four-wheel steering capability.

While perfect for planes, helicopters or

anything that requires light weight and high power, turbines don't fit the commercial vehicle agenda mainly because of their noise and airflow. This perceived irrelevancy for car manufacturers perhaps explains why it hasn't been used so much in racing. But from a pure engineering and physics perspective, it's almost a no-brainer in terms of power density and efficiency.

Turbines are the most efficient way of extracting the chemical energy from combustion – and would be just as efficient as a Formula 1 engine but much cheaper and lighter. For detractors pointing at the results of past turbine cars in racing, just imagine how far the technology has come since the 1960s! As with F1 cars from that era to today, there would be no comparison.

Finally, as to who would drive... it would be cool to reunite with my LMP1 team-mates, Oliver Jarvis and Loic Duval. Oliver won the IMSA SportsCar Championship this year and Loic is racing for Peugeot in the World Endurance Championship, so I would be the least experienced one again! ■

SCHLEGELMILCH



Rover-BRM turbine finished at Le Mans with Stewart and Hill in 1965



Turbine technology has come a long way since its use in 1960s sportscars such as the Howmet TX

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ENGINEER'S VIEW CHRIS MIKALAUSKAS

PUTTING CADILLAC'S STAMP ON THE LMDh CONCEPT

Cadillac's lead designer worked with Cadillac Racing and Dallara on the styling of the V-LMDh to impart the brand's identity on a full-house racing car



Mikalauskas took inspiration from a stealth fighter for the V-LMDh

Cadillac will be competing in the World Endurance Championship and the IMSA SportsCar Championship next year against so many high-level brands, Porsche, Ferrari, Peugeot and others. The exciting thing for me in the new era of sportscar racing is that the fans will be watching huge grids that aren't made up of cookie-cutter cars. The different appearance of the machinery is what is going to give the series a pulse.

Here at Cadillac it is important to come in with a strong visual identity behind us with the V-LMDh. We learned a lot with our Daytona Prototype international, but the LMDh rules have presented a great canvas to work with. From a designer's perspective it has given us everything we could have asked for: and LMDh is a lot wider, and a bit longer, as well as being leaner in some areas than the previous generation of cars.

Having more freedom in the rules and being able to be involved with Cadillac Racing and our chassis partner, Dallara, from day one has given us a much bigger presence on the car. Having the imagery and the design inspiration up front really helped Dallara understand what we were

after from a brand perspective. That opened some doors to help them enable us to get there. That compares with the DPi, which was more of a challenge because the underpinnings were further along when we became involved.

The V-LMDh was one of my many assignments at the time along with production vehicles, and we approached it very similarly to how we would a road car. You have sketches and clay models, and try to find forms and surface language that everyone likes. That's just the starting point – then you iterate back and forth. The further along you

the Cadillac Racing and Dallara perspective it has got to be fast, the car has got to win. We have had to respect their feedback and have learned where we could push and where we had to stay within some boundaries. We produced the Cadillac Project GTP Hypercar, on which we worked in conjunction with Dallara and engineering to produce a one-of-a-kind artistic influence for the race car.

One area of the car of which I am particularly proud is what we call the floating buttresses on the front and rear fenders. I say floating because they kind

“With the buttresses we are taking elements we have in our DNA and repurposing them”

get, the less iterations you have because you are zeroing in on your targets.

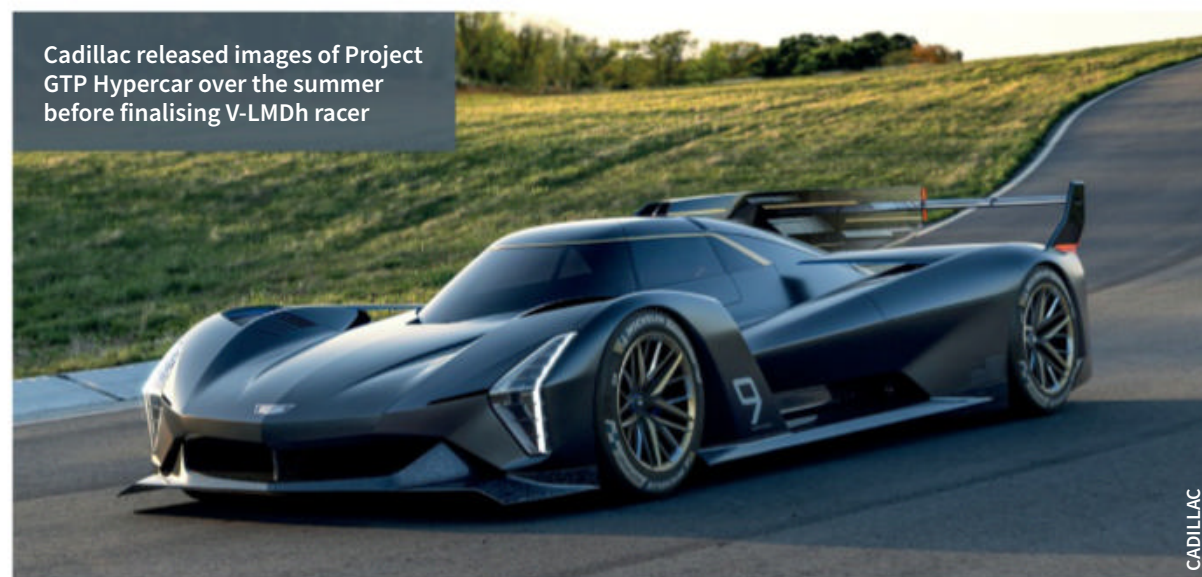
The most fun part is trying to figure out solutions through the car that get you what you want without losing the artfulness of it, because it is an art form. The car should feel beautiful – that is our job at the end of the day. But from

of hang in space. If you look at the big book of heritage going back to the 1950s and 1960s, Cadillacs were recognisable for their fin shapes and floating blade elements inspired by the space race of the time.

I was thinking in terms of a super-fast aircraft, like a stealth fighter. They all have those horizontal elements that give them a presence, that sleek feel. With the buttresses we are taking elements that we have in our DNA and repurposing them.

Everything on the car has function as well as form. From a design point of view we didn't want to do something just for aesthetics' sake, we wanted to do something that could be integrated into something functional.

The V-LMDh gives Cadillac a presence on the world and North American stage and the chance to join the dots with road cars we have either been releasing or teasing with our V-Series Blackwing models and the Celestiq electric luxury sedan. I'm really excited about that. ■



Cadillac released images of Project GTP Hypercar over the summer before finalising V-LMDh racer

SPORTSCAR RACING'S NEW ERA

THE LONG ROAD TO CONVERGENCE

The organisers of the World Endurance Championship and IMSA SportsCar Championship worked together to devise the popular new LMDh rule set. Here's how that came about...

BY GARY WATKINS

It was a historic moment. The great and good from the Automobile Club de l'Ouest and IMSA sat on stage and told the racing world what it had wanted to hear for years: that the same cars would battle it out for the overall victory at the Le Mans and Daytona 24-hour endurance classics and right across the two series. An announcement, you might think, deserving of a 21-gun salute from the National Guard or a ticker tape parade through the streets.

Yet for all the euphoria on the eve of the 2020 Daytona 24 Hours when the convergence between the top-class prototype rules of the two governing bodies was revealed it was just a staging point — perhaps a flag-in-the-sand moment — on a long and winding road. There was still work to be done to align what was now being called LMDh, the category that had grown out of IMSA's vision for a successor to the Daytona Prototype international class, and the Le Mans Hypercar rules of the ACO and the FIA. It would be another 18 months or more before sportscar racing nirvana, on the verge of which we now stand, was achieved.

The difficulties ahead were illustrated over the course of the convergence press conference. IMSA boss John Doonan, newly incumbent in the job after taking over from Scott Atherton at the end of the previous year, announced on stage that LMH cars would be able to race in the North American series from the get-go. In the media scrum that followed, he back-tracked. There was a desire to see that happen, he explained, but it remained a work in progress.

IMSA knew all too well the difficulties of matching the



LEVITT/MOTORSPORT IMAGES

performance of the LMDh prototypes, developed like their predecessors out of LMP2 machinery, using an off-the-shelf rear-axle hybrid system with the bespoke four-wheel-drive LMH machinery. It wanted assurances that a true equivalence could be achieved before it opened up its series to the high-tech machinery from the world stage. But the reality was that the same hurdles had to be overcome if manufacturers taking the cheaper route to the



JEP/MOTORSPORT IMAGES

“Everyone was prepared to really do some self-evaluation of what was best for the sport”

pinnacle of sportscar racing were going to sign up for the WEC.

Or sign up to build LMDh cars in the first place. Porsche put its hand up within minutes of the Daytona announcement and stated its interest in the category for the simple reason that it allowed it to compete across two arenas on a cost-effective basis. Sister marque Audi followed quickly afterwards, though, of course, it has long since abandoned its aspirations to return to the top of the sportscar tree.

No one was going to commit to contest the WEC with an LMDh if they believed they had no chance against an LMH. As one insider present in some of the technical meetings that followed



IMSA's DPi class will be replaced by GTP division for LMDh cars next year

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THE MANUFACTURERS COMMITTED TO LMDh

ACURA

The Honda brand announced it would be carrying on in IMSA with a new LMDh in January 2021. A North America-only brand, it has so far only committed to IMSA, where it will compete with single-car entries from Wayne Taylor Racing and Meyer Shank Racing in 2023. Its ARX-06 has been developed in conjunction with ORECA and is powered by a 2.4-litre twin-turbo V6.

ANDREAS BEIL



put it, “the prospective LMDh manufacturers looked across the table and said, ‘Do you think we are going to come to Le Mans just to be beaten by the LMH cars?’”. Concessions had to be made in the LMH camp, and to a lesser extent on the LMDh side. But that ground was given on both sides for the good of the sport.

Toyota, the leading player in the formulation of the LMH rules, had long since made a significant compromise. It agreed to the introduction of Balance of Performance in WEC, which was a condition of Aston Martin's entry in the summer of 2019. Now a manufacturer that had been the last man standing after first Audi and then Porsche axed their LMP1 programmes came to accept that more ground had to be given.

“We have always been supportive of the convergence in the sense that we were desperately looking for competitors joining the series,” says Toyota Gazoo Racing Europe technical director Pascal Vasselon, who had gone on record a couple of months before Daytona 2020 suggesting he was not averse to what were then being called DPi 2.0 cars being allowed into the WEC. “Anything ▶

that created an incentive for people to join had to be good.”

Peugeot, which had announced its LMH programme in November 2019, took the same big-picture view. “We have to assume that we will be paid back by the quality of the championship in the next years,” says Olivier Janssonie, technical director of the 9X8 programme.

Vasselon believes that the COVID pandemic that followed quickly after the Daytona announcement solidified the convergence process: it concentrated the minds of the protagonists involved on what needed to be done in difficult times. An “accelerator”, he calls it: “It probably made it happen easier, and stronger.”

What followed in the months after that historic day in January 2020 is described as a “highly collaborative” process by IMSA’s vice-president of competition Simon Hodgson.

“Everyone looked at that long-term picture and was prepared to really do some self-evaluation of what was best for the sport in general,” says Hodgson. “There was a real appreciation by

“There was a shared goal. No one went against the grain, because we all wanted a nice big grid”

all concerned, whether they were an LMDh or an LMH manufacturer, that there would have to be compromise to move towards a common goal.”

Laura Wontrop Klauser, programme manager of Cadillac’s LMDh project, offers a similar perspective: “There was a shared goal. No one went against the grain, because we all wanted a nice big grid.”

The start date of the brave new world of sportscar racing was originally a year ahead of where it ended up. The plan was for LMDhs to come on stream in the IMSA SportsCar Championship in 2022 and, in theory at least, in the WEC from the start of the 2021-22 season. The WEC was at the time of Daytona 2020 in the midst of its first, and thanks to COVID its only, season run to the winter-series format starting in the late summer and climaxing at Le Mans in June. The idea of a first draft of the LMDh rules being published in March 2020 seemed hopeful even before COVID and the introduction of LMDh was surreptitiously put back to 2023 at the delayed running of Le Mans in 2020.

THE MANUFACTURERS COMMITTED TO LMDh

ALPINE

A full-scale return to frontline sportscar racing by Alpine as the Renault brand undergoes a relaunch was announced in October 2021. The car will be developed by ORECA, which produced the Gibson-engined A480 LMP1 design it has fielded in the WEC for the past two seasons (below). Signatech will again run what is a WEC-only programme from 2024, though customer cars could end up in IMSA.



BMW

BMW has partnered with Dallara for its return to the sportscar big time next year. The programme announced in June 2021 was for IMSA only with the Rahal team, though this was extended last summer to cover the WEC from 2024 with WRT. The engine in the back of the M Hybrid V8 a development of its DTM powerplant of 2017-18, now in turbocharged form.



Front axle deployment of 4WD LMH cars is now governed by BoP, in a step seen as key for parity



The first big step towards convergence actually came in the summer of 2020 when major changes were announced to the LMH rules to bring them into line with what was planned for LMDh. Both power and weight were reduced, and significantly so.

The minimum weight for an LMH was reduced from 1100kg – the figure to which it had risen on Aston’s commitment to bring a race version of its Valkyrie road car – to 1030kg and 1040kg for two and four-wheel-drive machinery respectively. Maximum power came down from 585kW or 785bhp to 500kW or 670bhp.

These changes had a big impact on the LMH programmes already in place. Don’t forget that the new breed of WEC prototypes were due to start racing just eight months after the convergence announcement in early September at the start of the 2020-21 season. Toyota’s LMH was already in build at this time, while Peugeot was making some big decisions about its programme. The reduction in weight of Toyota’s GR010 HYBRID would ultimately result in a not-insignificant redesign for its second season in 2022, while Peugeot abandoned plans to use a V8 powerplant in favour of a V6.

The moves announced in May 2020 were far from the end of the convergence process. The elephant in the room was still four-wheel drive and how to mitigate the advantages that come with a front-axle hybrid system – both in terms of traction and braking stability. It took until July 2021 for the final

CADILLAC

The General Motors marque continues in IMSA and expands into the WEC for the first time with a continuation of its sportscar programme dating from 2017. Dallara is once again its chassis partner on the V-LMDh, the engine an all-new 5.5-litre normally aspirated V8. Chip Ganassi Racing fields the solo WEC car and one in IMSA alongside Action Express Racing. Expect all three to be at Le Mans.



RICHARD PRINCE/CADILLAC

pieces of the jigsaw to be put in place.

The key piece of the puzzle was the move of the speed at which hybrid power could be deployed via the front axle out of the technical regulations. Instead, the speed that had originally been set at 120km/h (75mph) in the dry and 150km/h in the wet would be governed by the BoP. From this season, LMHs are operating in four-wheel-drive mode for the most part in a straight line.

The torque transfer allowed across the front axle has also been mitigated to what Vasselon describes as “the minimum possible”. The nuts and bolts of this rule were only finally agreed in December of last year.

There was also a concession on the LMDh side. Measures were

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New cars can’t run tyres of equal size front to rear as Peugeot has done

put in place to ensure that LMDh cars cannot use their rear hybrid system to aid traction control.

At the same time, the wheel and tyre sizes of the LMDh and LMH machinery were brought into line. The option for LMHs homologated after 2022 to run equal size tyres front and rear was removed. Toyota abandoned this specification on its 2022 update of the GR010 as a result of the changes to the minimum weight back in 2020, while Peugeot just snuck in before the new rule came into force. All LMDhs and new LMHs must run 13.5in tyres on 12.5in rims on the front and 15in tyres on 14in rims at the back.

“We had a series of technical meetings essentially based on simulation to anticipate an alignment of performance,” explains Vasselon. “Clearly the architecture of a LMH with four-wheel drive was a major difference. Item by item we went through all the performance factors that were different and somehow they have been aligned.”

“Everyone understood the commitments the LMH manufacturers had made in developing all-wheel-drive vehicles, but a four-wheel drive and a rear-drive vehicle are two very different platforms,” says Hodgson. “For equitability of the

THE MANUFACTURERS COMMITTED TO LMDh

LAMBORGHINI

Lamborghini, part of the Volkswagen group like Porsche, has ended up ploughing its own furrow for its first top-flight sportscar entry. It has partnered with Ligier Automotive and is developing a clean-sheet twin-turbo V8 for the car. Iron Lynx will run a solo car in both the WEC and IMSA starting in 2024 in co-operation with sister team Prema.

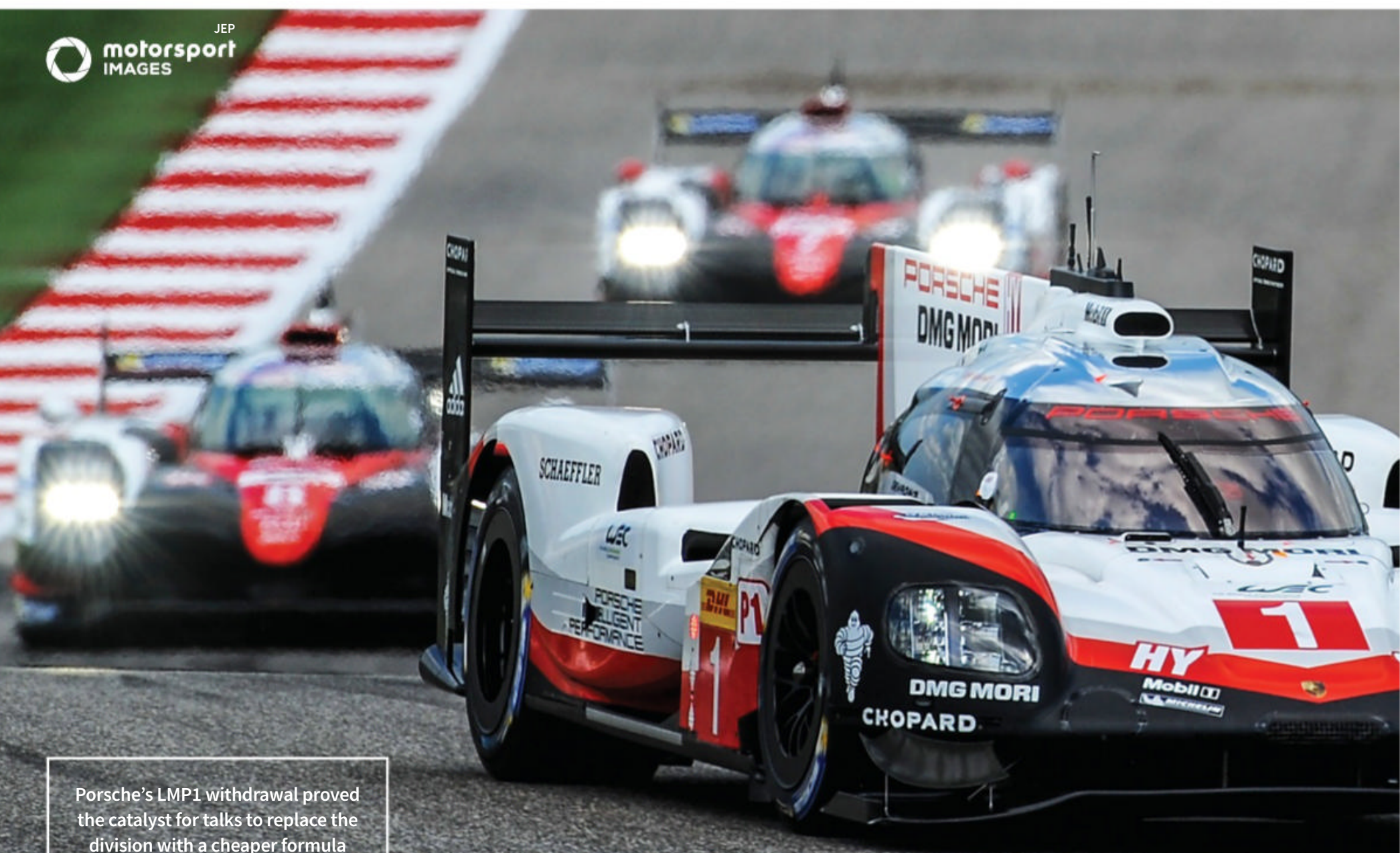


competition we had to look at all those elements and try to do a lot of work to really evaluate the benefits of the different attributes of the different types of cars.”

Klauser — who remembers “lots and lots of meetings, lots!” — stresses that ensuring a level playing field between LMDh and LMH wasn’t just about speed over one lap. “The most important thing was parity,” she says, “and just because two different types of car can turn the same lap times doesn’t mean they are equal in a racing situation.” That hints at the LMDh manufacturers’ concerns about four-wheel drive.

The road to convergence — a term borrowed from the ultimately unsuccessful attempt by the FIA to bring GTE and GT3 rules together in 2012-14 — began a long time before Daytona 2020. The ACO and the FIA had set out to find a new set of regulations to replace LMP1 in the aftermath of Porsche’s shock announcement in July 2017 that it would be ending its involvement early at the end of that year. IMSA’s technical staff were involved in the process, from the roundtables that began in the spring through to the technical working groups that followed in the summer after the ACO and FIA’s vision for LMH was unveiled at Le Mans in June 2018.

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Porsche’s LMP1 withdrawal proved the catalyst for talks to replace the division with a cheaper formula



Aston Martin Valkyrie has not made it into competition

FOX/GETTY IMAGES/REDBULL CONTENT POOL

What were believed at the time to be the final LMH rules were published by the FIA in December 2018. No one could have known at the time that they were in fact far from final. The idea of the ACO and the FIA had been to lower the financial bar to entry into the top prototype class, but in the spring of the following year a group of manufacturers – Ferrari, Aston Martin and McLaren – went back to the rulemakers arguing that they weren't low enough. They also raised the idea of road-going cars going up against the pure-bred LMH prototypes. Aston, of course, took that route with its still-born Valkyrie project.

The WEC had been bullish at the end of 2018 about its future

with LMH. It was privately predicting five manufacturers would be on the grid by the end of the 2021-22 season. As 2019 wore on, it became increasingly clear such a shake-up was hopeful in the extreme. There were also doubts inside the WEC about Aston Martin's commitment. Those ultimately came to pass, the British manufacturer blaming the LMDh announcement for its decision to put the project on what remains a permanent hold. It claimed that the new category undermined a business model based on the sale of customer cars.

The ACO and the FIA ultimately decided that they didn't have a choice but to join up with IMSA on its plans for DPi 2.0, though of course they would never articulate the genesis of LMDh in those terms.

IMSA was never likely to adopt LMH regulations, but its engagement in the rule-making process meant it took the idea of performance windows for aero and drag – easily attainable minimum and maximums to reduce costs that are at the heart of LMH – on board and adopted it as one of the building blocks for the new category initially aimed solely at North America. That definitely helped facilitate the convergence process a couple of years down the line.

Sportscar racing now stands on the brink of what so many are heralding as a golden age, though when the first LMH cars start racing across the Pond in IMSA remains unknown. But there is a confidence among the governing bodies that the convergence process will create the desired level playing field.

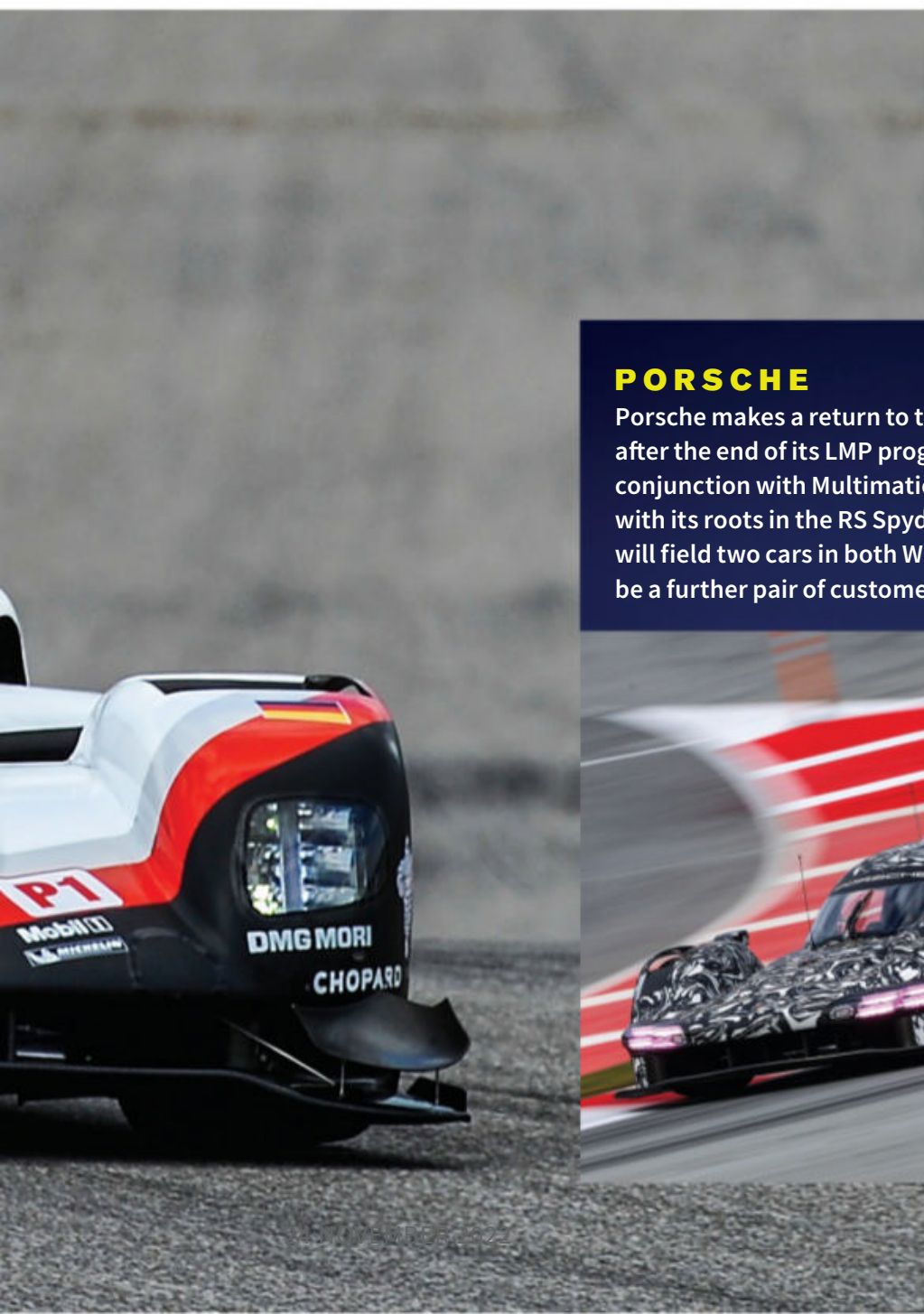
"The ACO, FIA and IMSA have been working in lock step with all of the LMDh and LMH manufacturers on the overall BoP process, on simulation and how the overall competition will be managed to ensure there is performance equity," says Hodgson. "We stand by our statements that we expect every manufacturer will have an equal opportunity to win races and championships." ■

PORSCHE

Porsche makes a return to the prototype ranks only five years after the end of its LMP programme with the 963 developed in conjunction with Multimatic and powered by a turbo engine with its roots in the RS Spyder LMP2. The factory Penske team will field two cars in both WEC and IMSA while there should be a further pair of customer entries in each series.



PORSCHE





THE SPEC HYBRID SPINE OF LMDh CARS

BMW will race its M Hybrid V8 in the IMSA SportsCar Championship next year and the World Endurance Championship from 2024. Project leader Maurizio Leschiutta shares the workings of the spec, rear-axle-mounted LMDh hybrid kit

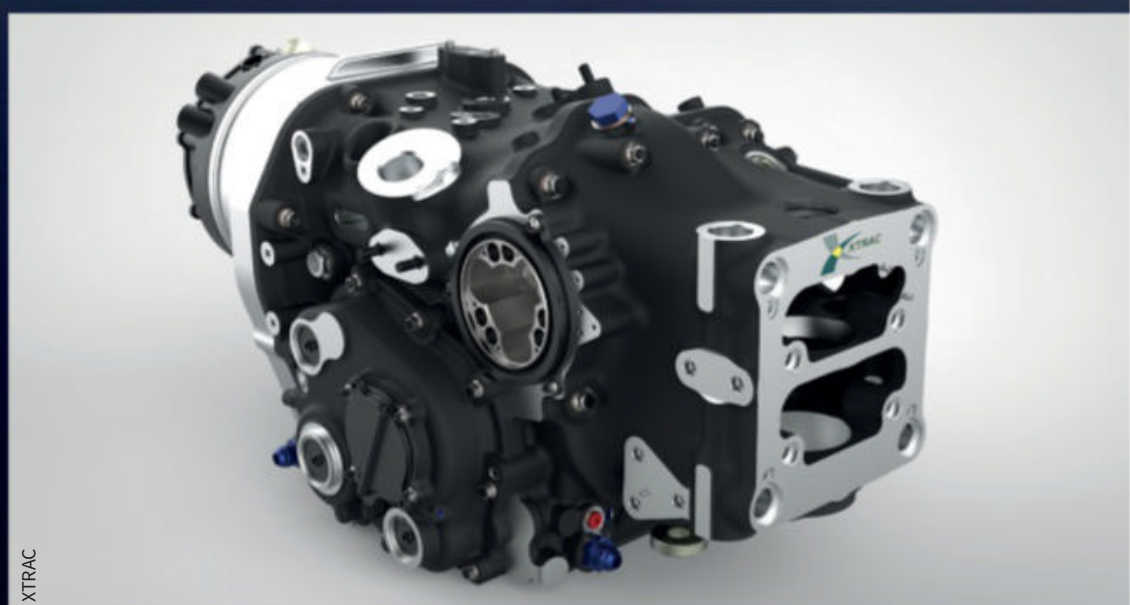
BY JAMES NEWBOLD



BATTERY

Williams Advanced Engineering supplies the battery, which can provide up to 50kW (67 horsepower) of continuous power and has a regen capacity of 170kW. As this contributes towards only a modest element of the drivetrain's maximum power output, which must fall within the range of 480 and 520kW, Leschiutta says it is "a moderate hybrid" but believes it has been pitched right for the class's low-cost and performance-balanced mantra.

"The requirements are modest and the battery can be reasonably small, also because it has to be packaged within an LMP2 cockpit and there's not a lot of space," he says. "It's an excellent compromise and from this point of view I think the Williams battery gets the job done."



XTRAC

ELECTRIC MOTOR

Bosch supplies the motor generator unit, inverter and is also the integration manager for the entire hybrid system. This includes the brake-by-wire, which cannot be overlooked as manufacturers work out how to deploy the hybrid energy most effectively. Control will be shared by the ECU, developed by the manufacturers, and Bosch's vehicle control unit – whose configuration, software and settings are not accessible by teams.

“The electronic braking system is a contribution of the hybrid system to the rear-axle braking, [allowing drivers] to move the brake-bias migration,” says Leschiutta, “so there are a lot of things that you can develop. The key is to integrate these two systems. You have a purely hydraulic system that controls the front brakes and partially controls rear brakes, coupled with an electric motor which is contributing to the rear brake torque, so you want the driver to have a very linear feeling of what's going on.”

The MGU drives through a gear train homologated for each engine and will perform the same regardless of engine type. To Leschiutta, this baked-in parity is “a key attraction of a spec system for this category”.

PACKAGING, RELIABILITY AND SUPPLY

The uniformity of the hybrid system means all LMDh manufacturers start from the same point on packaging, but their cooling requirements will differ depending on styling priorities. BMW has expertise in fully electric powertrains from racing in Formula E, but Leschiutta says applying this to a system linked to an internal combustion engine “was partially new to us”. However, he says “we haven't had any major setbacks” in its software development.

The hybrid kit has been running since the start of the year with Porsche, the most advanced of the LMDh manufacturers in its development path. But this was “a mixed blessing” for the Weissach marque, says Leschiutta, as Porsche “went through all the difficult part of getting things sorted”. BMW has experienced “a few niggling issues” with the hybrid kit on its Dallara-based car, but Leschiutta has found it “a positive experience” all told, with the biggest issue resulting from supply chain delays that are impacting the entire motorsport industry. “Your lead times are much longer than what you are used to working with maybe five or six years ago,” he says, “but you just have to work that into your planning.”



GEARBOX

Xtrac's P1359 gearbox is a seven-speed transverse arrangement that counts the MGU as a fully integrated component and has a maximum power capability of 585kW.

Manufacturer-specific gear clusters, hybrid drive gears and ratios have to be homologated to accommodate the many different approaches to engine architecture taken by manufacturers, and the varying power displacement and torque curves that entails.

It may have been specially developed for the LMDh class, but the 'box uses Xtrac's P1254 integrated valve actuator (IVA) gearchange system, which Leschiutta says is “a fairly conventional and known technology”. The British company has previously collaborated with BMW on its DTM title-winning M4 GT3. “We work with them well,” Leschiutta says. Excluding the MGU, the package weighs 78kg.

LMH OR LMDh?

Leschiutta is in discussions with the organising bodies over how the equity model from convergence between LMDh and LMH manufacturers running bespoke hybrid systems will be reached. He accepts that tolerances in manufacturing and ageing of the components may conceivably mean that not all hybrid systems have the same efficiency, but is confident that BMW has chosen the right path.

“A key attraction of LMDh as a category is that it doesn't escalate into a technological war, whereas the LMH category, which allows a lot of technical freedom to the manufacturers, could conceivably do so,” he says. “We have a cost-effective solution which appealed to us with a very well-defined boundary condition, and the hybrid system in the LMDh car absolutely hits that target on the head. The advantage to the spec system is indeed the same for everyone. It's just one less thing to worry about.”

THE NEW GT4 CONTENDERS TO WATCH

GT4 is set for a shake-up next year as McLaren and BMW introduce new models to market

BY STEFAN MACKLEY

While most of the focus in endurance racing has been on the new LMDh offerings, that's certainly not to say there's no new developments in the world of GT4 competition, with the McLaren Artura and new BMW M4 set to race across the globe in 2023.

McLaren's previous model, the 570S, was released in 2016, with the British manufacturer selling more than 180 examples, the last being produced at the start of this year.

Despite having achieved considerable success over a six-year period,

culminating in last year's GT4 European Series crown, the age of the model was beginning to show, according to McLaren Automotive's director of motorsport Ian Morgan.

"The 570S was done as a way of getting us into GT4 racing and I think it's been very successful in achieving that, but we've learned a lot from the limitations of the car," he admits. "We kept the initial car very much based around road car systems but then were not able to tune the performance of the car up and down, which has been an issue for us going forward. As other manufacturers change

and improve, we've ended up being locked into a position."

Malcolm Gerrish, chief engineer of the Artura, adds:

"The 570S was the right car for the right market at that time, but now GT4 racing has evolved so much we have to evolve with it."

It's a similar story for BMW with its older M4 model, released in 2017, despite it receiving an evo package last year. That allowed Century Motorsport pair Will Burns and Gus Burton to claim last year's British GT title, with Burns and Jack Brown also winning at Snetterton this year.

"The old car was super-reliable, the ultimate 24-hour or endurance car," says Century boss Nathan Freke. "It had a lot of road car stuff, the traction control was wet, dry or off, there was a gearbox mode but that was kind of it really. It is absolutely time for a new car, we maximised the old car because we ran it for five seasons."

McLAREN ARTURA

LENGTH (incl. splitter and rear wing) 4607mm

WIDTH (incl. mirrors) 1938mm

WHEELBASE 2640mm

ENGINE 120-degree V6, twin turbo

CAPACITY 3.0L

ENGINE MANAGEMENT Bosch Motorsport ECU

TRANSMISSION 7-speed SSG

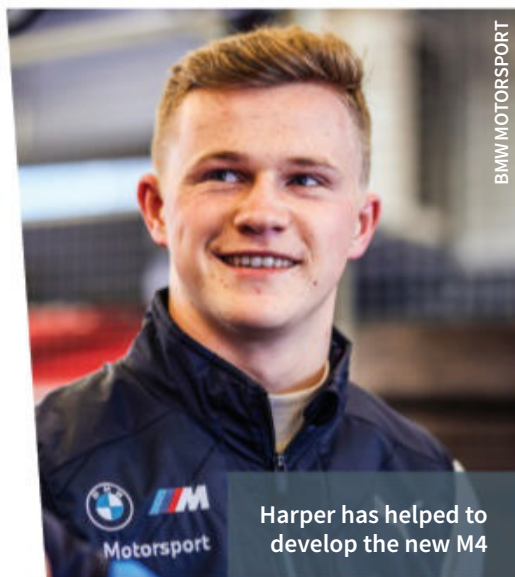




WHAT'S NEW?

Driveability. It's a word used repeatedly by both manufacturers and is the single biggest focus point for the design teams at McLaren and BMW when developing the new machines. Perhaps unsurprisingly when it is often gentleman drivers forking out for their latest products.

"They focused a lot on the driveability for the Am drivers, just make the car easier to drive," says BMW Junior driver Dan Harper.



Harper has helped to develop the new M4

"They did a very good job on that, because the main thing is you feel comfortable in the car. Especially for the Am drivers, if they feel comfortable then they normally go faster."

Harper believes the M4 is "much more of a race car" than the older model, with stiffer suspension and the addition of aspects from the GT3 machine, including the steering wheel and dashboard, helping to enhance that feeling.

The car has a V6 twin-turbocharged engine, as well as 10-way traction control and adjustable front and rear camber, but Richard Wesselak, head of the project, says "nothing exceptionally has been pointed out from the customers".

"There were a couple of things which we thought might have been the weak points," he says. "We've looked at the whole thing, be it systems or chassis set-up, we've tried to build on pretty much everything that we could."

Unlike the Artura, the new M4 model has already been thrown

BMW M4

LENGTH (incl. splitter and rear wing) 4863mm

WIDTH (incl. mirrors) 2093mm

WHEELBASE 2857mm

ENGINE Six-cylinder in-line, twin turbo

CAPACITY 3.0L

ENGINE MANAGEMENT Production-ECU, power for BoP management adjustable

TRANSMISSION 7-speed automatic gearbox by ZF

into a racing situation with factory-run outings in the Nurburgring Endurance Series and the 24 Hours of Portimao, where valuable data was accumulated.

"When you have multiple cars on track it always creates different issues, just running behind other cars can become an issue," adds Wesselak. "There were some issues with punctures for many cars and we also suffered one or two punctures [using Hankook tyres]. It sounds funny, but it was one of our test points, not specifically for that race, but for the project to see how the car handles a puncture. The car came into the pits, we fitted a new set of tyres and we continued the race so there was not a single issue. That's also a very strong point for the car."

"In the past if you had a fast car, you could even probably compensate some reliability issues that you had," says Dominik Nadler, BMW's head of track ►

570S and previous generation M4 are being replaced in 2023



operations. “But nowadays there is five, six cars finishing within a few seconds and if you have any reliability problem you will be out [of contention].”

Driveability, reliability as well as a sense of enjoyment are all aspects McLaren has tried to incorporate into the Artura too.

“It’s got to be consistent,” says Gerrish. “There’s no point in having a car that is ballistic fast when you’re on the peak of the tyre, and then it just drops off and becomes unpleasant for the Am to drive, that’s not what we want. We want something that is as consistent as possible, that’s how you work in our world. If a driver is engaged and enjoying the car, they will push themselves more.”

The new Artura is 220lb lighter than its predecessor and incorporates a carbon chassis. The front wheel width has been increased to offer more grip and less tyre degradation, while a mechanical limited slip differential offers increased rear grip. Radiators have been moved inboard, while the rear bodywork is now detachable without having to remove the rear wing,

making the car more serviceable for teams.

As with BMW, a full motorsport system has been placed on the car, moving away from the road car ECU on the 570S, with adjustable traction and ABS controls – even down to different mappings depending on if the car is using Michelin or Pirelli tyres.

Perhaps the biggest difference, at least compared to the road car, is what will power the Artura GT4. The hybrid power unit has been removed for the racing version, with the 120-degree, twin-turbocharged V6 engine solely powering the car, although Gerrish says this redesign caused surprisingly few headaches. Space under the monocoque where the hybrid battery of the road car would sit, for example, now houses the fuel cell and



Bell says consistent feel is the goal with Artura

ancillary drive system, keeping weight central and low down.

Making a product which is both consistent and engaging takes on even more importance in the world of GT racing, where Balance of

Performance can either hinder or help cars due to changes in power output and weight.

“In our world it’s BoP racing,” says McLaren factory driver Rob Bell.

“Performance is a target and we want to win every race we enter, however the reality is that won’t happen because certain cars will be given BoP breaks at certain circuits. It might not suit our car, so actually the goal is that the car feels good to drive and it’s engaging.”

McLaren has worked hard on this aspect, incorporating Am drivers as part of its

OTHER NEW GT4 CARS COMING IN 2023



It’s not just McLaren and BMW that will begin the season with new GT4 cars, as the Nissan Z (left) and Lotus Emira will also hit the track in 2023.

The Nissan Z, which was unveiled at the SEMA show in Las Vegas earlier this month, will be provided to pilot customer teams in the SRO’s Pirelli GT4 America series and Japanese Super Taikyu Series. Nissan has completed extensive testing of the twin-turbo V6 racer, which will be capable of 450bhp subject to Balance of Performance, and comes fitted with a SADEV six-speed sequential gearbox and Ohlins two-way dampers.

Speaking at SEMA, Nissan’s global programme director Michael Carcamo said: “We’re in the throes of preparing for the 2023 season – testing here locally – and we look forward to continuing to talk with teams and continue to establish the Z as a force to be reckoned with on tracks around the world.”

That means it could soon be represented in British GT for the first time since 2018 with the GT3 GT-R and GT4 370Z.

Another marque that has already made something of a return to the championship is Lotus, which took eight GT4



McLaren has completed endurance tests with Artura



New M4 made its debut in Portimao 24-hour race

development programme, which included a 36-hour test at Paul Ricard, while there have even been outings at Sebring and Daytona.

“The car should never be in a unique scenario with the customer that it hasn’t been in our hands,” says Gerrish. “Hence Daytona and Sebring are unique tracks so we need to go there first so we know what the car will do.”

No stone has seemingly been left unturned by both manufacturers, which is even more impressive given the new cars have been designed, built and developed under the cloud of the COVID-19 pandemic, as well as a global shortage of parts. Yet both have

produced their cars to schedule, with customer orders being taken for 2023.

WHAT TO EXPECT

BMW has yet to release official figures on how many cars it plans to build, but Harper says “there’s a waiting list, so there’s plenty of customers waiting to buy it”.

Century Motorsport will run two of the new M4s next year, one of which will be used in January’s Dubai 24 Hours.

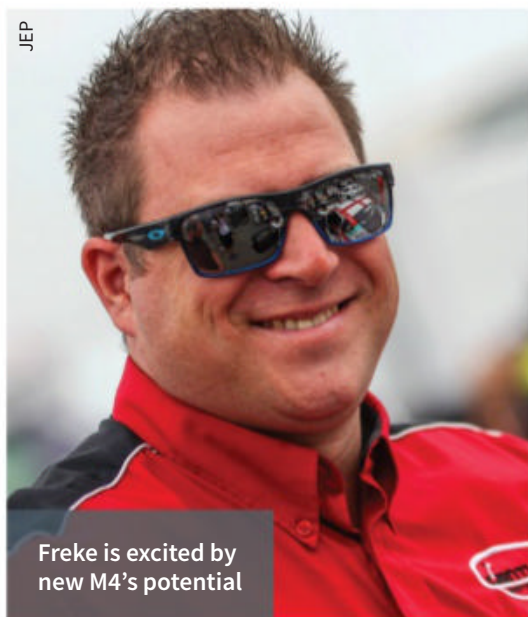
“I’ve worked with BMW for five years and one thing I’ve learned with them is they are very straightforward,” says Freke. “If it’s bad, they say it’s bad. If it’s good, they say it’s good. This new GT4, they’re really

punchy about what they’re saying, so my view is it’s going to be good. We’ve got a massive amount of interest in next year [from drivers], I’ve never received interest like it before and it’s down to this new car.”

McLaren already has 48 confirmed orders, with the Artura GT4’s expected race debut coming in the Daytona 24 Hours-supporting IMSA Pilot Challenge series. A number of the new cars will also be used in the new-for-2023 McLaren Trophy, a one-make championship aimed at Am drivers where the Artura will be free of BoP restrictions, that is all part of McLaren’s push to bring its customer base from the road to the race track.

“The cars look like the road cars, there’s a proper direct link between a race car and a road car,” says Morgan. “It’s the real way you can race on a Sunday and sell on a Monday, and I think that’s important to all of us as manufacturers.”

They may look like the road-going versions, but under the skin the latest racing products from McLaren and BMW promise to be much more. ■



Freke is excited by new M4’s potential

wins between 2011 and 2015 with its previous model, the Evora. Its latest road-going model, the Emira, has been used as this year’s safety car, and will be available for customers to race next year.

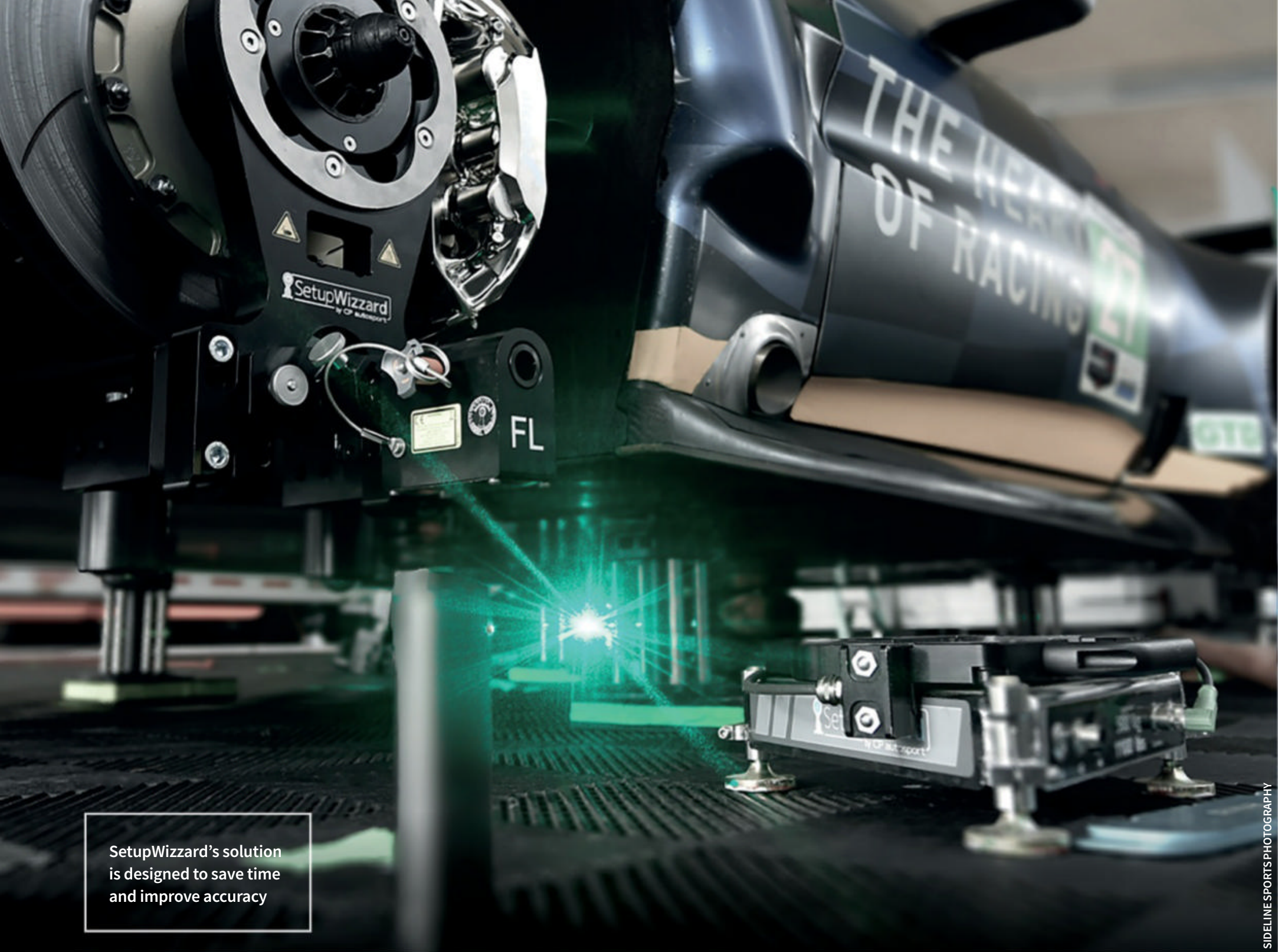
“GT4 is a wonderful category for us and it fits really well with the Emira because it allows us to prove that car through motorsport,” says managing director Matt Windle.

The car (right) will feature a transversely mounted 3.5-litre supercharged V6 Toyota engine capable of 400bhp (BoP dependent), Hewland six-speed sequential gearbox and two-way

adjustable Ohlin dampers. RML is set to build the cars, the first of which are expected to be produced by the end of the year.

Lotus Advanced Performance executive director Simon Lane is looking forward to showing off its “epic noise”. “The first day we fired it up and ran it around the track, I stayed out with the team for a few hours and went back to my office and was struggling to concentrate because all I could hear was the car! On the first day we ran it, we got 400-odd kilometres out of the car, we just ran it all day, so it’s been very reliable from day one.”





SetupWizzard's solution is designed to save time and improve accuracy

SIDELINE SPORTS PHOTOGRAPHY

SET-UP FOR SUCCESS

Devising the best car set-up on any given weekend is vital to successful outcomes in motorsport. Shortcuts are few and far between, but there is a tool that can help...

BY JAMES NEWBOLD

There are an almost infinite number of set-up combinations available to competitors in motorsport that can be tailored for track conditions, driver preferences and car characteristics. The exact same solution is unlikely to be found between two cars from the same one-make series, let alone between factory teams in international GT racing and an amateur racer making their start at grassroots level.

However, the process of establishing base set-ups is surprisingly similar, starting with accurate measurements of the camber, toe, corner weights and rideheight. And depending on how serious the club racer is, they can use the same equipment to set-up their Sports 2000 machine or Mazda MX-5 as a top GT3 customer racing outfit.

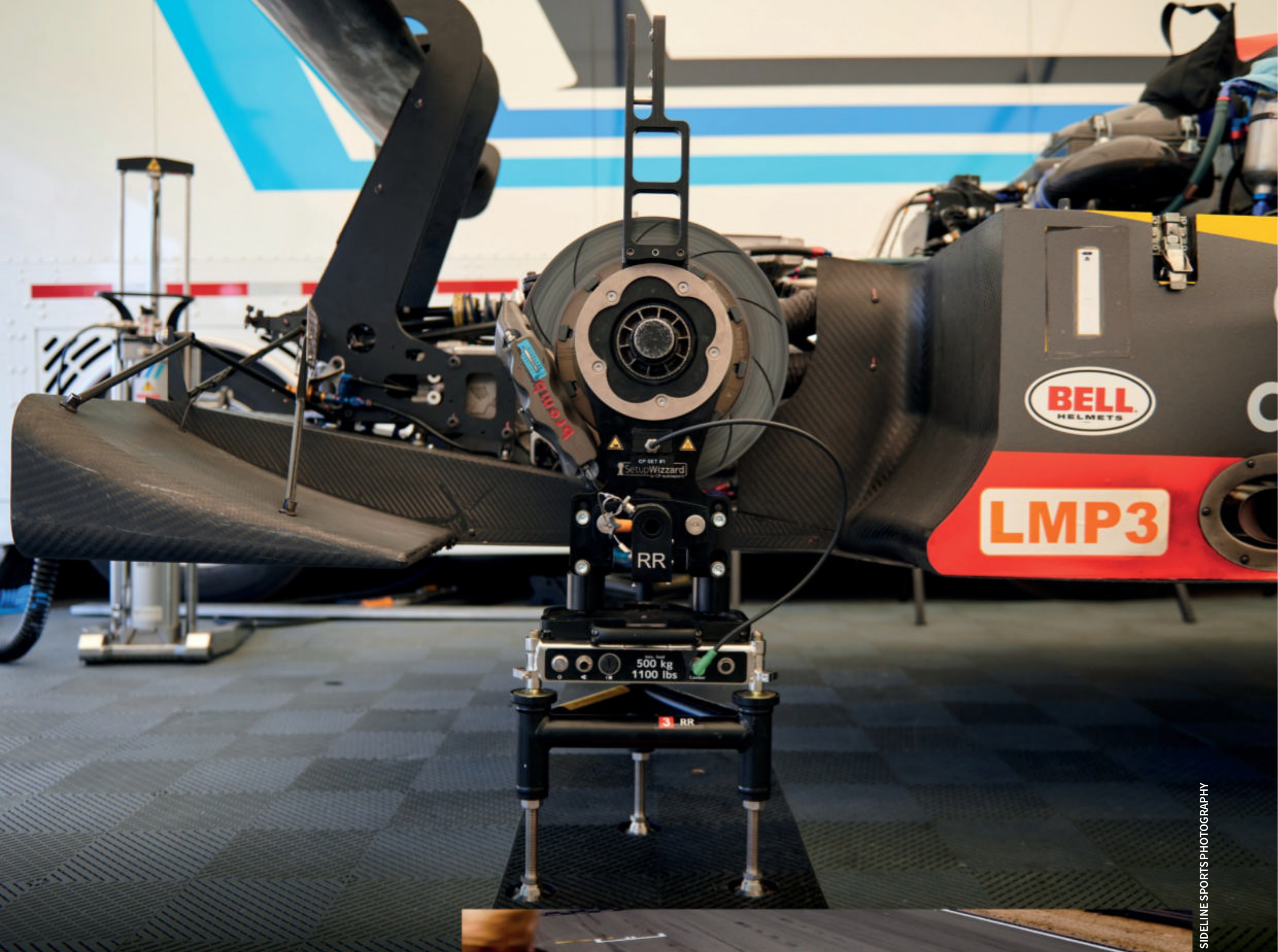
This was something considered impossible in past years as cars typically required bespoke set-up equipment – painstakingly pieced together from numerous suppliers – that couldn't be transferred to other vehicles and had to be sold on when the car changed hands. But that all changed with the advent of the CP Autosport SetupWizzard, developed by long-time Porsche Motorsport supplier, and licensed builder of FIA-standard halos, CP Tech GmbH. Its solution is widely employed by top teams across the world's leading sportscar championships, as well as in single-seaters and touring car racing, with an array of adapters allowing the same equipment to be used across multiple cars.

"I have been using the CP Autosport SetupWizzard since 2018 with great satisfaction," says Renaud Dufour, chief

The SetupWizzard kit is fully portable



CPTECHGMBH



SIDELINE SPORTS PHOTOGRAPHY

engineer for 2021 DTM title-winning squad Haupt Racing Team. “We are using our four systems in all championships we are involved in. The CP system is a very reliable, accurate, repeatable and especially time-efficient way to set up our cars in a high level of competition.”

Clearly, the insight needed to interpret feedback from the driver and make the correct set-up tweaks will have a bigger final impact on the outcome than the set-up equipment used to effect the changes. But, in an era where single-make series are rife and many other championships incorporate Balance of Performance, teams cannot afford to leave any performance on the table as a result of rushed or inaccurate measurements. And according to experienced engineer Owen Hayes, formerly Porsche North America’s motorsport director, the SetupWizzard is an important foundation for all the detailed work that comes next and is more convenient for its users than “the hotch-potch of things that you buy from different people”.

Irishman Hayes first came across it while working for Porsche and “straight away knew what I had on my hands”. Now freelance, he owns the rights to SetupWizzard in the US and has seen a rapid rise in its adoption.



GRUPPEC GMBH

Leading DTM squad Haupt Racing Team has four of the systems

“All I had to do was tell people about it and they got it,” says Hayes, who attends events across the country in a supporting capacity. “You need that baseline to understand what you’re working with. You can’t have equipment that’s giving you values which are all over the map, you need a proper performance baseline that makes sense and that you can always refer to. Hardly a race weekend comes along where you’ve got perfect performance, and what helps you really move closer to that is proper set-up equipment.”

A reliable baseline is especially important when a car is in the

process of being developed.

“We had a car where we noticed the rear axle toe was moving after each session,” Hayes explains. “It turned out there was a weakness and it was flexing, so it helps you identify clear errors to rectify quickly.”

SetupWizzard comes in three package levels – Easy, Basic and Pro – designed to suit the needs and budgets of different customers. The full Pro kit comes with all the bells and whistles inside the black carry box, including scales that come with an inclinometer for measuring camber and a Bluetooth module that sends live readouts of camber and corner weight values to a ▶



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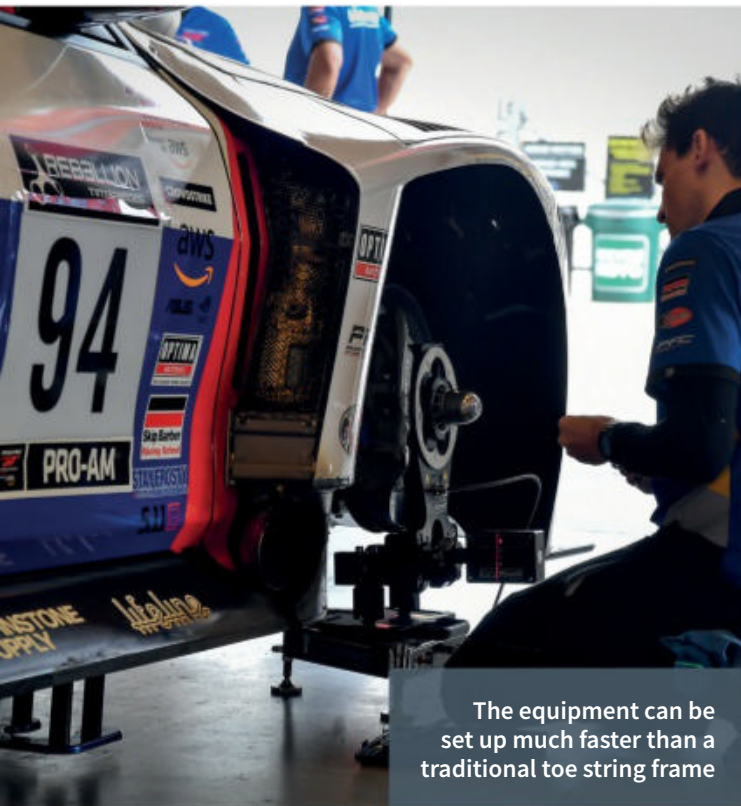


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The equipment can be set up much faster than a traditional toe string frame

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tablet. That means engineers can spend less time on their hands and knees once the equipment is set up, which Hayes says takes less than five minutes.

Once up on jacks with the tyres removed, set-up wheels and adjoining stands are bolted onto the wheel hubs. The car is then lowered onto platform scales – Easy and Basic kits come with levelling pads that can be attached to scales – which at the Pro level are aligned using a positioning laser. “It’s just like any architect or engineer would do out in the field,” says Hayes.

Rideheights are measured by four spring-loaded height gauges that are placed under the car. The set-up wheels are fully adjustable, able to be configured to different track widths as well as heights.

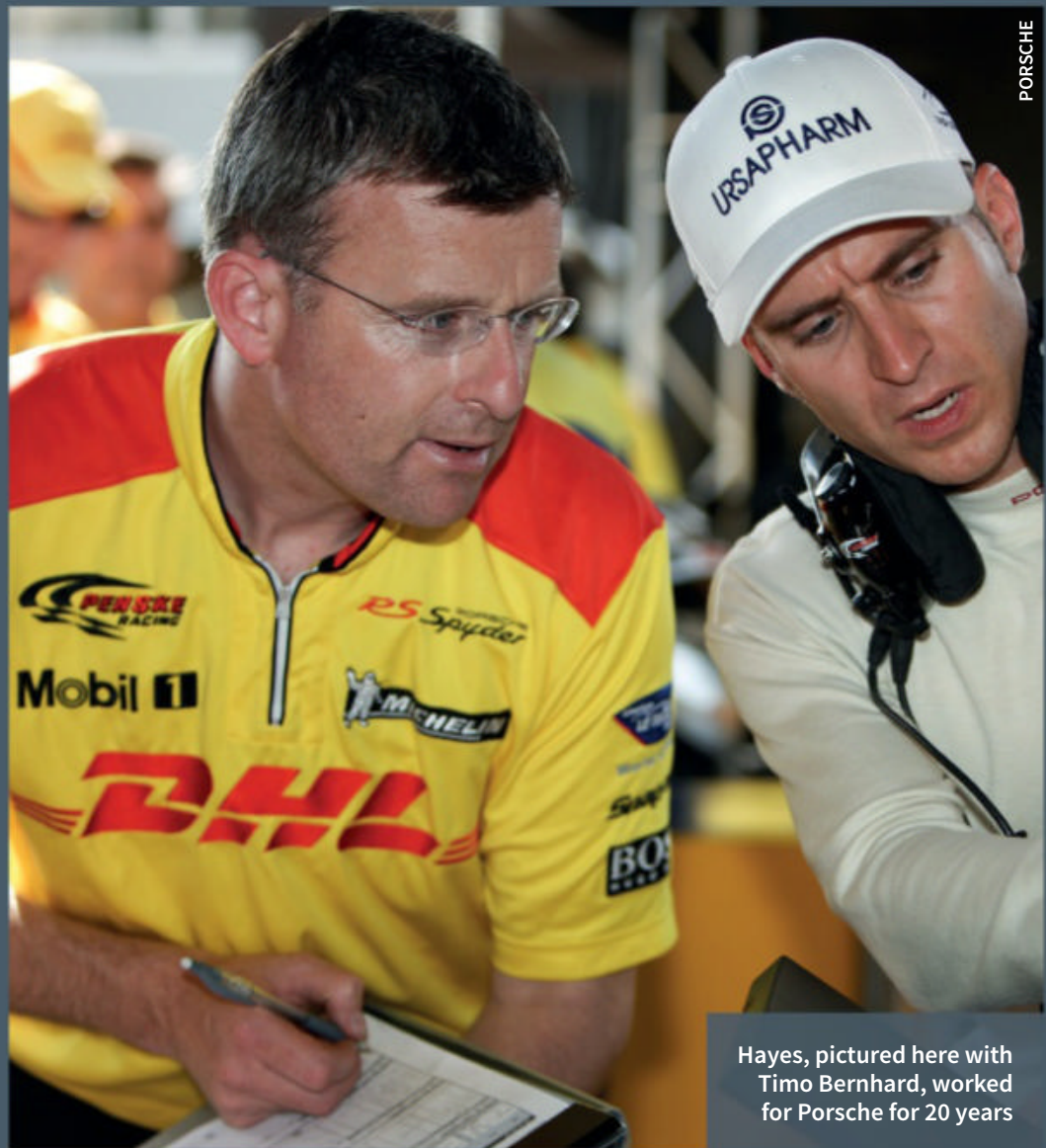
“We have various [camber] shims which go down to 0.5mm resolution,” Hayes says. “You can get the exact same rideheight that you would have operating on hot pressure tyres, or you can adjust the set-up wheels for scrutineering height. The system is extremely tuneable.”

At the secondary Basic level, there is no need for a toe string frame. The package includes toe laser modules that bolt onto the set-up wheels to improve speed and accuracy.

“You can see the values changing as you’re working on the car, it’s so much quicker,” Hayes says. “You don’t have to be running to get a camber gauge and a toe string and tripping over the string.”

Hayes believes the “massive investment per weekend” of any competitor means it is absolutely worthwhile paying for proper set-up equipment.

“It’s such a small investment compared to what you spend over a season,” he says. “You can have the most dominant car in the world, but if it’s not set up properly or you’ve got something completely wrong with the set-up, then you’re going nowhere.” ■



Hayes, pictured here with Timo Bernhard, worked for Porsche for 20 years

PORSCHE

THE GROUNDING OF SETUPWIZZARD'S APOSTLE

Owen Hayes is well-qualified on the subject of car set-ups, having worked on numerous single-seaters and sportscars in a career spanning three decades.

Starting out as a Formula 3 mechanic in 1987 with Eddie Jordan Racing, Hayes met Edward Turner, who later introduced him to AMG in Germany. He spent summers helping out at DTM rounds, during an automotive engineering degree at Bolton University, and made a dream start to his first race engineering role in the 1996 International Touring Car Championship when Jan Magnussen won first time out at Hockenheim.

“It was absolutely incredible, a baptism of fire,” he says.

Following the ITC’s demise, Hayes switched to the FIA GT programme for 1997 and ran Bernd Schneider and Mark Webber close to the 1998 GT1 title. Schneider stormed to pole at Le Mans, but engine problems put both CLK-LMs out early.

“That was devastating, one of the ones that I’ll certainly remember,” he says. “I was absolutely committed

with every single cell of my body to the whole project as regards to just wanting that win. The amount of preparation we did was nuts.”

A two-decade stint at Porsche began in 1999, initially working on the canned LMP2000 project, before heading up the marque’s junior efforts in Carrera Cup.

He was later assigned to engineer Penske-run RS Spyders in the American Le Mans Series for golden boys Romain Dumas and Timo Bernhard, based out of Penske’s Mooresville campus. They won the LMP2 title in 2007 and in 2008, with an outright victory at the Sebring 12 Hours.

“Everything just perfectly meshed in, it was a magical time, punching above our weight at times,” he says. “We didn’t even realise how good it was until the project came to an end.”

Hayes then assumed the role of Porsche Motorsport North America’s racing director, overseeing the management of customer teams, drivers and the factory IMSA SportsCar Championship programme until going freelance in 2019.

HOW TO BE AN ACE ENGINEER

Chris Mower reveals insights from working as a mechanic, engineer and team manager

BY JAMES NEWBOLD

From a humble truckie's mate to mechanic, race engineer and now experienced team manager, Chris Mower has filled just about every position going on a race team in a career spanning more than 30 years across single-seaters and sportscars.

He followed in the footsteps of father Derek by working as a Formula 1 mechanic for Team Lotus in 1992, before they linked up to run the family's Nordic Formula 3000 team that scooped the title in 2001. After stints working for US open-wheel teams and manufacturer programmes in sportscar racing, today he's a senior motorsport programme manager at engineering giant Multimatic, assisting Sebastien Metz with overseeing the Porsche 963 LMDh project.

The young Mower spent much of his youth Stateside as his father took in stints at several Indycar teams, and spent spare weekends fabricating dragsters in Phoenix before getting his first job in Europe "as a gofer" for BSA Automotive in F3000. He began gaining experience as a mechanic on Alain Menu's Anglia Cars Ralt in British Formula 3 and Eddie Irvine's Pacific Reynard in F3000, before joining Lotus. Financial issues meant he went three months unpaid, but he still regards it as "one of my most enjoyable years in racing".

Mower Jr joined Nordic in 1993 initially as a mechanic, but had become a self-taught race engineer by 1996. "As a mechanic you learn about the car and what differences the changes make," he says. "You also do your own studying at home, so you can learn what you need to know

LEVITT/MOTORSPORT IMAGES



Mower (right, with Eric Bachelart) worked his way up to team manager and is now with Porsche partner Multimatic

that applies to what is expected of you."

It wasn't long before he learned that, as an engineer, "you're less in charge of your own destiny" relative to the regimented role of a mechanic. After the team's first win in 1995 courtesy of Marc Goossens, Nordic had some lean years before the arrival of Justin Wilson and lucrative Coca-Cola backing meant it had the budget to forge a title-winning campaign.

"In a single-make formula, a driver can bring you so much more than any part," says Mower. "I've worked with drivers that couldn't get it done – it's much easier with good drivers, you focus on what matters."

When Nordic was sold in 2002, Mower was hired by Conquest Racing as its team manager in Champ Car. He stayed through a tough Indycar unification season in 2008 before joining Panther and claiming three Indianapolis 500 runner-up finishes from 2009 to 2011. Mower says the mark of a good team manager is if they can step away without impacting trackside operations.

"During a race weekend you're there

to put out fires and to ensure that there's nowhere you need to stand in," he says. "If everyone is in the right place doing the right thing, you've done your job."

After being reunited with Ben Bowlby – who had been a works Lola engineer assigned to Nordic in 1994-95 – on the short-lived Nissan LMP1 programme, Mower had spells at the KV Indycar team and at Cosworth before being introduced to Multimatic as team manager on Mazda's Joest-run IMSA SportsCar Championship effort. And when he returned to the UK to be nearer family, after two years with BMW RLL, Multimatic snapped him up.

"I couldn't have wished for it to end up any better," says Mower, who regards charismatic boss Larry Holt as "one of the smartest people I've ever worked with". "You have to really want it, but if you're committed and show that you are good enough time after time, then there are still no boundaries in the way for anyone starting off as a truckie's mate and working their way up to team manager." ■

SUTTON/MOTORSPORT IMAGES



Mower debriefs Nordic's 2001 champion Wilson

TOP TIPS FOR ENGINEERS FROM CHRIS MOWER

- It's so important that you get on with your driver. If you don't like them, put those feelings aside and spend time together. Do what you can to make it work or they won't give 100%.
- You're only as strong as your weakest link, so don't make shortcuts and leave yourself with excuses for not winning.
- So long as you have a certain amount of brains and work ethic, you can go far in racing. If it's a passion, then go for it!

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