



Ferrari reveals radical F1 racer



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HAMILTON STRIKES BACK

Mercedes launches new assault as Lewis speaks out on Abu Dhabi and F1 2022...

'This has nothing to do with Max'

'We have to make sure this never happens to anybody else'

'I lost a bit of faith but I'm very determined'



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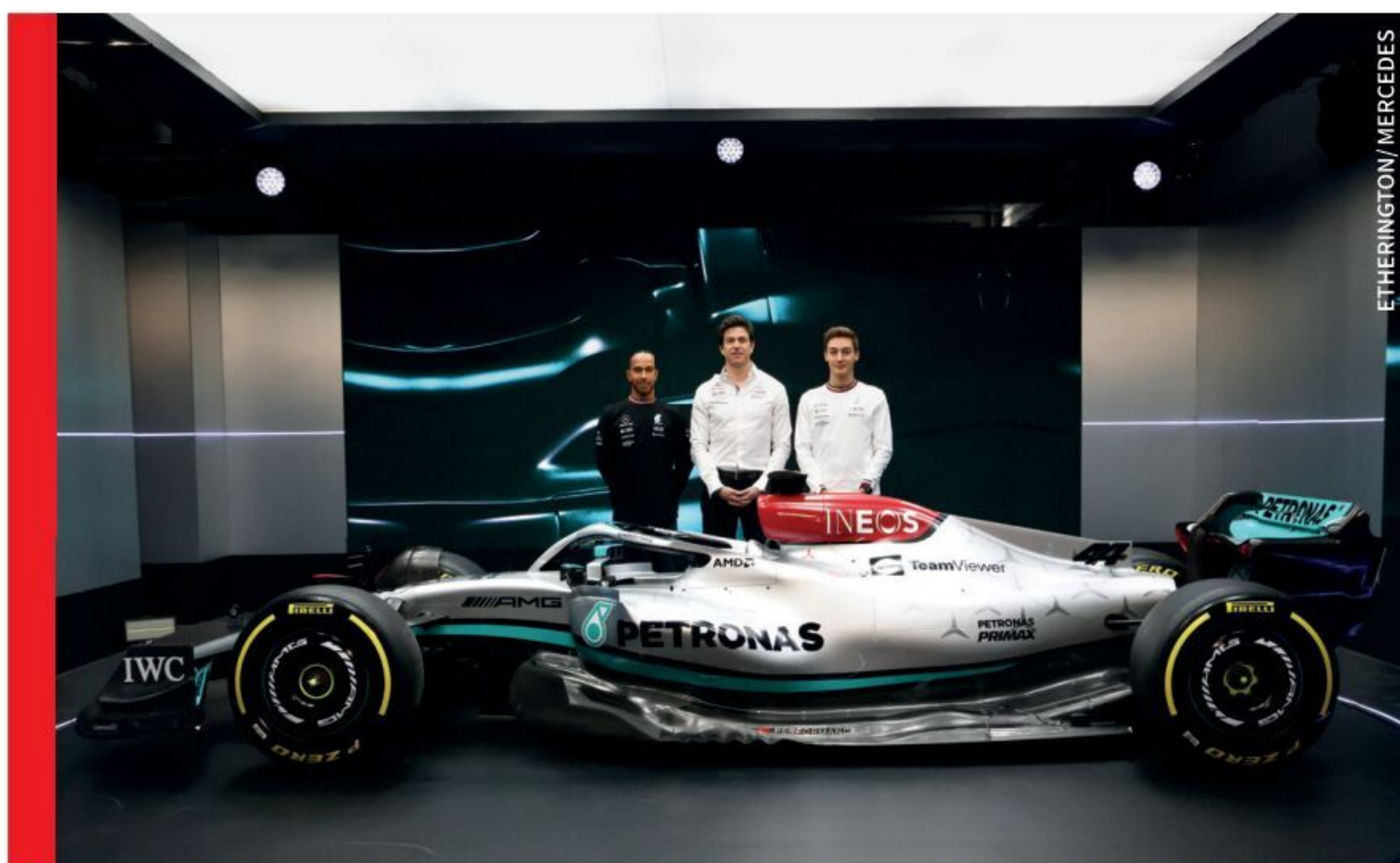


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Hamilton breaks his silence as F1's 2022 cars hit the track at last

It took a while but, when Lewis Hamilton decided to end his silence, he did so with some strong, well-considered comments. Mercedes launched its 2022 Formula 1 attack last week and, as our piece on page 20 shows, Hamilton did not mince his words concerning December's controversial Abu Dhabi Grand Prix finale, or his desire to make sure the FIA changes (p4) result in real improvements.

Hamilton was also careful not to criticise Max Verstappen in the whole saga while at the same time saying that "we will obviously grow from our races and experiences we had last year", indicating he hopes – or expects – a cleaner on-track fight this time around...

Of course, many fans hope the battle at the front won't just be about Mercedes and Red Bull in 2022. It really is about time Ferrari challenged for its first titles since the team's 2008 constructors' crown. The new F1-75 certainly looks the part and, as Luke Smith discovers on p28, there is an air of cautious optimism coming out of Maranello.

As well as looking at the latest Mercedes and Ferrari machines, our Technical Editor Jake Boxall-Legge also casts his eye over the Alpine, Williams and Alfa Romeo contenders, as testing kicks off this week.

Also getting under way before the end of February is the IndyCar season. David Malsher-Lopez investigates Romain Grosjean's chances and picks out the main storylines in our preview on p34.



Kevin Turner

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NEXT WEEK
3 MARCH

F1 test war analysis
Our expert team in Spain
assesses the 2022
contenders

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FREE WITH THIS ISSUE



ENGINEERING SUPPLEMENT

The technical challenges of the WRC's new hybrid era and Audi's ground-breaking Dakar contender feature in our 28-page special.



Masi will be replaced by two alternating directors: Freitas (inset top) and Wittich (inset bottom)

SBLOXHAM
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IMAGES

MASI OUSTED FROM RACE DIRECTOR ROLE

FORMULA 1

Formula 1 race director Michael Masi has been axed from his role for 2022, with the FIA splitting the task between two alternating officials who will be given additional support.

Masi's future had been in doubt throughout the FIA's investigation into last December's Abu Dhabi Grand Prix season finale, where he failed to apply two of the sporting regulations fully, leading to the last-lap restart that ultimately decided the world championship when Max Verstappen overtook Lewis Hamilton.

Following an F1 Commission meeting in London last week, FIA president Mohammed Ben Sulayem released a video in which he announced major changes for this year in response to the Abu Dhabi investigation. The race director role will be shared by Eduardo Freitas and Niels Wittich in 2022. Masi, who held the post for three seasons, will be offered a new position within the FIA.

Freitas has more than 20 years' experience as a race director, and has overseen World Endurance Championship events since 2012, while Wittich previously served as the race director of the DTM. Both are set to get to work in the role this week at Barcelona during the first pre-season test. Freitas and Wittich will have added support in the form of Herbie Blash, who was the late Charlie Whiting's long-serving deputy until 2016, and returns to F1 as a senior advisor.

Another measure that is set to ease the burden on the race director is the introduction of a new virtual race control room, which Ben Sulayem compared to the highly controversial VAR from football. Teams will also no longer be able to communicate directly with the race director, with a new process set to be introduced to make radio chatter less intrusive in the wake of the appeals in Abu Dhabi by both Red Bull and Mercedes. The pitwall-to-race-control radio communications will no longer be broadcast.

"With this plan, FIA opens the way for a new step forward in F1 refereeing," said Ben Sulayem. "Without the referees, there is no sport. Respect and support of the referees is in the essence of the FIA. That is why these structural changes are crucial in a context of strong development and the legitimate expectations of drivers, teams, manufacturers, organisers, and of course, the fans."

While the announcement offers some answers to one of the biggest sagas of the off-season, there are still calls for the FIA to publish the Abu Dhabi investigation in full. While there have been some suggestions that the FIA plans to keep the report secret, Autosport understands that a final decision has not yet been taken about what will happen. One possibility is for the FIA to publish it after approval from the World Motor Sport Council at its next meeting, which takes place on the eve of the F1 season opener in Bahrain.



Speaking for the first time about his title defeat in Abu Dhabi, Hamilton admitted he had “lost a little bit of faith within the system” and that the FIA had work to do to regain his trust. “This first announcement is perhaps a first step of that,” he said. “But that doesn’t necessarily change everything just yet. We have to see actual action and I think it will take a bit of time.”

Mercedes F1 boss Toto Wolff welcomed the moves by the FIA, believing some of the decisions that had been made in recent years proved the need to restructure. “Certainly the role of race director is not easy, and now we’re having two very experienced guys up there, that is good,” he said. “But the support structure that has been built around them is essential, not only in the race director’s room, but also with a remote control room where the race directors can rely on feedback and inputs to make the decision-making process easier for them.”

“I believe that the last couple of years, we have seen a little bit of freestyle in the interpretation of the regulations. So yes, I’m happy with what has been implemented by the incoming president.”

Additional changes are also planned to the sporting regulations surrounding safety car restarts, and will be discussed at the upcoming F1 Commission meeting ahead of the new season. One tweak that has already been made is that the safety car will get the call to pit at the end of the following lap sooner than in previous years. Instead of the call being made when the last lapped car has passed the leader, it will now be given when the lapped cars are told they can overtake.

This was part of a handful of changes detailed in the updated sporting regulations issued last week. Notably, the rule that required drivers starting in the top 10 to use their tyres from Q2 has been scrapped, giving the full grid a free choice of starting compound.

LUKE SMITH & JONATHAN NOBLE



Michael Andretti raced in F1 in 1993 with the McLaren team

Andretti plans start-up F1 team for 2024 season

FORMULA 1

Formula 1 has attracted a potential new entrant for 2024 with the revelation that Michael Andretti has set his sights on setting up a new team.

A tweet sent by 1978 world champion Mario Andretti late on Friday night lifted the lid on his son’s plans. “Michael has applied to the FIA to field a new F1 team starting in 2024,” it read. “His entry, Andretti Global, has the resources and checks every box. He is awaiting the FIA’s determination.”

Last year the younger Andretti, who heads up the Andretti Autosport operation that races in IndyCar, Indy Lights, Formula E, Extreme E and Australian Supercars, was in talks to buy the Alfa Romeo team and the Sauber company behind it. But he was left frustrated at the eleventh hour when main shareholder Finn Rausing opted not to sell.

With the new Concorde Agreement in place and the cost cap now introduced, all 10 existing F1 teams are in good financial health, so there are no longer any bargains to be had for potential buyers, with ‘franchise’ values rising. Andretti now appears to have decided instead to pursue his own project and start from scratch. Sources suggest that a headhunting organisation has already been talking to F1 personnel about an unnamed

project that would start in 2024.

Despite his father’s claim of an application to the FIA, no formal entry process appears to be open at the moment, and it’s not clear what the procedure would be. One big challenge that any new team would face is a \$200million entry fee incorporated in the current Concorde Agreement, and which is a “dilution fund” designed to protect the value of the 10 existing teams.

While there are significant hurdles for any possible new operation by Andretti, it comes at a time when American F1 interest is at a high level. A second US race has been added to the calendar this year in Miami, while Las Vegas remains engaged in discussions over a potential grand prix in the coming years. F1 also announced last week that it had agreed a new five-year contract with the Circuit of The Americas in Austin, Texas, to continue hosting the United States GP. The track joined the calendar in 2012, and welcomed a record crowd of 400,000 over three days last year.

Several teams have attracted US investors in the past two years, notably McLaren and Williams, while American tech giants have entered F1, such as Cognizant at Aston Martin and Oracle at Red Bull. One of Andretti’s own IndyCar sponsors, Gainbridge, is also a backer of the Miami GP.

ADAM COOPER & LUKE SMITH

Toyota reworks LMH car for 2022 season

WEC

Toyota has reworked its Le Mans Hypercar to incorporate different size wheels and tyres for the 2022 World Endurance Championship. The Japanese manufacturer isn't confirming it yet, but it is known that it has switched to the second of the two options allowed in the rules.

The Japanese manufacturer's four-wheel-drive GR010 HYBRID ran with 14-inch tyres front and rear in its title-winning debut season in 2021. Testing this year has taken place with 13.5in fronts and 15in rears, the same option chosen by Glickenhaus for its rear-drive 007 LMH.

So far Toyota has only said that it will reveal the full technical specification of the 2022 version of the

GR010 just prior to the official WEC prologue test at Sebring, the weekend before the season-opener at the US venue on 18 March.

Toyota's switch between the two tyre-size options in the regulations has been influenced by rule changes following the completion of the process of convergence between the LMH category and sister LMDh class, which comes on stream next year. The so-called '120 rule', the minimum speed in kilometres per hour at which power can be deployed at the front wheels by an LMH hybrid when the cars are on slicks, has become part of the system of Balance of Performance.

That means that this speed and the 150km/h minimum enforced last year when the cars were on wet-weather tyres can change from track



to track and from car to car. Toyota appears to have concluded that those speeds will be pushed higher under the BoP, reducing the benefit of the wider front for an all-wheel-drive car.

It is unclear at this stage whether the change in the

tyre configuration of the Toyota will count as one of the five evolutions allowed on performance grounds, known as 'evo jokers' in the regulations, to each manufacturer over the life cycle of an LMH.

GARY WATKINS

Porsche runs for 2000km at Barcelona test

WEC/IMSA

Porsche's new LMDh prototype completed 2000 kilometres on its maiden test at a proper race track last week when new signings Felipe Nasr and Dane Cameron were among the drivers to put the car through its paces at the Circuit de Catalunya.

The distance covered at the Barcelona track more than doubled the running that has been put on the hybrid machine, which began running at Porsche's Weissach test facility last month. The German make has not stated which other drivers joined Nasr and Cameron, who were signed last year to lead development of the hybrid machine, at the multi-day Barcelona test.

Two-time overall IMSA champion Cameron, who also drove the car – which will take Porsche back to frontline sportscar racing in the World Endurance and IMSA SportsCar championships next year – at Weissach, explained that the Porsche made



“consistent progress” at Barcelona.

“Each day we managed to cover more mileage and the performance improved noticeably,” said Cameron. “At this early development stage, it's not about pushing to the very limit – our approach is very conservative. Based on this, my impression is extremely positive.”

Urs Kuratle, director of the LMDh project at Porsche, expressed satisfaction with the Barcelona run and suggested that it was making up for time lost to a delay in the start of the test programme caused by supply-chain issues. He said the distance covered

in Spain “shows that we used the time after the planned but cancelled tests very well”.

The latest test of the car developed in conjunction with Multimatic Motorsport was described as “an enormously important step” by Porsche Motorsport boss Thomas Laudenbach. He added that he found it “very impressive” how the key players in the project worked together at the test, at which more than 70 personnel were present from Porsche, Penske (which will run the factory cars in the WEC and IMSA) and Multimatic, as well as tyre supplier Michelin.

GARY WATKINS

Top BMW squad back in GTWCE

GT WORLD CHALLENGE EUROPE

Two-time Spa 24 Hours winner Rowe Racing is switching back to the GT World Challenge Europe after a season in the DTM to run a two-car factory programme with BMW. It will field a pair of new M4 GT3s for six works drivers across the five Endurance Cup rounds of the series.

BMW stalwarts Augusto Farfus and Nicky Catsburg will renew the partnership that yielded the Intercontinental GT Challenge title with Walkenhorst Motorsport in 2020. They will share one of the M4s with Nick Yelloly, a BMW driver since 2019. The second M4 will be driven by the three members of BMW's junior programme: 2019 Porsche Carrera Cup GB champion Dan Harper, Max Hesse and Neil Verhagen, who have cut their teeth with BMW racing on the Nurburgring Nordschleife since 2020.

It will be Rowe's first campaign with BMW in the GTWCE, formerly the Blancpain GT Series, since 2018. Its switch to Porsche, while still running Bimmers at the Nurburgring 24 Hours, yielded a second Spa victory in 2020 with a 911 GT3-R after its 2016 triumph with the BMW M6 GT3.

"It is going to be an exciting year, with



Left to right: juniors Harper, Verhagen and Hesse clearly have standard-issue BMW hair gel

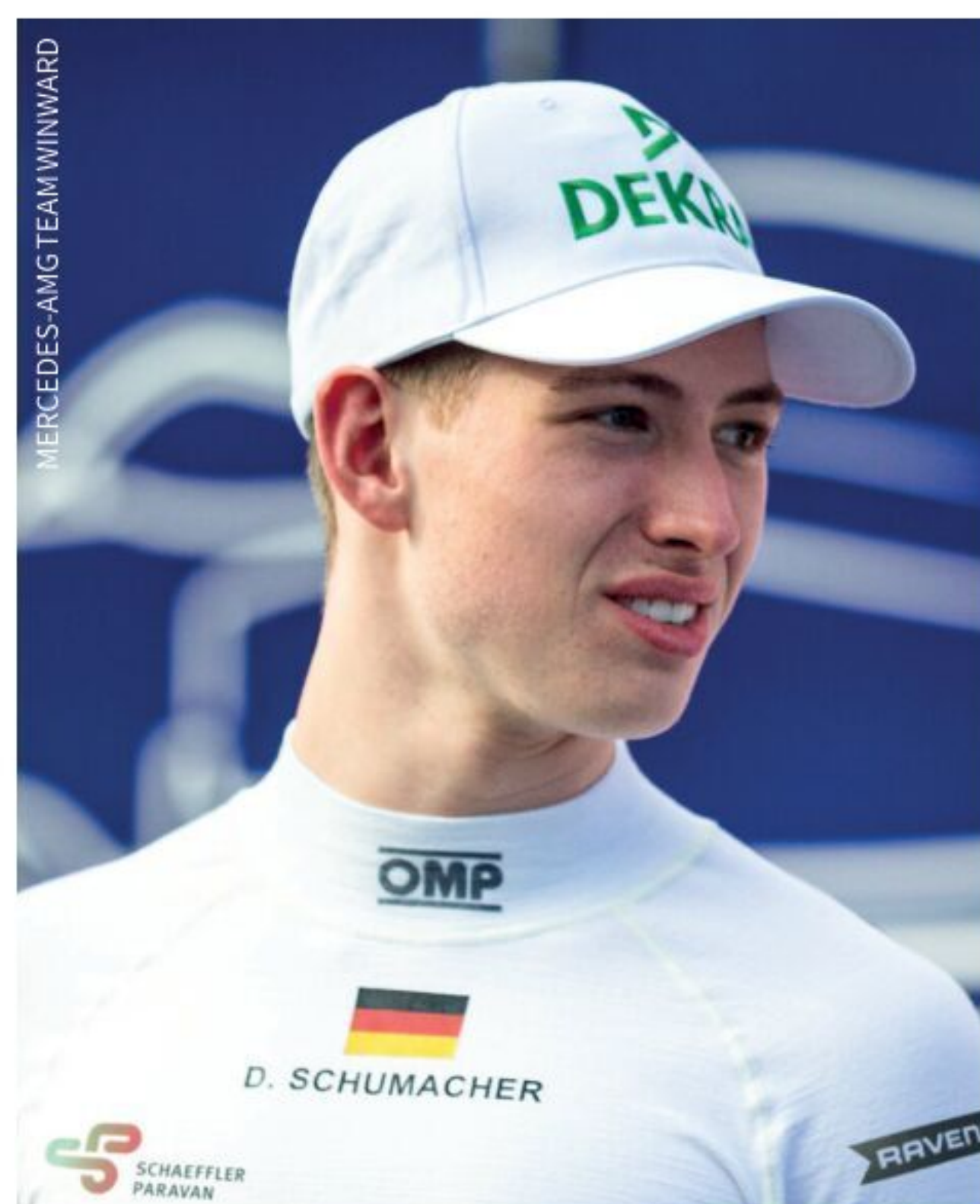
three very experienced BMW M works drivers in one car and the three guys from the BMW junior team in the other – it is the perfect mix," said Rowe team boss Hans-Peter Naundorf. "We are very proud that BMW M Motorsport has entrusted us with accompanying the next step of the BMW junior team."

Former BMW Motorsport boss Jochen Neerpasch, who is a consultant on the revival of the junior programme he launched in 1977, explained that the three juniors

had now "completed their apprenticeship on the Nordschleife". "They will be put to the test in the GTWCE," he said. "They will be driving at race tracks that are new to them, and will be up against the best GT drivers in the world."

Rowe will also return to the Nurburgring 24 Hours in May with a pair of M4s as it bids to repeat its 2020 victory with the M6. The factory drivers for this programme have yet to be announced.

GARY WATKINS



Schumacher joins bulging DTM

DTM

Mick Schumacher's cousin David is jumping off the single-seater ladder into the DTM this season, and will follow in the footsteps of his father Ralf by driving for Mercedes.

Schumacher (left), whose uncle Michael also contested a few DTM races in 1990-91 as a Mercedes junior, took part in the marque's young-driver test at Paul Ricard last November. He will now partner reigning champion Maximilian Gotz and established DTM racer Lucas Auer at the Winward Racing squad of AMG GT3s.

The naming of Schumacher as part of an eight-car line-up for Mercedes in the DTM is just the latest in an explosion of interest

for the series, which is now entering its second season under GT3 regulations. To date, 27 drivers have been named, with not all seats yet assigned. One of these could go to Porsche factory star Laurens Vanthoor, who has been tipped for a berth at the SSR Performance squad as it enters the series.

In recent days, two-time DTM runner-up Nico Muller has been confirmed as remaining with Team Rosberg to once again spearhead its two-car team of Audis. BMW has announced Schubert Motorsport joining the series, with Philipp Eng returning to the DTM to partner Sheldon van der Linde. And Lamborghini star Mirko Bortolotti has been named in the GRT Grasser squad's four-car line-up of Huracan GT3 Evos.

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DAMS was initially a force in F3000. This is Olivier Panis en route to 1993 title

TOP DAMS SINGLE-SEATER WINNERS

DRIVER (SERIES)	WINS
Sebastien Buemi (FE)	13
Romain Grosjean (GP2/Auto GP)	10
Nicolas Lapierre (GP2/A1GP)	8
Alexandre Premat (A1GP)	7
Carlos Sainz Jr (FR3.5)	7
Erik Comas (F3000)	6
Jose Maria Lopez (FRV6/GP2)	6
Nicholas Latifi (F2)	6
Neel Jani (FRV6/A1GP)	5
Kamui Kobayashi (GP2)	5
Alex Lynn (GP2)	5
Kevin Magnussen (FR3.5)	5

Ex-F1 racer Pic takes over DAMS

FORMULA E/FORMULA 2

Ex-Formula 1 driver Charles Pic has secured an agreement to take over the DAMS Formula E and F2 team from the founding Driot family. He takes control from co-team principals Olivier and Gregory Driot, the brothers who had been in charge since the passing of their father Jean-Paul in 2019.

DAMS, which initially stood for Driot Arnoux Motor Sport and began in Formula 3000 in 1989, will remain unchanged under Pic's ownership. Driver line-ups and team personnel will stay put under managing director Francois Sicard and chief engineer Remi Decorzent.

Pic, 32, has long held ties to DAMS. His grandfather Charles-Pierre Andre supported former DAMS drivers Eric Bernard and Olivier Panis, while younger brother Arthur raced for the team in Formula Renault 3.5.

"I am still very passionate about motorsport, and this is a long-term project," said Pic, who moved into management in 2015 after ending his full-time racing career. "I hugely believe DAMS can be successful both on and off track and I can't wait to see what we can achieve with Francois, Remi and the rest of the DAMS team members."

In a joint statement from the Driot brothers, they revealed that the team wasn't up for sale before Pic's approach, but felt

that he was the right person to lead it forward. "We were contacted by Charles and very quickly found his approach and vision in line with our values and racing spirit," they said. "Charles has achieved a lot in motorsport, he's a great asset and his plans will bring the team forward and help maintain DAMS's successful legacy."

DAMS is preparing for the 2022 F2 series with a line-up of Roy Nissany and Ayumu Iwasa, while it continues to run the FE Nissan e.dams squad in FE, with Sebastien Buemi and Maximilian Gunther driving.

HAYDN COBB

➔ P71 DAMS TOP FIVE

GB3 title contender Simmons secures F3 seat

FORMULA 3

GB3 Series runner-up Ayrton Simmons has joined the FIA Formula 3 grid for the 2022 season.

The 20-year-old Hispano-Essex racer (right) has joined Czech squad Charouz Racing System, with which he made his FIA F3 debut in last year's Sochi finale. He is one of three drivers from last year's top four in GB3 to graduate to F3, alongside

champion Zak O'Sullivan and Reece Ushijima.

"It will be interesting to race against some of the best young drivers in the world and to race on legendary tracks, especially at Silverstone which will be my home race," said Simmons. "A good result there would be a dream."

Simmons is just one of the recent announcements that have brought the 30-car F3 grid to just three short

of completion. Indian Kush Maini, Simmons's predecessor as the GB3/British F3 runner-up, has joined Dutch operation MP Motorsport for his rookie F3 season. Formula Regional European by Alpine race winner David Vidales has joined Campos Racing, whose late founder Adrian Campos Jr supported his early career, and American Brad Benavides is at Carlin.

MARCUS SIMMONS



IN THE HEADLINES

NO CHANGE AT ALPINE

Alpine will go into this year's World Endurance Championship with an unchanged driver line-up. Nicolas Lapierre and Matthieu Vaxiviere were announced last week as renewed driving partners in the Signatech-run Alpine-Gibson A460 for Andre Negrao, who was named in the car on the publication of the series entry list.

YPRES WINS WRC SLOT

Belgium's Ypres Rally has filled the final slot on this year's World Rally Championship calendar. Since the Rally Northern Ireland project fell by the wayside for 2022, Ypres's bid for a second year was up against the Czech Republic's Rally Zlin, but the Belgians won the race for the vacant 18-21 August date. WRC chiefs say that the door remains open for Zlin in future.

WURZ JR IS CHAMPION

Charlie Wurz, the son of ex-F1 driver and Le Mans winner Alex, clinched the UAE Formula 4 title with one race to spare at last weekend's Yas Marina finale. Wurz defeated Ferrari junior Rafael Camara and Brit Aiden Neate, all three driving for Prema. Among a strong Anglo-Irish contingent, others to impress across the five events/20 races included Alex Dunne (two wins with Hitech GP), Taylor Barnard (one win with PHM), plus podium-finishing Hitech part-timers Ollie Gray and Luke Browning.

FITTIPALDI GETS F2 SEASON

Enzo Fittipaldi has been named as the second driver for Charouz Racing System's FIA Formula 2 line-up this season. It's his second season with Charouz – he started the 2021 FIA F3 campaign with the team but then switched to F2, before sustaining a fractured heel in a startline smash with the stalled car of Theo Pourchaire in Jeddah. Fittipaldi joins Esports star-turned-single-seater promise Cem Bolukbasi at the squad. Just one of the 22 F2 seats – the second Trident car – is unfilled.



Butcher stays in Toyota line-up

BTCC

Amid the flurry of the British Touring Car Championship silly season, official Toyota team Speedworks Motorsport had stayed conspicuously silent. The squad was one of three to be granted the loan of an additional TBL entrants' licence from series organiser TOCA to potentially allow a three-car line-up of Corollas, but little information was leaking from its Cheshire workshop.

It was always known that the team wanted its three-times-in-2021 race winner Rory Butcher to stay on, and why wouldn't it? But then clandestine rumours of a very big name signing began – and drifted away again on the wind.

What we know for sure is that Butcher is secure. This was announced on Tuesday, and remarkably represents the first time that the Scot will stay in the same car as he campaigned the previous season. He took time to get to grips with the Toyota in 2021, but once he had done so he was one of the late-season form men, and took seventh in the championship.

"Rory is the first to admit to taking a little time to get his head around things, and it was the first time we've worked with a new driver in a long time," said

Speedworks chief Christian Dick. "Once we worked that out and understood each other better, the results started to come.

"There's still work to come that's exciting because we know we're in a good place as a baseline. That reinforces our positivity. We can't wait to get out into testing and the season starting."

Speedworks, of course, operated the test 'mule' Corolla with the new-for-2022 hybrid from Cosworth and the development M-Sport-built TOCA customer engine. Is that an advantage? "You've got to say a small amount, but probably not as much as people think," said Dick. "TOCA and Cosworth were very fair, and we had no access to the data, but you do start to understand what's required and get a feeling for it."

And what about the other drivers? Autosport sources have suggested two contenders, both of whom have strong GT pedigree but have yet to contest a full BTCC season, for the second car. Dick was staying schtum on that, but did confess to reports that Nicolas Hamilton could pilot the third Toyota. He said that "the third car is a possibility", and that "we've been speaking to Nic a lot – I would love to put something together for him".

MARCUS SIMMONS

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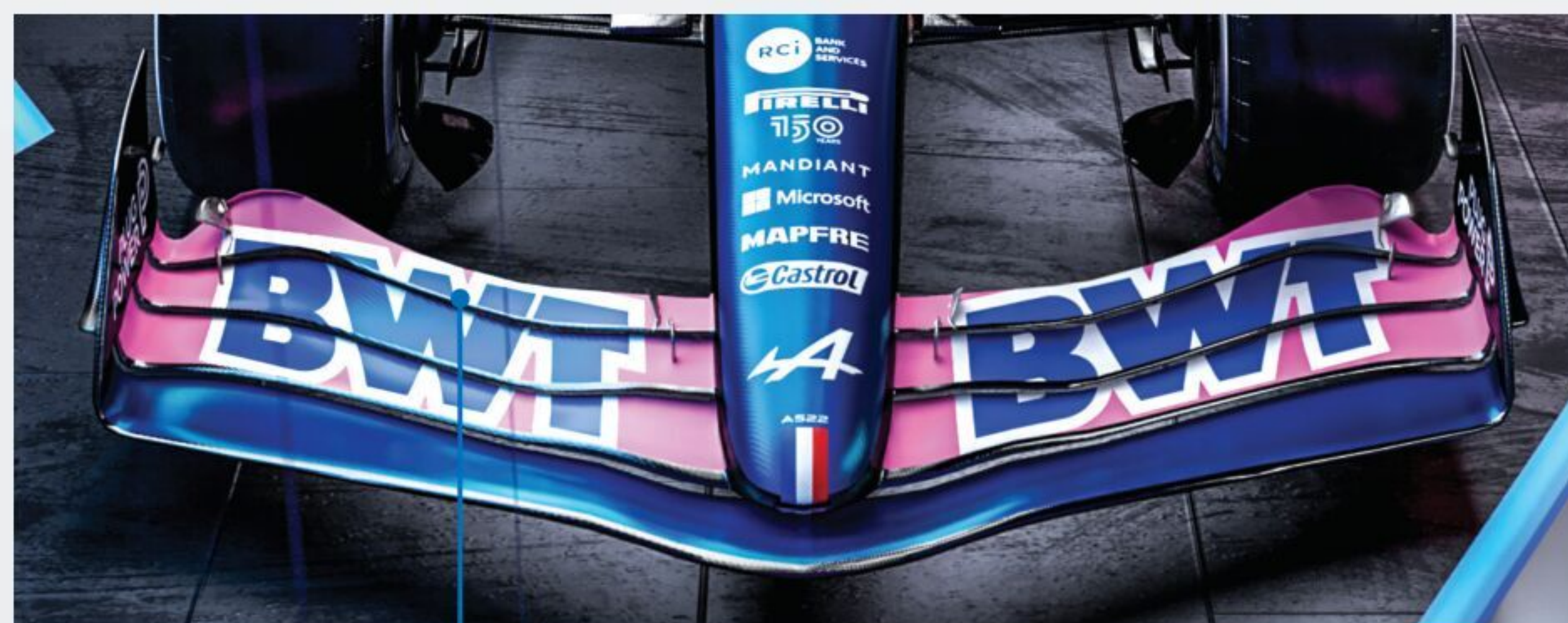
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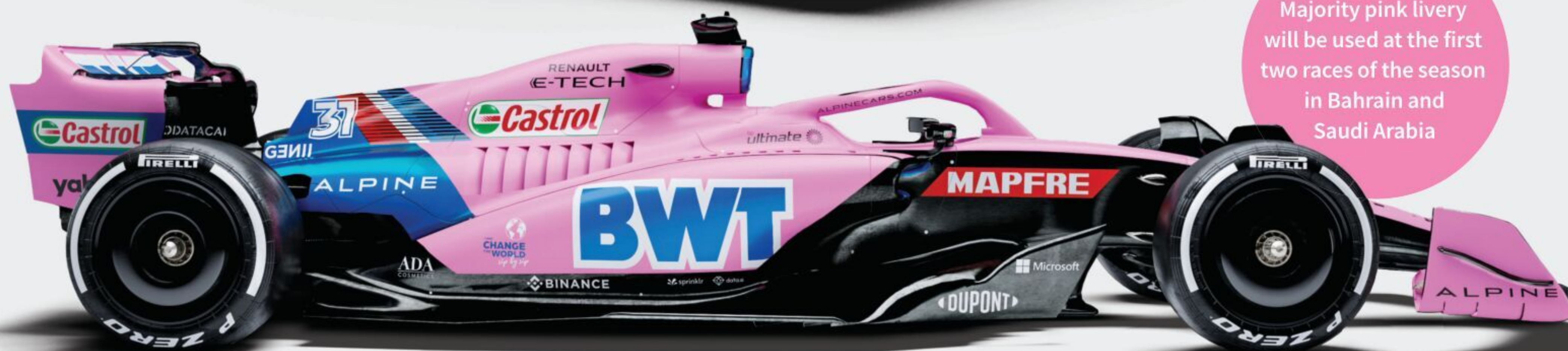
JAKE BOXALL-LEGGE

The only Renault-engined car on the 2022 grid was launched with two colour schemes, but the crucial development could be to follow Mercedes' lead with the powerplant



FRONT END

Alpine's launch front wing has noticeably short chord lengths (the breadth from front to back) on each of its four elements, and are at their shortest around the 'W' of new title sponsor BWT. This gets longer as the wing sweeps outboard, perhaps looking to play with the outermost section, which will allow airflow to pass around the front face of the tyres. The nose attaches to the upper three pink elements with the front plane seemingly detached, which should allow for some passage of air to move underneath. This features a spoon shape in the centre.



Majority pink livery will be used at the first two races of the season in Bahrain and Saudi Arabia

BODYWORK

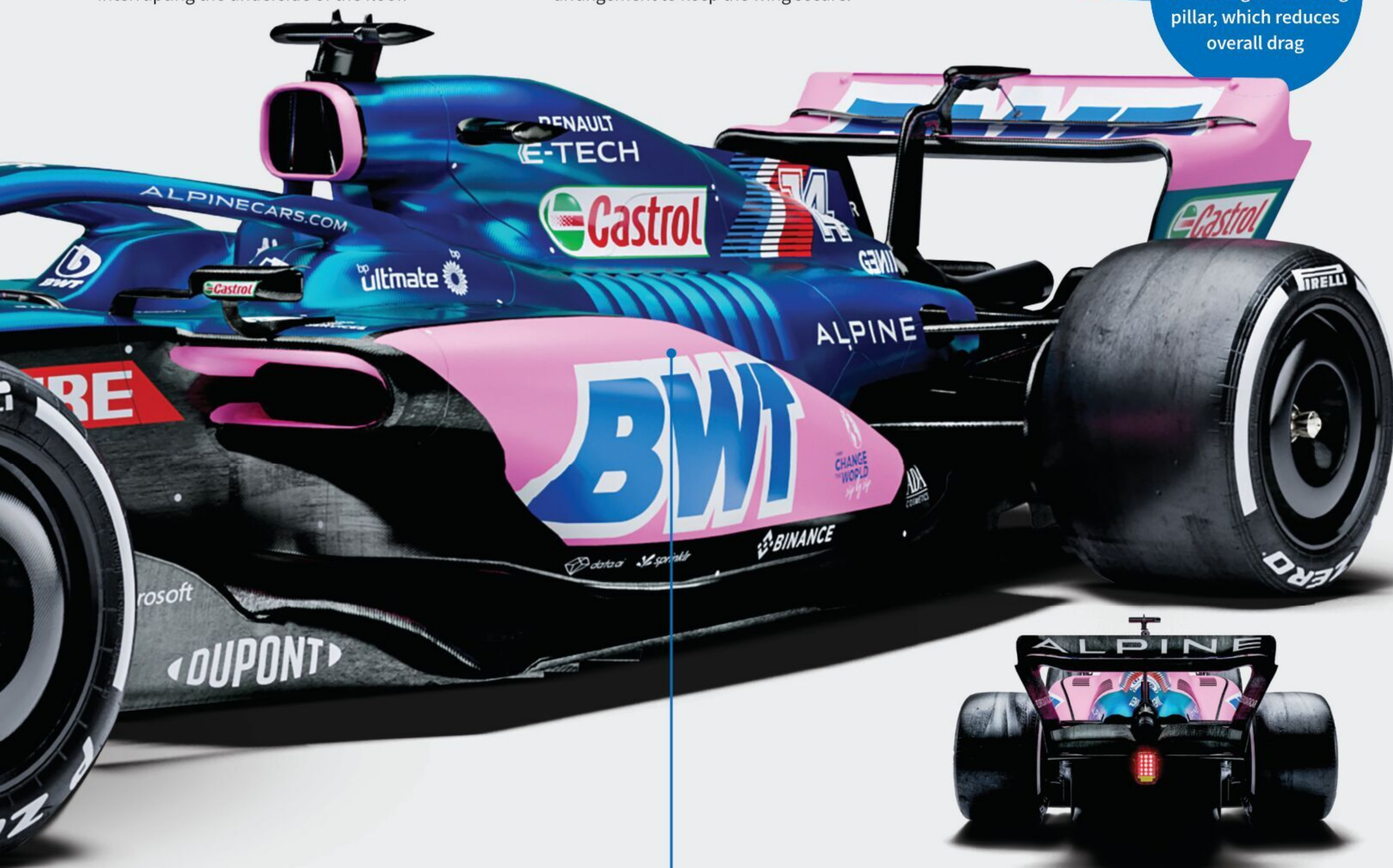
After running its 2021 car with a large roll hoop, Alpine appears to have scaled back on this slightly and has reworked the elliptical intake to appear more rectangular, reducing the overall size and shifting some of the intake to the sidepods. Below the Castrol logo, there's also a set of gills to assist cooling, meaning that the outlet at the back of the car can be reduced in size. At the front of the floor, the outermost side of the opening seems to be extended forwards to bring the wake of the front wheels away to limit any turbulence from interrupting the underside of the floor.

REAR WING

Alpine's A522 launch images hint at how teams will tackle the lower-downforce circuits, reducing the depth of the spoon section in the mainplane to cut the overall frontal area of the wing. Like a host of other cars, Alpine's rear wing is mounted to a single pillar that incorporates the DRS mechanism; although the single pillar reduces the overall drag produced by the assembly and also ensures the mainplane's pressure distribution isn't hurt as much, it needs to be stronger than a twin-pillar arrangement to keep the wing secure.



Alpine's new car follows the trend with a single rear-wing pillar, which reduces overall drag



SIDEPODS

The sidepods feature a distinct ramp arrangement to channel airflow down to the rear of the car, hoping to increase the effectiveness of the floor and the exit of its venturi tunnels. At the front, the undercut is quite dramatic, but squares off around the central part and then folds back in to allow more air to be drawn towards the rear. This also allows the beam wing to benefit from a clean supply of airflow.



POWERTRAIN

As the only user of a Renault powerplant, Alpine's fortunes in the engine department rest solely on its own internal ecosystem. For 2022, Renault has adopted the split-turbo arrangement pioneered by Mercedes, where the turbine sits at the rear of the engine block and the compressor sits at the front. This should ensure that the compressor can be kept cooler, allowing for a smaller intercooler. Alpine CEO Laurent Rossi tasked the Renault engineers at Viry to focus on performance rather than reliability in an attempt to move up the grid, and explained that the new power unit should be "more compact, enabling us to move it closer to the driver, and therefore change the centre of gravity of the car".



WILLIAMS FW44

JAKE BOXALL-LEGGE

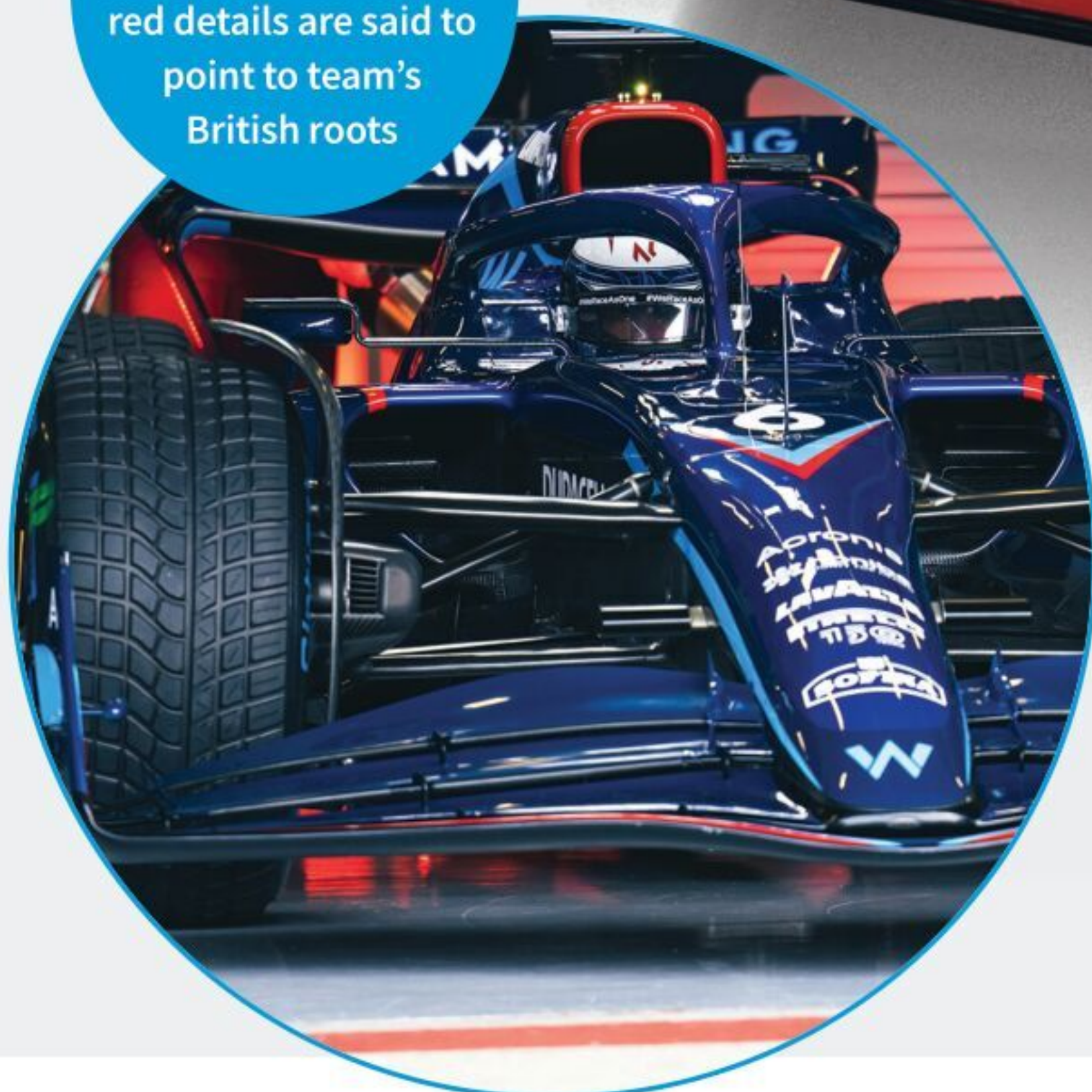
Williams wants to build on the momentum it gathered last season with a car that in one element at least appears to hark back to its illustrious past



BODYWORK

Williams has gone for very tight packaging on the FW44, similar to the Mercedes works team and McLaren, which also uses the German manufacturer's powerplants. The rear cooling aperture has been concentrated around the exhaust to provide clearance to the beam wing. It also appears that the team has taken a slight leaf from Alpine's book from 2021, concentrating on making the airbox slightly larger to ensure the sidepods can be even smaller. The front part of the sidepods ramp down dramatically in order to move the airflow downwards and towards the floor.

There's more than a hint of the FW13 about the nose; red details are said to point to team's British roots



FRONT END

There's something very 1990s about the nose on the Williams FW44, and it almost looks like it's been borrowed from its FW13. The rounded shape should help airflow pass around it and down the flanks of the car. As for the front wing, it's an inboard-loaded design with a small spoon-shaped mainplane ahead of the nose, which should help to trim off any pockets of turbulence that appear underneath. The outboard section is turned down to blend into the endplates and help turn airflow around the front wheels. Curiously, the trailing edge of the diveplanes on the endplate has been turned downwards, presumably in an exercise to have more control over the position of the shed airflow.





REAR WING

Williams had quite a “conventional” rear wing on its FW44 for its shakedown – at least, conventional given the outlook of the new rules. This features a spoon-shaped middle section, which will be responsible for developing the majority of the downforce, and includes a small gurney flap along the leading edge of the upper wing flap to dial in a little more downforce and stability. The team has also introduced the single-pillar mounting pylon that has the DRS mechanism embedded into it, which should reduce its impact on the rear wing’s pressure surface.

GEARBOX

As part of the expansion of its technical partnership with Mercedes, Williams has now taken the constructors’ championship winner’s gearbox rather than developing its own for 2022, although team CEO Jost Capito says that it hasn’t closed the door on building its own again in the future. “I think to get the most out of the engine, you need the gearbox that has fully been developed with the engine and is fully adapted as its one power unit,” he said. “And that’s why we took that decision, but it doesn’t mean that we completely gave up our gearbox department.”

ALFA ROMEO C42

JAKE BOXALL-LEGGE

The C42, as yet only seen being shaken down on track in camouflage livery, stands out for possessing what looks like the most complex front wing design that's appeared so far



SUSPENSION

After deciding to plot its own course with suspension design, Alfa has elected to shift the front leg of the top front wishbone further up to allow for airflow to be directed downwards. The steering arm is set just above the lower wishbone to continue that effect. The Swiss-based team has also opted to introduce a pushrod at the rear, perhaps to open up floor space by positioning the rockers on the top of the gearbox.

REAR WING

Alfa's shakedown rear wing was noticeably large, and almost looks like a hybrid between its old rear wing and those allowed by the new regulations. The centre features a large degree of camber within, and comes with the V-shaped cutout in the upper flap to bleed off any wake from the DRS system. This is bounded by a gurney flap along the trailing edge to add a little extra downforce. The beam wing is also quite aggressive, and the reduced size of the roll hoop should ensure that the rear wing assembly works as efficiently as possible.



BODYWORK

With the larger sidepods, Alfa has been able to keep its engine-cover inlets to a relatively small size, persisting with the split inlet design around the centre 'blade' roll hoop structure. This has allowed the team to maximise the size of the sharkfin at the back of the engine cover, which can straighten out the airflow before it reaches the rear wing.

SIDEPODS AND FLOOR

Alfa's sidepods are more similar to the Aston Martin's larger sidepod designs, but feature a pronounced undercut along the bottom to allow a distinct channel for the airflow to move through. There are a few little intricacies on the edge of the floor too, featuring a small scroll along the top to potentially yield a little more downforce while the car is in yaw during the corners. To cut the size of the outlet at the rear, the tops of the sidepods feature an array of small louvres to allow hot air to escape, reducing any interruption to the aero components at the back.



Sidepods have a pronounced undercut, and louvres on the top to vent hot air



FRONT END

Out of the front-wing designs seen so far, Alfa Romeo's version seen during the shakedown of its C42 has one of the more 'out there' geometries, featuring a distinct degree of curvature across it. It focuses on loading the inboard parts to generate downforce, and this sweeps downwards dramatically to the attachment points with the endplates – as it tended to do with the old ruleset to draw airflow outwards. The nose ends on the second element, allowing the front element to host a spoon-shaped centre section. This is arguably the most complex front-wing design seen so far in the first iteration of the 2022 rules.



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The challenge shared with Moss

The career of new Mercedes Formula 1 driver George Russell shows some intriguing parallels with Mr Motor Racing

ALEX KALINAUCKAS

Mercedes is Formula 1's third most successful team in terms of race wins. It reaches that placing despite having run just 12 drivers in world championship races. Of those, three have been British (including newcomer George Russell's 2020 one-off). That's a considerable chunk, while another Briton, Richard Seaman, must be added to the list of drivers to have achieved success with the Silver Arrows. That moniker returns to action in 2022, when the W13 takes Mercedes' traditional colours. The all-black livery the team used for the past two years has been removed – its point well made.

Seaman raced for Mercedes in its most infamous period just before the Second World War. Then, with Mercedes finally permitted by the sport's governing body to race in top-level motorsport following the end of hostilities, another legendary British racer linked his name with the marque. Although he wasn't part of the Mercedes superteam when it entered the F1 world championship for the first time in 1954 – the Stuttgart squad didn't think he was quite ready at that stage – a central part of Stirling Moss's story was his single season racing a W196.

The next British F1 star to become a hero of the three-pointed variety is the most famous and most successful of the lot: Lewis Hamilton. Now he has finally confirmed his return to the quest to clinch a record-breaking eighth world title, and forms half of Mercedes' first all-British F1 line-up. Russell is now where he always

“Even if he won't admit it right now, beating Hamilton would be a tremendous achievement”

aimed to be: a Mercedes works driver, primed to race for the best team of the era just gone. And while he is set to race alongside one Mercedes hero in 2022, it's how his career so far stacks up against Moss's that contains some fascinating similarities.

First up, Russell arrives at Mercedes aged 24, with Moss doing likewise at 25 – both on the cusp of their prime, 67 years apart. They also arrived having largely been limited by compromised machinery in their GP careers up to that point. But the really intriguing link between Moss and Russell is their respective team leader. In Hamilton in 2022, Mercedes has statistically F1's greatest ever racer. In 1955 it had another driver who is in the debate over the greatest ever (as is Hamilton, of course): Juan Manuel Fangio.

Moss vowed to learn all he could from *El Maestro* during their time as team-mates. He knew he had the edge in sportscars – he was even

pleased to share a car with Fangio at Le Mans in 1955, since he felt it would be poor form to show up his illustrious team-mate – but in F1 he was the number two. Not that there was much in it given Moss's talent meant he could follow Fangio so closely, to pick up any driving tip he could. They regularly formed a 'train' nose-to-tail at the front of the pack. Fangio was much more than a team-mate to Moss. Their relationship is described in Moss's authorised biography, by Robert Edwards, as “an almost spiritual thing” and “fraternal and paternal at the same time”.

Hamilton-Russell. What will this Mercedes line-up produce? At Mercedes' 2022 launch event last week, Hamilton insisted he wants to see Russell “learn as much as he can, and grow as much as he can” at the team, in response to Autosport asking how he had been working with his new team-mate so far. But although both fondly acknowledge the picture of aspiring racer Russell waiting for Hamilton's autograph, it's hard to imagine their team-mate relationship getting anywhere as close to that of Fangio/Moss. With motorsport's safety evolutions loosening the bonds between on-track rivals – as evidenced by the aggressive passing that has become commonplace since Ayrton Senna and Michael Schumacher shook things up quite so forcefully – a team-mate competition is a very different philosophical challenge these days.

Plus, we know – because he said it when Mercedes' 2022 line-up was being scrutinised last summer – that Hamilton would have preferred his squad to keep Valtteri Bottas on across the garage. But Hamilton is also keen to point out that he has “learned a lot over the years of how to engage with your team-mate”. This means keeping a steady ship – the stability of the Bottas era versus the flashpoints against Nico Rosberg.

From Russell's perspective, even if he won't admit it now, beating Hamilton would be a tremendous achievement. His peers have taken similar scalps when arriving at new teams – Red Bull's Max Verstappen taking on Daniel Ricciardo, and Charles Leclerc essentially ending the Sebastian Vettel era at Ferrari. They put in no-nonsense passes and even crashed with their team-mates...

That is getting quite far ahead – as is any firm assumption that Mercedes will remain at the front of the grid given the new rules reset finally on show in the first test at Barcelona this week. Indeed, given Russell's maturity and intelligence, it would be wiser to predict that he continues to drive with the team in mind early on – particularly with the memory of his impetuosity at Imola not even a year old. Whatever happens when racing finally starts, the Russell/Hamilton contest is set to be one of the stories of the season. And it could yet spark another legendary Mercedes tale. 🏁

➔ P20 HAMILTON ON 2022



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NASCAR's team-friendly Next Gen

Parts supply so far is a concern, but overall NASCAR's new stock car generation is encouraging an influx of fresh blood into its top tier

CHARLES BRADLEY

NASCAR's revolutionary Next Gen Cup Series car has had something of a baptism of fire, with last Sunday's Daytona 500 on the 190mph high banks a world away from the LA Coliseum's quarter-mile oval where the car made its debut earlier this month.

The new machine's single-supplier, common-component ethos forms the seventh generation of stock car at the premier level since 1948 and comes at a time when cost savings need to be made. These outlier tracks have proved the concept's flexibility; while teams will still assemble multiple cars for use on short tracks, intermediates and superspeedways – NASCAR's punishing 36-round schedule means they need multiple cars in rotation in a logistical puzzle – they simply won't build as many as before.

The Next Gen car is assembled in three pieces: the central chassis has front and rear 'clips' that are bolted on, which helps teams out when it comes to fixing inevitable accident damage. Another stated aim is to attract a fourth manufacturer to join Chevrolet, Ford and Toyota – and NASCAR will likely add a hybrid element to its V8 engines in 2024 to aid that.

What Next Gen has achieved already is to attract new teams to its charter franchise system: Kaulig Racing bought two charters to enter a pair of full-time cars, 23XI added a second car for Kurt Busch (buying its charter from StarCom Racing, which is now affiliated with Floyd Mayweather's 'The Money Team Racing'

“Richard Petty said when he raced years ago, they only had one car for all the race tracks”

project), GMS Racing bought in to Richard Petty Motorsports, and Trackhouse Racing bought Chip Ganassi Racing to field two cars.

Kaulig is the 'poster boy' team for Next Gen. Having shown race-winning and title-contending form in the second-tier Xfinity Series, it won a Cup race with road-course star AJ Allmendinger at Indianapolis last year during its toe-in-the-water campaign.

“I had a meeting 18 months ago with Richard Petty, and he was talking about when he raced years ago, they only had one car for all the race tracks,” says team owner Matt Kaulig. “When I got into this sport seven years ago, I was amazed to find they used a car for every speedway, you had to have 10 or more full-blown race cars in your garage ready to go for all the different kinds of track. If you think about it, that was really unnecessary – it was overkill.

“The Next Gen car is a business model that NASCAR has

introduced for reduced costs for the owners, and I feel it's almost levelled the playing field for us. Of course, we don't know how it will play out yet, but it just felt like a really good time, and a really good opportunity, for us to move up and see what we can do. Everyone is starting with a clean slate.”

Kaulig had the misfortune to suffer the biggest wreck in LA, when champion Kyle Larson veered its driver Justin Haley into the inside concrete wall, smashing the right-front wheel off the car. While not impacting on its Daytona programme, it means a knock-on as the series returns to California this weekend for Fontana.

“It destroyed the front clip,” says Kaulig. “The neat thing about this Next Gen is that you can use the car. You can beat it up, and you just replace the front and rear clips depending on the damage. With Justin's car, it's put us behind a little bit. Getting out of that LA race unscathed means you have a car to work with, but our car got destroyed – and it destroyed a concrete wall! But Justin was fine, that's the main thing.”

Another relatively new team owner, Denny Hamlin, was more critical of the damage one of his cars sustained, when Kurt Busch also got wrecked in the Coliseum. “On the ownership side, all we think about is cost – when we look at our team's net [finances], it was bad,” says Hamlin. “It was really, really bad because it was very expensive for us to go there and get significant damage. When you look at what we win versus what we pay out it just didn't add up.”

Hamlin's OEM boss, Toyota Racing's David Wilson, is sympathetic to his team's plight, especially as the common parts supply chain isn't as robust as it should be. “For the next few weeks it's going to be tough on all of our teams,” he said at the weekend. “We're going to have to be mindful and make good decisions.

“What we can't do is ask a driver, once he pulls that visor down and gets ready to race in anger, to mitigate his performance based upon a concern about parts. That's not racing, and we're in the racing business. We're all in this together, and we're all doing the best we can. We know NASCAR and their supplier base are on it 24/7.”

Daytona's 500 featured the usual levels of mayhem but, even though a lot of cars did get torn up, much of the damage on display in the garage afterwards looked replaceable – although Harrison Burton's Ford did fly upside down at high speed.

The increased flexibility engineered into these cars doesn't mean anyone is at risk of missing races through a lack of cars or spare parts just yet. When Wilson asked Hamlin when he thought his team would be comfortable with its inventory, he replied “Phoenix” – he didn't mean the upcoming race there in March, but the finale in November... ❧

P42 DAYTONA 500 REPORT



“IF YOU THINK WHAT YOU SAW AT THE END OF LAST YEAR WAS MY BEST, WAIT UNTIL YOU SEE THIS YEAR”

Lewis Hamilton invariably finds his finest form in the face of adversity. And in the wake of his championship defeat, he's in fighting spirit

ALEX KALINAUCKAS

The 2021 Formula 1 season was the best in a decade, and the best driving of the campaign came from the controversially defeated title contender. Lewis Hamilton's response to being disqualified from qualifying for the Sao Paulo Grand Prix was tremendous. He gained 25 positions in one and a half races, going from the back of the Interlagos sprint grid to the GP victory, even with a second grid drop undoing a chunk of his progress from the first race. Yes, the fresh engine punch that his penalty bought was a help, but Hamilton still needed to pull off pass after pass — and find a way ahead of his fierce title rival.

He did it, eventually, after Max Verstappen's unacceptable initial defence, and then went on a dominant run that would have yielded a season-closing victory hat-trick and the 2021 title had it not been for the Abu Dhabi finale shambles. In Mercedes team boss Toto Wolff's words, the Brazilian DQ had “woken up the lion” inside.

Now we know how Hamilton is responding to his Abu Dhabi heartbreak. In short, he is heading into the 2022 F1 season in fighting spirit. But that late-2021 form boost is far from the only example in Hamilton's career of the now-37-year-old turning adversity into almost sensational success. Think the 2006 Turkey GP2 sprint race, and the 17 passes he pulled off to finish second after spinning down to 19th. His famous Silverstone 2008 wet win — his first in F1 on home soil — two races after clattering Kimi Raikkonen in the closed Montreal pitlane. The five victories en route to his first Mercedes title that followed contact with Nico Rosberg at Spa in 2014, which gave Hamilton a puncture and a later DNF. The way he raised his game overall following his defeat to Rosberg in the 2016 title fight.

That last example is particularly important in early 2022.



Five years ago, Hamilton was reflecting on his first championship defeat in the turbo-hybrid era — against his only rival, who'd retired from across the Mercedes garage in the aftermath of his triumph, such were the extremes Rosberg had to reach to claim the crown. Although Hamilton had let himself down with some poor starts that year, the main takeaway from that championship was how unreliability could thwart his ambitions.

Hamilton's response was to be better in every area. Mercedes insiders suggest he simply vowed to never leave anything on the table from his own performances for his rivals to gain in qualifying or races — he was painfully aware of how just six extra points would have helped after his engine expired in flames in Malaysia. At the same time, his clean racing mantra would go on to serve him well, as he generally >>



COATES
motorsport
IMAGES

avoided needless spins and clashes that others did not.

Some of Hamilton's best races followed his 2016 defeat. His passes on Sebastian Vettel at Barcelona and Austin in 2017 won him those events. He charged from 14th to win the rain-affected race at Hockenheim one year on, when Vettel's title charge fell off the road, then at Monza later in 2018 he famously defeated the faster Ferrari pair on their home patch. Monaco 2019 followed Niki Lauda's death; Spain 2020 came in the midst of the unfurling pandemic and Hamilton's personally emotionally draining new drive to improve diversity in motorsport following the global Black Lives Matter protests. His Bahrain and Barcelona triumphs in 2021 came in Mercedes' rule-hobbled car.

It's quite the list. And it, along with four more world titles, which came so close to being five in a row, demonstrates how much

better Hamilton became after Rosberg's championship — one that didn't end in utter acrimony.

Speaking to reporters from Mercedes' shakedown after the W13's launch last Friday, Hamilton is facing the media for the first time since he qualified second for the Abu Dhabi GP. He "just unplugged and switched off" in the days following Verstappen's controversial victory at the Yas Marina track. His social media channels stayed silent for 56 days, as Hamilton "took time to digest what had happened" during a "difficult time". He didn't watch a race replay — instead he went back through his own memories of the events that he called, in real time, "manipulated".

Wolff's words explaining how Hamilton was left "disillusioned" by the way events in Abu Dhabi played out raised speculation that he could make a shock retirement — with a two-year contract still ahead. But Hamilton insists "I never, ever said that I was going to stop".

Instead, he went through what is now an annual process of evaluating if he can continue to make the necessary sacrifices and effort to succeed at the top of global motorsport. But the regular question of "do you believe that you can continue to punch at the weight that you're punching?" did have an extra consideration this time — could he trust F1's system given how badly it had just let him down?

"Ultimately this is a sport that I've loved my whole life," he says. "There was a moment where I obviously lost a little bit of faith in the system. But I'm generally a very determined person. And I like to think to myself, 'While moments like this might define careers, I refuse to let this define mine.' And so, I'm focused on being the best I can be and coming back stronger."

"I feel great. I feel fit. Naturally when you have an extra year of experience under your belt that always helps. I always feel like through these sorts of experiences, you can turn that emotion



Hamilton holds
no grudges against
Verstappen

ETHERINGTON/MOTORSPORT IMAGES

Hamilton gained 25 places at Interlagos after penalty had "woken up the lion"



Wolff talks of Hamilton's "attack mode" on his return to the team



DAIMLERAG

into strength and into power. That's what I'm doing. I'm putting that into my training. I'm putting that into my work that I have with the men and women here in this team."

All of that is ominous for his on-track rivals given how good Hamilton already is. Wolff says that since returning to the team, his lead driver has been in "attack mode". "He has come back in a great mindset," Wolff explains. "He is positive, he is determined. And yet again, adversity that was thrown at him will make him stronger."

Both Wolff and Hamilton welcomed the FIA's decision to reinforce its F1 race officiating for 2022, which includes Michael Masi's removal from his post as F1 race director. Interpreting

"IT'S GOOD THAT THE FIA ARE TAKING STEPS TO MAKE IMPROVEMENTS. ACCOUNTABILITY IS KEY"

Hamilton's words on this reform, where it is also clear that it will take time before he can fully trust the FIA again, we can assume that he was personally satisfied by that particular call. "While we can't change the past, and nothing will ever really be able to change the way I felt at the time and how I feel about the situation, it is good to see that the FIA are taking steps to make improvements," he explains. "I think accountability is key."

"And we have to use this moment to make sure that this never happens to anybody else in the sport ever again. We have to make sure that we keep a close eye on making sure that we actually are seeing those >>



Spirits are high for Russell, Hamilton and Wolff in the build-up to the start of the new season

changes, and rules are applied fairly and accurately and consistently.

"I put faith and trust alongside each other. Trust can obviously be lost in the blink of an eye or the flick of a finger. But to earn trust is something that is built over a long period of time. So, while I didn't see that coming, [the FIA's announcement of F1 race control reform] is perhaps a first step of that. But that doesn't necessarily change everything just yet. We have to see actual action and I think it will take a bit of time. But I'm not really focused necessarily on that area at the moment. I'm just putting every ounce of my energy and time into making sure that I'm the best you've ever seen."

And Hamilton thus enters F1's new era – the third major rules overhaul (second for aerodynamics) that he has experienced so far. It's his 10th season at Mercedes, alongside a third team-mate now, with George Russell earning a promotion from Williams.

The new cars make the present period both similar and yet different to 2017 and the aftermath of Rosberg's title. Then, Hamilton was adjusting to the start of the generation of cars that will likely go down as F1's fastest ever, with the rules then requiring downforce to be packed on. Valtteri Bottas had been thrust in to replace Rosberg. But now Hamilton will have to adjust to the challenges of a ground-effect formula, and do so alongside a driver essentially hired to one day replace him as Mercedes' leading star.

"I have driven [the W13] in the simulator," Hamilton says, speaking before it's his turn to shake down Mercedes' new machine in the totally unrepresentative conditions Storm Eunice is wreaking on Silverstone. "The car is so much different. It's so different to any other car that I've driven in the past in terms of the aero balance and how it shifts, the

mechanical balance and how it shifts – a low rear. It's a much different machine to drive. It's going to require a lot of finesse, a lot of work to find how to set it up with new tools that we have. I hope the simulator is accurate. If not, we'll make corrections, and push forward."

Hamilton's feisty words regarding his intention to raise his game further still must be viewed in the context of F1 entering a new age – one in which the championship's owner hopes any team can win, not just Mercedes, Red Bull and (sporadically) Ferrari. If Mercedes starts the new campaign in what has really become its traditional spot – at the front – then that's one thing. But if W13 is off the pace

or at the same level as another car, then his vow to improve could be a crucial difference.

One hallmark of a truly great racing driver is the ability to succeed in a slower car. Hamilton checks that box – and indeed did so throughout 2021. Yes,

Mercedes' British GP upgrade last year was impressive, but it did only bring the squad onto terms with Red Bull, which regularly squandered the best of the RB16B's potential during the title run-in, rather than step clear. Hamilton made the difference.

He did it with his own clear style in wheel-to-wheel racing too, against Verstappen's persistent aggression. This was ultimately vindicated – Hamilton had the title won before Nicholas Latifi's crash five laps from the season's end – but it's worth considering what might happen if indeed Mercedes finds itself behind or in a close fight come the start in Bahrain next month.

If either of those scenarios comes to pass, then Hamilton will have to tread unfamiliar ground – matching his desire not to leave points for others by getting involved in clashes, with not being able to afford

"MAX DID EVERYTHING A DRIVER WOULD DO GIVEN THE OPPORTUNITY HE HAD. HE'S A GREAT COMPETITOR"



Effects of Storm Eunice meant that shakedown conditions were not ideal



Hamilton was spotted filming Russell's first outing in the W13



Positivity shines through on Hamilton's return to the spotlight

to regularly back out of contact. The first lap of the 2021 British GP showed what could happen when Hamilton gave as good as he got from Verstappen. But in making his public return last week, there are no hard feelings from Hamilton towards his fierce rival.

"This has nothing to do with Max," Hamilton replies when asked about his relationship with Verstappen and Red Bull following the conclusion to 2021. "Max did everything a driver would do given the opportunity he was given. And he's a great competitor."

"We will go into another battle like we did last year and hopefully conduct ourselves... we will obviously grow from our races and experiences we had last year all through the season. But [I have] no issues with him. I don't hold any grudges with anybody – I never think that's ever a good thing to carry around with you. I move forwards, I don't dwell on the past. And I feel fresh, I feel centred, and fully focused. I don't have anything over my shoulders holding me back this year. Not that I did last year, but I'm not letting that experience be one of those."

Overall, Hamilton's reappearance in the F1 spotlight is rather remarkable. He laments the media calls still being conducted on Zoom, but even there his positivity shines through. Autosport's

question about how he has been working with Russell raises a wide smile. He's been spotted filming his new team-mate leaving the garage for the W13's first laps on his phone. His words on Abu Dhabi seem cathartic but definitely not bitter – even as they reveal the pain he has clearly been feeling keenly during the off-season.

The standout points from his words all concern the future. And if Hamilton can indeed channel his feelings on the potential eighth title he lost last year to reach previously unscaled heights of driving feats, then F1's new era is going to be all the better because of it.

Although long-lasting top-level motorsport careers are increasingly common, there's also no doubt that Hamilton is now closer to the end of his racing life than the start. He's been around long enough to know the danger of making vows on performance a driver can't keep – which made his words on the year ahead stand out so starkly. And impressively.

Judging by Hamilton's no-holds-barred approach to Mercedes' 2022 launch event, his final F1 chapters may well contain some of his most impressive stories yet. ❧

➔ P26 DETAILS OF MERCEDES' W13

MERCEDES W13

JAKE BOXALL-LEGGE

The launch images have offered more questions than definitive answers, but the new Mercedes has already thrown up some fascinating contrasts to its rivals, while powertrain integration should be a key attribute

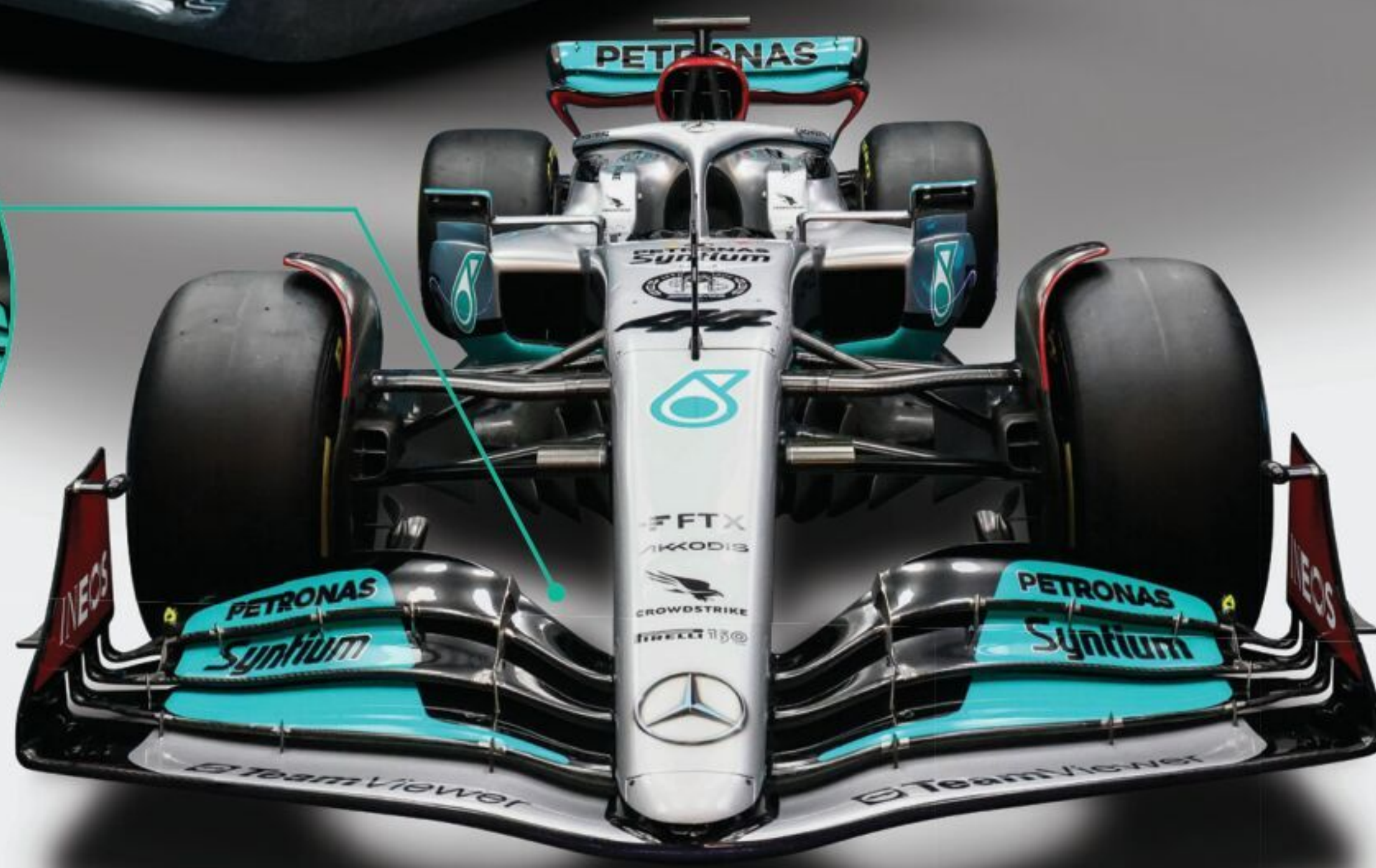
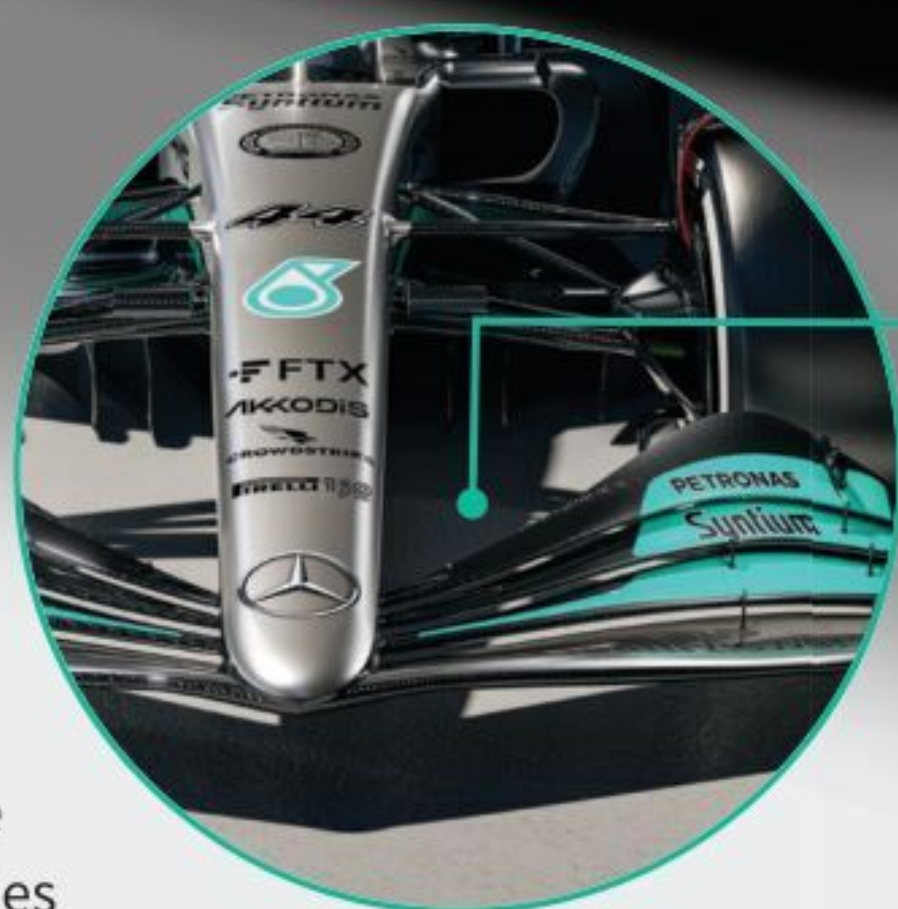
FLOOR

Mercedes hid the more aggressive opening to the underbody tunnels in its release imagery, and the outside strake is more vertical on the real car to reclaim any control over the onset of airflow from the front lost due to the departure of the bargeboards. This leads into some very light rippling on the edge of the floor, not dissimilar to the design used on the W12. That's potentially an attempt to help provide the venturi tunnels with more of a seal – or to generate more mid-corner downforce.



FRONT WING

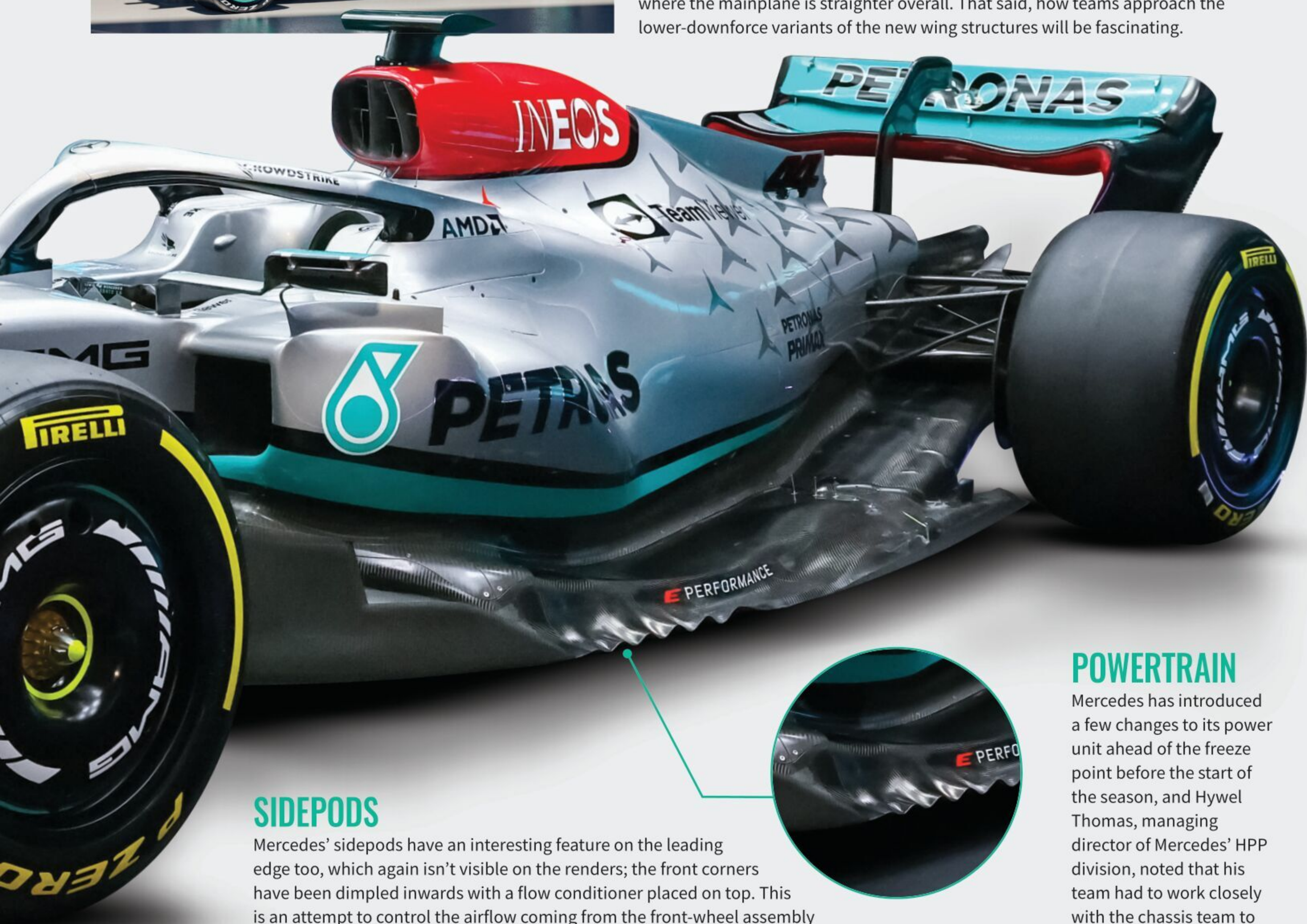
On many of the 2022 cars we've seen so far, there has been a focus on loading up the inboard part of the wing, filling as much of the bounding box as possible – even at the attachment points to the nose. Mercedes has focused its downforce production at the front within the centre of each side of the front wing, sweeping the wing downwards towards the nose attachments. Although the renders (inset) feature a more boomerang-shaped array of elements on the front wing, the real car (right) is less radical and shifts more of the chord length slightly further inboard.





REAR WING

The W13's rear wing features two dips either side of the central mounting pillar, with the leading edge of the mainplane slightly raised in the centre. At such an early stage in the new ruleset, it's hard to know definitively what specification of wings are being shown, especially given the renders show a slightly different variation, where the mainplane is straighter overall. That said, how teams approach the lower-downforce variants of the new wing structures will be fascinating.



SIDEPODS

Mercedes' sidepods have an interesting feature on the leading edge too, which again isn't visible on the renders; the front corners have been dimpled inwards with a flow conditioner placed on top. This is an attempt to control the airflow coming from the front-wheel assembly and turn it outwards, previously a job for the mass of bargeboard components in the old ruleset.

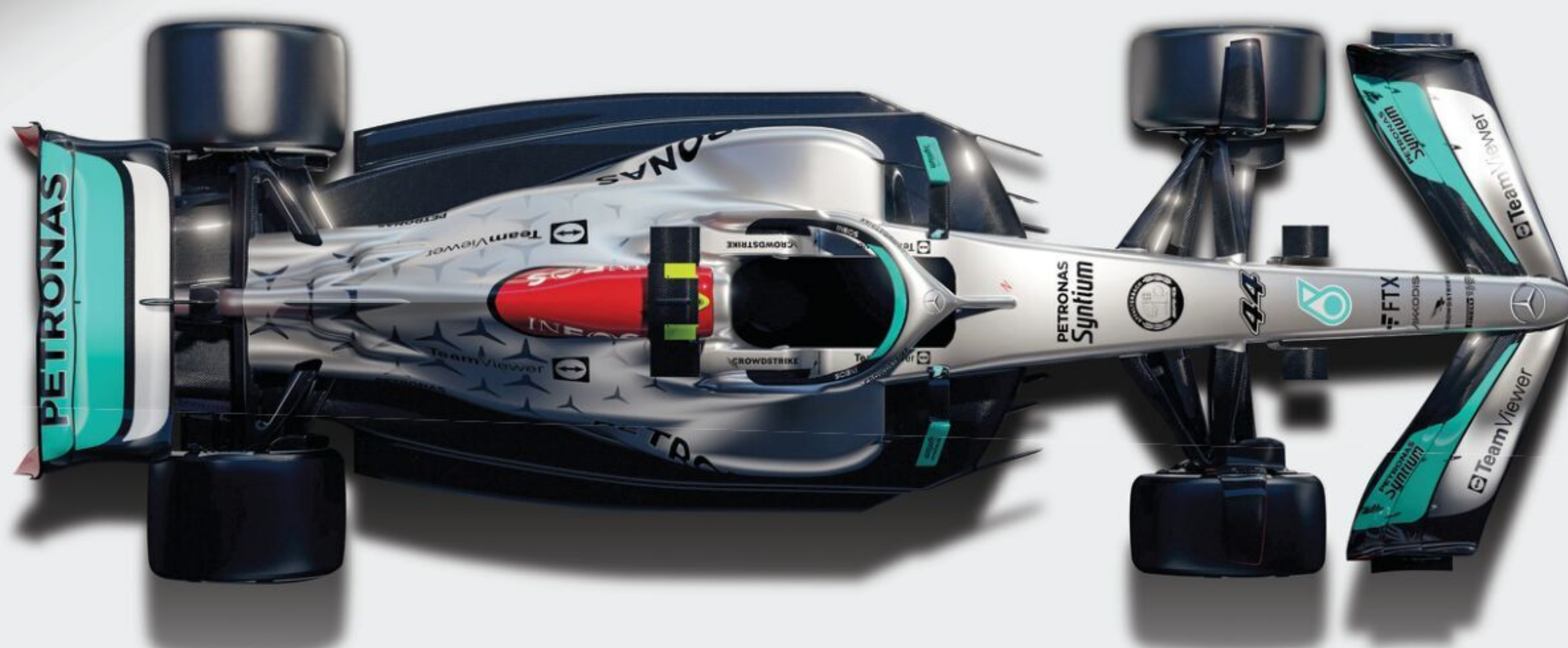
The W13 is also very tightly packaged, with the rear almost tapering off into a teardrop shape to open up the top of the floor. That should also endow the reintroduced beam wing with lots of clean air to work with, given the noticeable clearance between the rear wheels and the car's tail.



POWERTRAIN

Mercedes has introduced a few changes to its power unit ahead of the freeze point before the start of the season, and Hywel Thomas, managing director of Mercedes' HPP division, noted that his team had to work closely with the chassis team to reach an optimal layout, and added that Mercedes needs to be "adaptable" owing to the freeze.

"Over the course of the year, given the regulation changes, I think the development of the overall car package will be quite strong, so the way the PU works at the start of the season won't be the same come the final races of 2022," said Thomas. "We must include that ability to be adaptable into the PU from the start of the season, because of the performance freeze."





FERRARI GOES RADICAL TO END F1 TITLE WAIT

F1's most famous team has taken a bold approach with a new car that was long in its gestation. The pressure is on as Ferrari bids to rediscover what it takes to be a winner

LUKE SMITH

After two years of mediocrity not befitting a team as successful or mighty as Ferrari, 2022 is widely seen as *the* year it can become a force in Formula 1 yet again. It's a year where, at last, there can surely be no excuses. The misery of 2020, when it struggled with an underperforming power unit and endured its worst season for 40 years, was a sobering experience for Ferrari. But it managed to clamber out of the doldrums and make significant progress last year, finishing third in the constructors' championship after a season-long fight with McLaren.

Yet even through that 2021 battle with its great rival, Ferrari made clear that it wasn't exactly make-or-break whether it came out on top or not. Third or fourth isn't first — the only classification it can truly accept — and the gap to Mercedes and Red Bull was still sizeable. The best chance to make that up would only come once the new regulations arrived in 2022.

It made the launch of the new Ferrari F1-75 — named to represent 75 years since the first 'production' car by Ferrari, the 125 S — a significant moment in the narrative of the season. It could, and frankly should,



Ladies and gentlemen, the Ferrari F1-75. But will the team get back to where it once belonged?

FERRARI



SUTTON/MOTORSPORT IMAGES

Remember this? The last champion, Raikkonen, way back in 2007



S.BLOXHAM/MOTORSPORT IMAGES

Vettel's signature finger salute in Singapore 2019 is a distant memory

“I’M NOT CONSIDERING FAILURE, BECAUSE I DON’T THINK THAT’S THE WAY IT IS”

Binotto. But Binotto didn’t dwell on the pressure at the launch last week or what failure this year would mean. He acknowledged to feeling responsibility, of course, but said the most important thing for Ferrari this year was for the team to become competitive once again.

“For a long time we have been saying that in 2022, that’s our best opportunity to be back to being competitive,” he added. “Honestly, the way I’ve seen the team working, I’m proud of the way they made it, very united. I’m not considering failure, because I don’t think that’s the way it is. We are simply focused on trying our best, raising the level, and have a good start to the season.”

The mood coming out of the launch was one of defiant hope, not labelling 2022 as being make-or-break. This is never a time of year where a team will set firm targets or promise X number of race wins, yet Ferrari made clear that it sees a great deal of opportunity >>

be the car that ends Ferrari’s longest win drought since 1994. “Expectations are high, because we are Ferrari,” said Charles Leclerc, summing up the mentality bred throughout the Scuderia’s rich and successful history. “We are a team that is expected to win all the time.”

It’s been two and a half years since the last Ferrari win, at the 2019 Singapore Grand Prix, and over 14 since its most recent drivers’ championship courtesy of Kimi Raikkonen. Any extension of those unwanted records this year would surely go down as a failure – and inevitably pile pressure on the man leading Ferrari’s F1 hopes, Mattia



in the new season. For Leclerc, the unity that Binotto spoke of that helped get the team through the difficult recent times is exactly what could make it so strong this year.

"What makes me confident about this year's car is the work that I have seen in the last few months," Leclerc stated. "That has been absolutely incredible by the whole team. It's been a long time that we've been working on this car now, and I can see how well we've been working, so that gives me the confidence for the future." But even Leclerc conceded that it is naturally impossible to know whether or not it will be enough until qualifying begins at the Bahrain opener and the true pace of every car becomes clear.

Ferrari made decent progress last year, notably in the final third of the season after an upgraded hybrid system, introduced mainly as a trial for changes for 2022, helped it pull clear of McLaren in the pecking order. The SF21 wasn't developed past July's British GP because full attention shifted to the 2022 car, which also benefited from added development time in the windtunnel under the new Aerodynamic Testing Restrictions (ATR), a first-of-its-kind success handicap.

Mercedes boss Toto Wolff was quick to note the ATR's impact on Mercedes when asked about Ferrari's chance this year. "Having more windtunnel time is of course something you need to bear in mind," he pointed out. "The advantage of finishing sixth [in 2020] versus first over the course of the season is a couple of tenths. And that, of course, you need to catch up."

Even with the new rules, few expect the advantage of the big teams to be wiped away overnight, least of all Ferrari. "We've got a clear ambition, that is Ferrari's ambition, my ambition, the drivers' ambition: we need to become world champion," Binotto declared. "But we know as well how difficult it is to close the gap to the best. Last year at the end of the season, the gap was still very big. Our objective for 2022 is being back to being competitive, and being competitive means being capable of winning races. I think that's the way we see it at the moment, and I think we'd be pretty happy if we're in that position."

Yet it is not only the rule reset and the additional windtunnel time that should give Ferrari hope for this year. One of its weak spots in recent

times has been its simulator, but this has now been replaced by a state-of-the-art facility at Maranello with full driver-in-the-loop capabilities. It will give yet another boost to Leclerc and team-mate Carlos Sainz Jr, who last year made a sound case for being the strongest driver pairing on the grid. Sainz adjusted well to life in Maranello, scoring four podiums and even beating Leclerc across the course of the season (although Leclerc did attract most of the misfortune). They've become firm friends as well as colleagues, joking that they see each other more than their girlfriends.

The strength of the new partnership has already prompted Ferrari to open talks with Sainz over a new contract beyond this year. But it has also led to questions about what would happen if the team were to find itself at the front again, and if there would be a 'number one'.

Leclerc and Sainz laughed quietly when the question was asked. "Of course we've discussed it," Leclerc smiled. "That's why we are laughing, because I think it was two days ago or yesterday. Yes, we are free to fight, obviously without taking any stupid risks because we are fighting for the team, and the ultimate goal is to bring Ferrari to the top. But we'll be free to fight."

The question again hinged on the assumption that Ferrari will be a frontrunning team again, speaking to the level of expectation there is from the outside this year. "Expectations are always high in Ferrari," said Sainz. "We want to make the brand proud and the history proud. Our target is to be back up there fighting for wins and see what comes next."

The F1-75 is a break with the past for Ferrari not just by virtue of the new technical regulations. Gone are the traditional red-and-white colours necessitated by the partnership with Philip Morris International, whose long-running sponsorship deal appears to have



In Carlos Sainz Jr and Charles Leclerc, Mattia Binotto knows the driver line-up won't be a weakness



come to an end. This year's livery uses a darker red base combined with black front and rear wings, drawing similarities to the Ferraris of the late 1980s and early 1990s. Few would argue against it being one of the best-looking cars on the grid this year.

But the Ferrari in particular stands out for some of the design approaches that have been taken, especially with the dipping sidepods and pointed nose. "The Ferrari looks like there's been a lot of thought out of the box, and they've been challenging with these new regulations to try and find the edge in performance," offered Sainz. "I hope that we get it right and the car is performing well this year, because the car does look beautiful."

When the technical regulations for 2022 were first announced, there were fears that every car would follow roughly the same design given the restrictions of the rulebook. Yet that has not proven to be the case, pleasingly, with the Ferrari standing out as the most striking car.

Binotto was clear in the push for innovation with the radical design. "It was important for us to be fully open-minded," he stated. "When designing and developing the new car, it has been aerodynamically driven, so all the mechanical choices have been a consequence of it. All the power unit packaging has been a consequence of an aerodynamic choice. If you look at the car, [there are] a lot of unconventional choices in terms of aero shapes."

The innovation from Ferrari is under the skin of the F1-75 too. "The power unit and engine is certainly a big innovation for us compared to the past in terms of design," added Binotto. "That is something we may say ourselves, it's internal so it's difficult to judge." The step forward taken with the hybrid system upgrade late last season does point to the kind of potential Ferrari can tap into, though.

The seismic shift in the regulations means it won't be clear until the

"I'M PRETTY HAPPY. I SHOULD NOT BE NERVOUS, BECAUSE I KNOW THOSE GUYS AND HOW GOOD THEY ARE"

Bahrain GP weekend of 18-20 March who has got it right or wrong, the latter being all the more painful now in F1 given the budget cap, which prevents a wholesale overhaul. Binotto was confident that there would be "flexibility" for Ferrari if it hadn't taken the right path with its design – but again, it wasn't a prospect he was entertaining.

"If I'm nervous or not? Honestly, I'm not," he answered. "The team has improved in the last years, has developed capacity, methodology, new skills, and the way I've seen the team work, I think I'm pretty happy. I think I should not be nervous, simply because I know those guys and I know how good they are."

For all of the self-belief and downplaying of expectations, it's hard to see 2022 as being anything but a year in which Ferrari must succeed. It never quite delivered during the previous ruleset, despite getting a sniff of the title in 2018, and that makes this opportunity one it must grab with both hands. While the gap to Mercedes and Red Bull was large last year, the lessons learned through its recent struggles should have given Ferrari clues as to what it takes to be a major power in F1 once again.

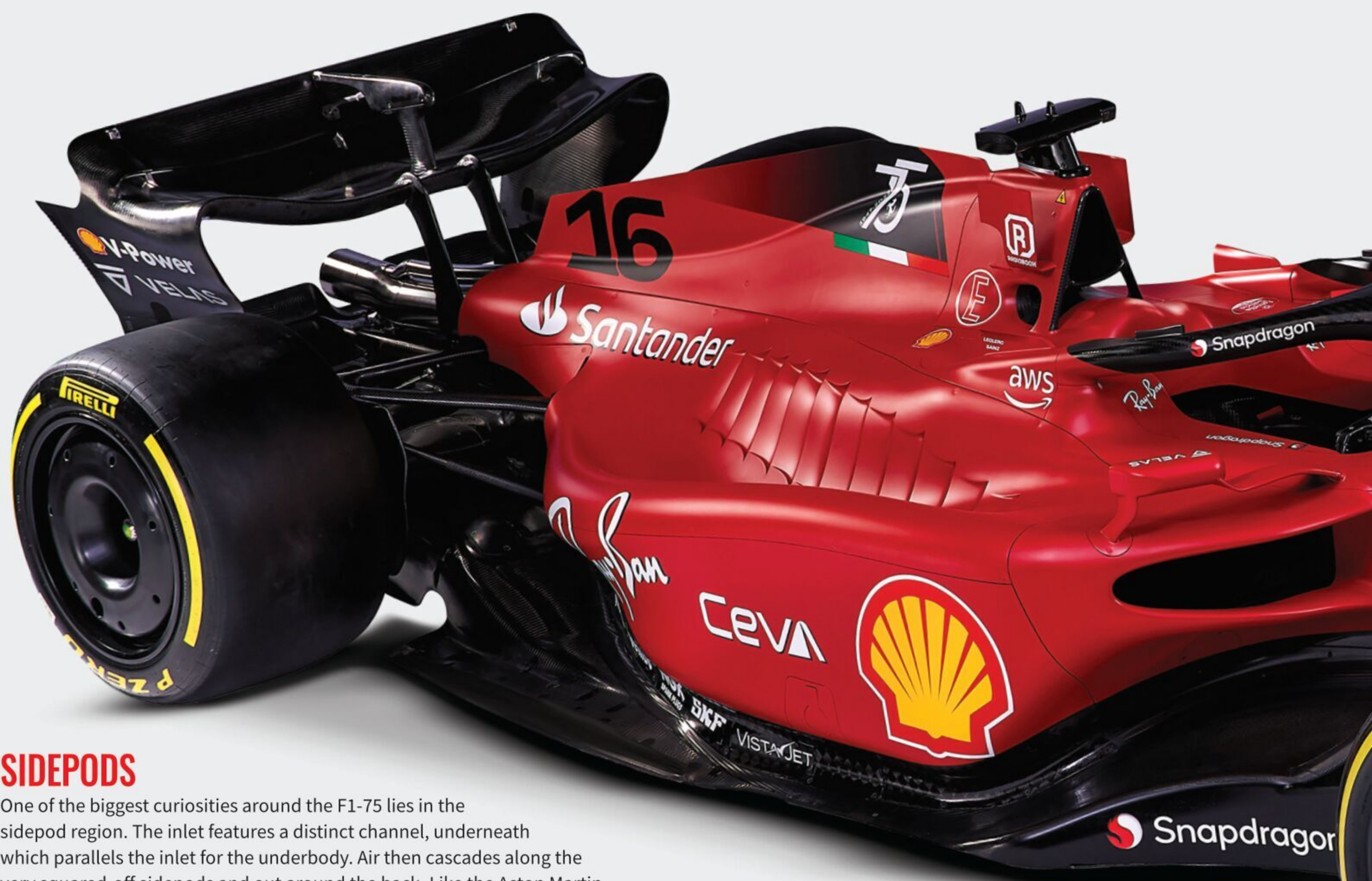
It has the new regulations. It has the facilities and resources. It has the drivers. The odds are in its favour. Now Ferrari must capitalise to finally end its win drought – and deliver the title it so craves. ❦

P32 DETAILS OF FERRARI'S F1-75

FERRARI F1-75

JAKE BOXALL-LEGGE

An entirely new approach stretches beyond the chassis regulation reset to a significant warming of the powertrain – ahead of the big freeze – as Ferrari attempts to claw back the ground lost since 2019



SIDEPODS

One of the biggest curiosities around the F1-75 lies in the sidepod region. The inlet features a distinct channel, underneath which parallels the inlet for the underbody. Air then cascades along the very squared-off sidepods and out around the back. Like the Aston Martin AMR22, the inclusion of the gills on the engine cover opens up the cooling, so that the rear of the car can be tightened up more.

Those gills fall into another channel on top of the sidepods – similar to the U-shaped sidepods seen on McLaren's MP4-26 from 2011. Back then, McLaren's goal was to use the channel to divert more air to the floor. In Ferrari's case, the dip in the sidepods could be used to produce a similar effect, given the shape of the trailing edge is not dissimilar to the MP4-26, but it also appears to yield a larger surface area to fit the cooling louvres, while potentially also assisting the beam wing at the rear.

SUSPENSION

To contend with the 18-inch Pirelli tyres, Ferrari has had to rework its suspension, but has elected to stick with the pushrod-front and pullrod-rear compositions that have been time-tested in modern F1. The positioning of the suspension arms at the front has been done in a compact manner, and presumably the aerodynamicists have been able to find enough space at the rear to open out the venturi tunnels without forcing the vehicle dynamicists to shift the rear rockers above the gearbox.





FRONT END

The new nose is of a modular design, which means that Ferrari can change the tip without having to cart around the full noses. This suggests that it has an array of front-wing geometries to trial. Other designs seen so far have included the tip of the nose on the second (rather than the first) front-wing element's leading edge, but Ferrari's nose extends onto the first wing element. There's also a tiny NACA duct on the nose, which could yield a driver cooling benefit.

The front wing is quite inboard-loaded, using the inside part of the wing to generate most of the downforce, while it features a spoon-shaped centre section. By getting more downforce out of the centre of the wing, the team can trim back the outer parts of the wing and use that to direct airflow out around the front tyres.



POWERTRAIN

Ferrari has revisited the triangular roll hoop design of the SF1000, complete with the horns either side (these were removed last year when the team opted for an oval-shaped air intake) to suggest a slightly different requirement for the intake. Ferrari has put a lot of effort into redesigning its powertrain ahead of the incoming freeze, aiming to overcome the lobotomy that it received at the close of the 2019 season owing to its alleged bypassing of the fuel-flow limits. That comes with adapting to the newly introduced E10 fuel, giving the chemists behind the fuel composition some work to do to address any drops in power thanks to the added biofuel percentage.

Intake horns return for triangular design that will feed air to a heavily revised powertrain





SEASON
PREVIEW

CAN GROSJEAN CONQUER INDYCAR?

The ex-Formula 1 racer starred in his rookie campaign and has now joined frontrunning squad Andretti Autosport for a crack at the crown

DAVID MALSHER-LOPEZ

PHOTOGRAPHY PENSKE ENTERTAINMENT

In his rookie season, Romain Grosjean was made to feel very welcome in IndyCar by everyone, it seemed — the public, rival drivers, the media, team owners. Equally, he and his family have been captivated by America and bought a house in Miami.

Yet you still get the impression that the real reason Grosjean is staying in IndyCar is to experience that winning feeling again. He arrived at the Lotus Formula 1 team with as impressive a CV as it's possible to accrue in junior formulas, went on to score 10 podiums over the next four years despite never having the best car, and then felt his talent being wasted in increasingly uncompetitive machinery at Haas. It's little wonder the IndyCar rookie didn't make a huge deal about losing a potential first win on the Indy road course last May to questionable blue-flag rules: the important thing was that he had fought for the win and been able to prove he still had 'it'. Two more very hard-earned podiums later in the season confirmed that.

Now expectations have been raised by his move from Dale Coyne Racing to Andretti Autosport for year two, which kicks off this weekend on the streets of St Petersburg. Sure, Michael Andretti's squad hasn't won a title since 2012, but Alexander Rossi challenged for it in 2018 and 2019, and Colton Herta scored three victories last year. Could Grosjean be a title contender in only his second IndyCar season? For now he's publicly damping down such thoughts.

"I have very little experience of the championship, especially

ovals of course," Grosjean admits. "Never done Texas or Indy, only Gateway, and this year we have two races at Iowa, and the Indianapolis 500 always counts for double points... So I need to make sure I score as many points as I can on ovals with as little experience as I have.

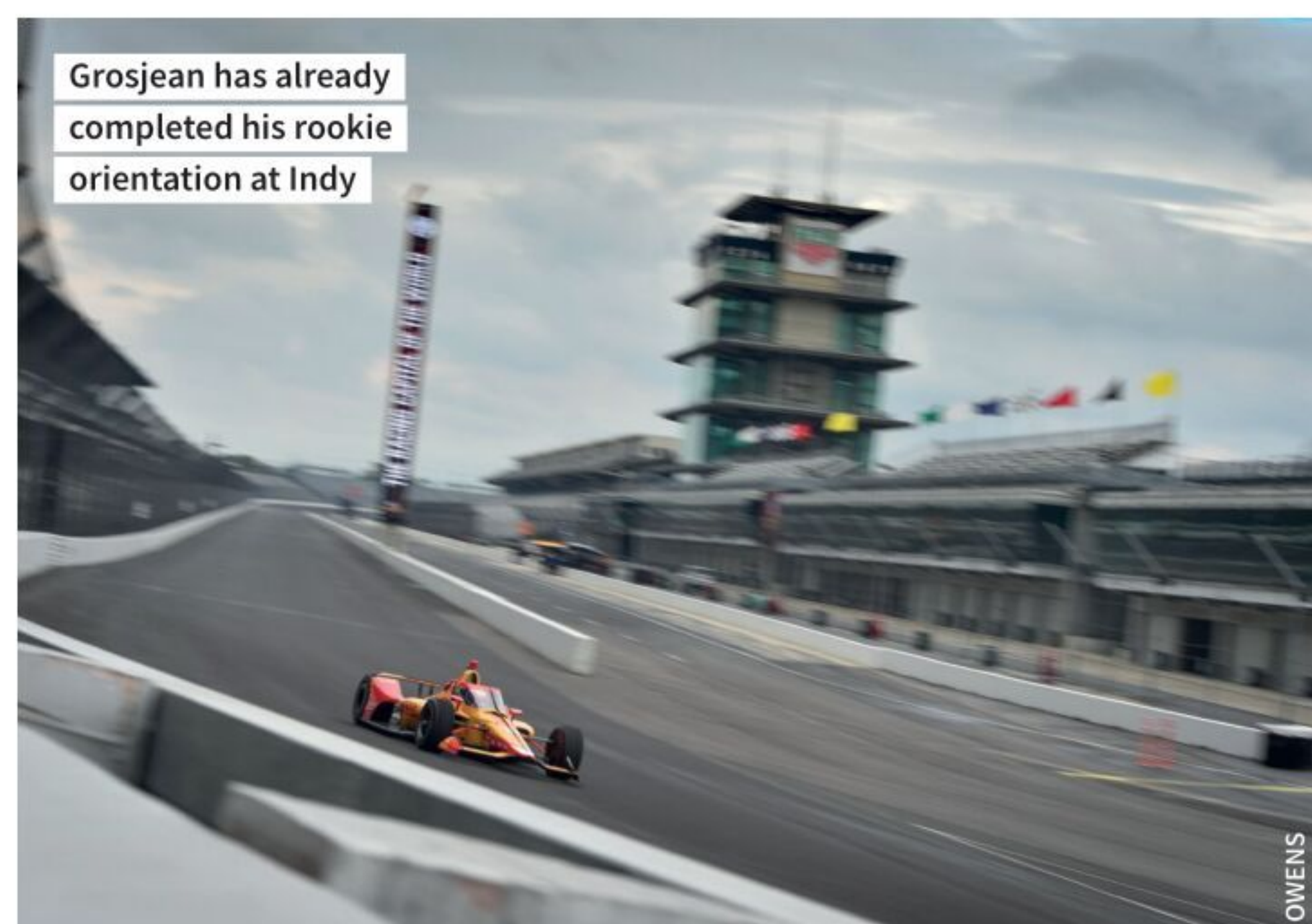
"But on the other hand, I'm with a team that is very strong and we are already working well together. From the first introduction I had with the people on the team to the test at Sebring last week, everyone has been very helpful, and the car is very good. I think my fifth lap on Monday morning was one of the fastest laps of the

session. I was able to come back to the pits and say, 'The baseline set-up is absolutely amazing!' There are a few things we can change that will make it a little more to my liking, but they are very minor adjustments.

"The relationship between the engineers at Andretti — and Meyer Shank — is very strong, and of course Olivier [Boisson] has come with me from Dale's team, and he has fitted in well. But the competition within the team is also very strong, and they have a lot more experience than me — Alexander Rossi, Colton Herta, Simon Pagenaud and Helio [Castroneves] — and we're all sharing the same information and feedback. And that's even before you look at competition from outside the team.

"But we'll see how it goes. I have good experience from life, my career, and sure, the idea is to challenge for the title in the >>

"THE IDEA IS TO CHALLENGE FOR THE TITLE, BUT I DON'T WANT TO TALK LONG-TERM BECAUSE I'M TOO OLD!"





Grosjean settled in well with his new team in a test at Sebring last week

short or medium-term. I don't want to talk long-term because I'm too old! Nah, I'm joking."

Grosjean finished his one road/street test day with second fastest time, 0.17 seconds behind Herta on Sebring's 52s, 1.7-mile lap. For a first-time experience of Andretti set-ups, that was commendable, and there is plenty more to come.

"We didn't try fine-tuning the set-up to my liking yet, we didn't change the front-wing angle all day," he says. "We stuck pretty much with the base set-up but making big changes to other things. For example, Olivier and I were experimenting with roll centres to feel what those changes did to the Andretti platform, so when we get to St Pete or Detroit we'll know what tools we have. For St Pete we will make some adjustments to give me a touch more front end, something I really love in a racing car, and from there we will see where we are."

One aspect that will help his progress is that he'll be able to lean on a couple of his team-mates when they all need to try out different set-ups during a fraught practice session. "It was interesting," he observes, "that if you looked at the traces of myself, Colton and Simon, it would be very hard to tell who is who. We drive very similar."

Just as Grosjean and Boisson appreciate their new environment, so their new colleagues appreciate the fresh stream of input, intrigued by how the #51 Coyne car last season often beat them.

"It's been very straightforward for Olivier and I to translate what we were doing last year, and apply it to the Andretti set-up," adds Grosjean. "I have 20 years of open-wheel experience and my feedback has always been one of my strengths. So when I was talking about dampers, I think the Meyer Shank guys [who tested the next day] used my feedback to make changes for their test. Andretti and Meyer Shank together is a big team and we're lucky to have so many fast drivers, so it's up to us to take advantage of this and be the best."

The elephant in the room, of course, is the aforementioned ovals. He looked brave and bold at Gateway and he passed his Rookie Orientation Program at Indianapolis Motor Speedway. But not much of what he learned on either course is applicable to Iowa Speedway or Texas Motor Speedway, or racing in the pack at Indy. What are his realistic targets on the left-turn-only tracks in 2022?

"Well, 'confident' would not be the word," he muses. "I feel you need to respect the ovals a lot, it's different from anything I've done before. I get the excitement of it, I like the chess game aspect at Indy; about getting in position and tuning your car for the final stint. I think it needs to be your day – you drive well, the car handles well, and then you need that extra bit of luck that comes with any work. It's going to be about getting up there, learning from my team-mates and doing my best to score good points, to see if I can get in the top five."

Andretti Autosport team manager and COO Rob Edwards is





“IT’S A CHANCE TO TRANSLATE THAT SPEED INTO WINS. AND WE’VE EVERY CONFIDENCE HE WILL DO THAT”

deeply enthusiastic about Grosjean’s arrival. “There’s an excitement surrounding Romain, a fresh outlook that he brings from that combination of years of experience in Formula 1 and a year of IndyCar racing in another team,” he declares. “The benefit of having both him and Olivier on the team isn’t underestimated here. To be candid, Olivier is someone we looked at hiring many years ago, and he and Romain have brought a great amount of knowledge, and also bring their own chemistry too. That will benefit the team as a whole. After the morning session at Sebring on Monday, as you’d imagine, the first bit of data that Colton and Alex wanted to look at was Romain’s.”

For Edwards, the fact that Grosjean now *wants* to race the ovals speaks volumes about how he will approach them – with the open-minded yet clued-up approach that he applied in his transition from F1 to IndyCar. ‘RoGro’ won’t run before he can walk.

“If you were listing the things that could make this year a title-winning year for Romain, one of the things we’d keep uppermost in our mind is to attack on the courses that he knows,” says Edwards. “Go for the wins on road and street courses, but at places like Iowa and Texas, remember that the championship is not generally won by anyone with more than one DNF.”

Still, like Grosjean himself, Edwards is keeping his expectations for the #28 car very much on the moderate side. “I’d be very disappointed if we couldn’t get Romain, Colton and Alex in the top 10 in the championship,” he says, “and I think the goal is to have at least two of them in the top five. Which one of them is where, I think, will come down to things outside our control...”

“Colton should have won the championship last year, and we can look at it as a missed opportunity, so the #26 programme is focused on making sure that opportunity isn’t missed again. In Alex’s case, the focus is on getting back to the way they were in 2018 and 2019, and some of that is about not putting too much pressure on – getting back to what comes naturally, and not thinking about, ‘It’s been X number of races since we last won.’ If you’re qualifying top six and running in the top three each weekend, at some point it’s going to be your day.

“And as for Romain... Well, for us it’s an opportunity to get fresh insight that helps push the whole team forward, and for him – someone who’s clearly very quick – it’s a chance to translate that speed into wins. And we’ve every confidence he will do that.” ❧

CHEVY AIMS TO SHIFT BALANCE OF POWER



Crucial to Andretti Autosport’s championship aspirations will be Honda continuing to hold an edge over Chevrolet, although that is by no means a foregone conclusion. In the 11th and final year of the 2.2-litre twin-turbo V6 formula, Chevrolet is not throwing in the towel to focus on perfecting its 2.4-litre hybrid units for 2023. It’s got something up its sleeve to try to reverse the trend that has meant Honda overcoming its previous deficit and beating Chevy to the manufacturers’ crown the past four years, and powering the two most recent drivers’ champions.

Given the minimal amount of fettling the manufacturers can do to the current engine, Chevy has decided to emulate its rival and allow more variations in engine mapping to tailor its characteristics to an individual driving style.

“We’re re-evaluating every part of our programme, including how we tackle a race weekend and how we operate with our teams,” says Rob

Buckner, GM’s IndyCar programme manager.

“So there are modified approaches that we’re going to be trying in 2022.

Relying on driver feedback

is probably not the right thing to do it because the details are so small that drivers won’t feel it, so we have to do a better job of summarising and making data-driven decisions on the way our engine operates at the track.

“That said, we use driver feedback to help define our goals, and our expectation is to increase the levels of driveability refinement and consistency that our drivers are looking for. We get pretty constant feedback that our engines can be pretty difficult to drive, [and] there are some areas where our engine is very strong and some areas where we can use a bit more oomph.”

But Chevy, which powers Penske’s attack, is unlikely to gain ground when it comes to fuel mileage. Last year, when engines were at their leanest fuel settings as drivers tried to extend a stint, Honda’s superior punch out of a turn meant their drivers could arrive at the end of a medium-length straight travelling some 6mph faster, allowing them to back off sooner, thereby saving fuel, while turning the same lap time as a Chevy-powered rival.

**“IN SOME AREAS
WE CAN USE A BIT
MORE OOMPH”
ROB BUCKNER**

SEASON
PREVIEW

FIVE THINGS TO WATCH IN INDYCAR THIS SEASON

From veterans' prospects to rookies' hopes, plus the chances of a new championship-winning team, here's what will set the agenda in 2022

DAVID MALSHER-LOPEZ

PHOTOGRAPHY PENSKE ENTERTAINMENT



OWENS

WILL THE CASTRONEVES-PAGENAUD COMBO TAKE MSR TO THE FRONT?

"Jack Harvey's a very good driver, but why was he so excited to leave Shank and go to Rahal's team?" remarked one entirely objective paddock luminary to Autosport last week. "I think he needed to be a bit more patient, give it another year – because I reckon he's quit Meyer Shank at exactly the wrong time, and he's going to be kicking himself..."

This comment came just a couple of days after new recruit Simon Pagenaud and former part-time – now full-time – MSR driver Helio Castroneves finished 1-2 in a 14-car test at Sebring, and just a couple of weeks after the pair helped MSR win the Daytona 24 Hours. Yes, our observer may be right about MSR hitting its stride in 2022.

Pagenaud (who turns 38 in May) and Castroneves (who'll be 47 the same month) wouldn't have been everyone's picks for a team expanding to two full-time entries for the first time. Notwithstanding his brilliant fourth Indy 500 victory, Castroneves needed his other five IndyCar outings last year to blow the rust off on road and street courses. And, frankly, we still don't know if that task is complete,



Castroneves and Pagenaud
will have a combined age
of 85 come the Indy 500

OWENS

and whether he can get back to the form he showed at Team Penske before 'The Captain' moved him across to his IMSA squad for three years.

There are question marks over Pagenaud too. When he's confident, the 2016 champion flies – he can't help excelling at Indy (where he won in 2019) and Toronto, for example. But since the universal aerokit was introduced in 2018, he never looked a consistent match for erstwhile Penske team-mates Josef Newgarden and Will Power.

Pagenaud can remedy that. He's already adapting to the Andretti/MSR-derived 'family' of set-ups, and he's enjoying the Honda's progressive

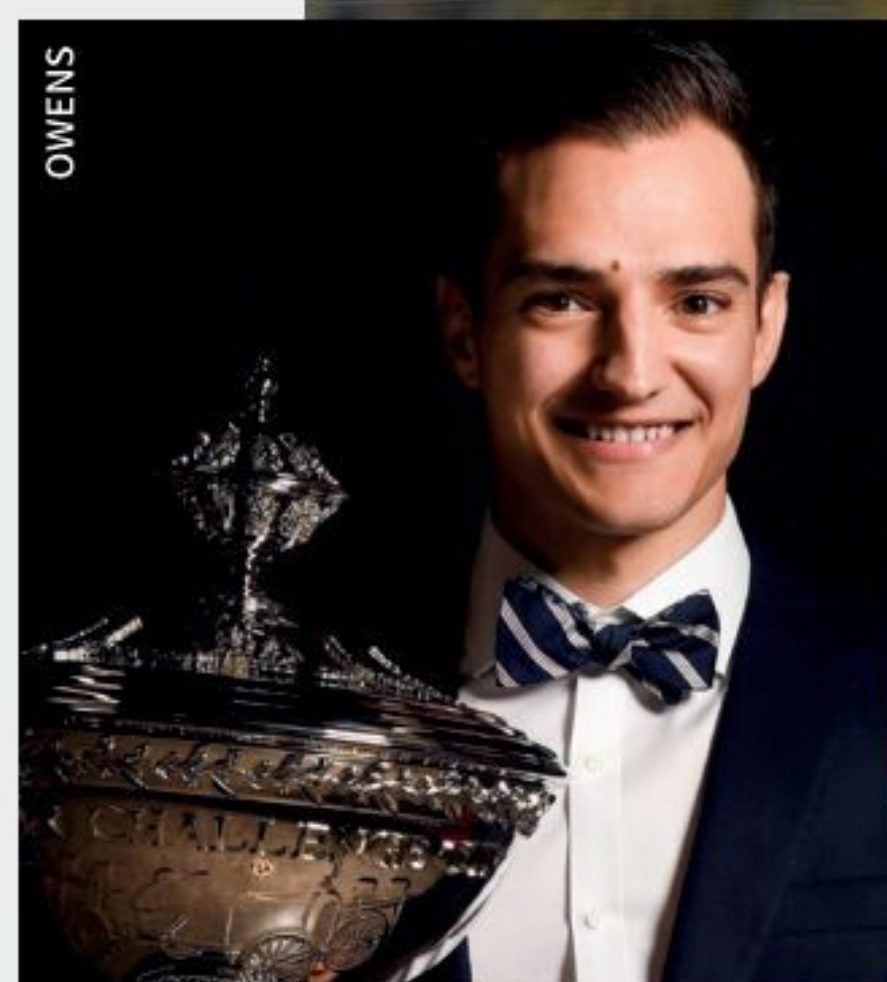
power delivery, and working with his new race engineer Garrett Mothersead. "It's difficult for me to express too much about it because I don't want to betray anyone at Chevy and I respect them and all the success we had," says the Frenchman. "But... the set-up is drastically different to what I used to run with Chevy and Penske. I was talking to my engineer Garrett because I have been shocked by some changes that he makes that work really well but didn't work well for me in the past."

Asked if he was a dark horse for the IndyCar title, Pagenaud responded: "Yes, I would like to be seen that way."

CAN PALOU DEFEND HIS CROWN?

Alex Palou is one of the many novice IndyCar drivers who, upon changing teams, have discovered that despite the series comprising spec Dallaras, set-up philosophies can vary markedly from squad to squad. But we can safely say that he adapted swiftly in his switch from Dale Coyne Racing to Chip Ganassi Racing for his sophomore IndyCar season in 2021. He won first time out with CGR, and the fact that he went on to earn two more wins, five other podiums and the championship is the stuff of modern-day IndyCar legend.

Without grid penalties for early engine changes (three times he suffered last year) it would have been easier so, assuming he's got those misfortunes out of the way, he now has to focus on improving his own qualifying performances. It's not that he was sluggardly by any means but, as his race engineer Julian Robertson says: "If you want to beat them



Palou needs more oval experience, but he's a fast learner



all at the end of the race, the easiest way is to start ahead of them by beating them all in qualifying."

Robertson also cited ovals as an area where Palou needs to gain experience. His runner-up finish at Indy last year was deeply impressive, but he needs more miles under his belt at Texas Motor Speedway and Gateway – and the returning Iowa Speedway. "He and I don't have much experience working together at ovals,"

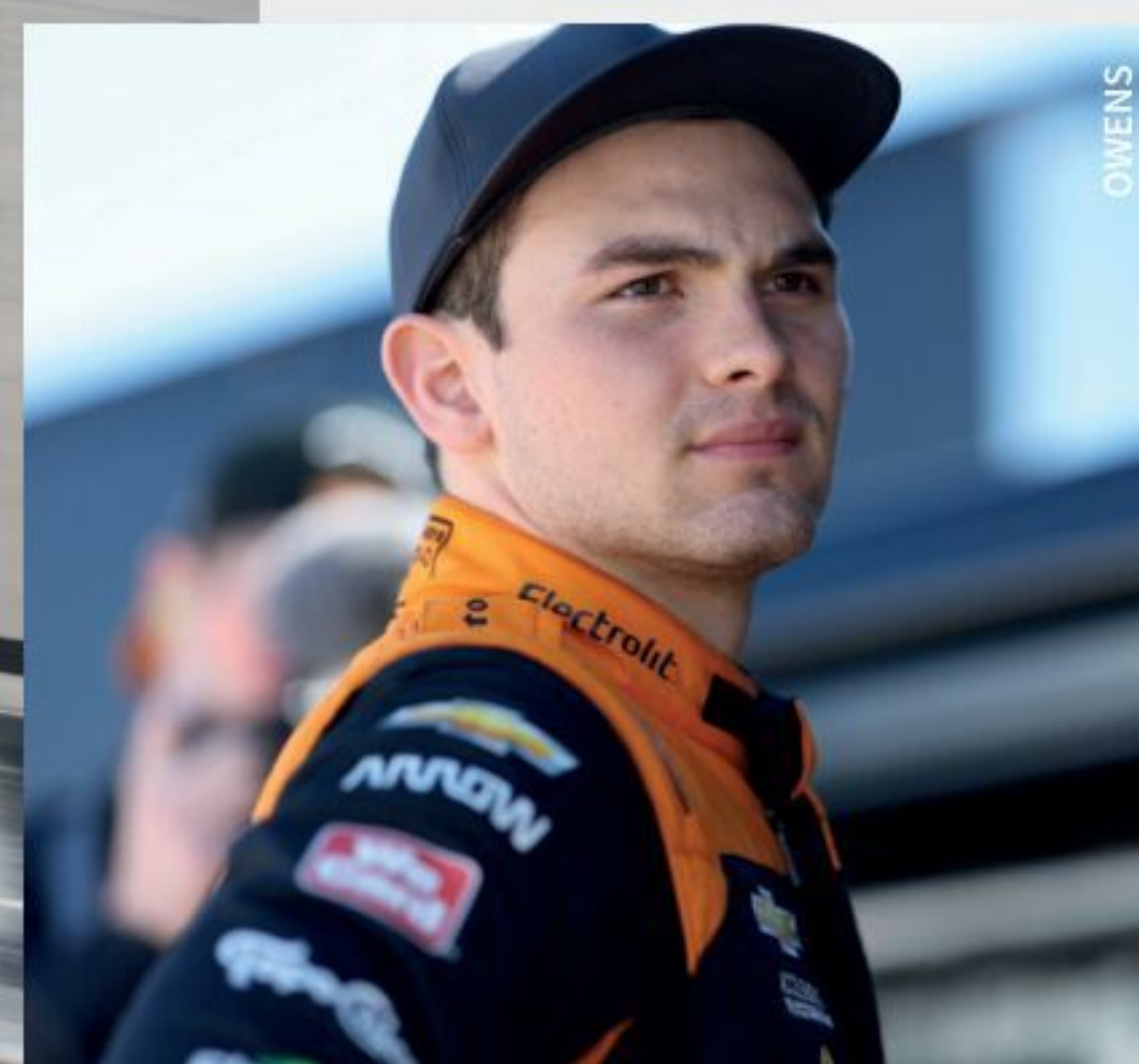
says Robertson. "That's an area where we can target a step forward. And that becomes more important with Iowa being thrown back in the mix, and as a double-header: a lot of points available there. Iowa is a tough track, and we as a team have had our ups and downs there."

If anyone can learn and improve at breakneck speed, however, it's the reigning champion. It would be a shock were he not in the title hunt come September.

IS ARROW McLaren SP CONSISTENT ENOUGH FOR O'WARD (AND ROSENQVIST) TO CHALLENGE FOR THE TITLE?



O'Ward needs set-up solutions that are kinder to his Firestones



For some, this is perhaps the biggest question of all. Partly that's driven by most people loving Pato O'Ward's combination of sparky personality and derring-do on track, partly it's a love of McLaren's rich heritage... But it's possibly also because so many observers are desperate for some team – any team – to break the Ganassi-'n'-Penske nine-year stranglehold on the IndyCar championship. As one engineer from a rival team remarked: "You keep writing that IndyCar is the most open series, and it's the most competitive it's ever been, but it's always the same two teams who come

out on top at the end of the year."

Can Arrow McLaren SP end this streak? The team's extremely front-end-positive set-ups in 2021 proved a double-edged sword, 'turning on' the Firestones for late-race restarts, but frequently punishing them over a whole stint. There were even times when O'Ward couldn't take advantage of his tyres warming up swifter than those of his rivals because he had to be mindful of having enough grip 20 laps later.

But AMSP, if it hasn't already become one of the top-echelon teams, is on the cusp of doing so, and some extremely intelligent folks on

either side of the Atlantic have been using their grey matter to find alternative set-up solutions that are kinder to the rubber.

Craig Hampson's ever-increasing influence over Felix Rosenqvist's car last year appeared to pay dividends in the final third of the season. The Swede hadn't liked the team's road/street set-up philosophy and had been off O'Ward's pace. And then, as his car was made less 'nose-heavy', and more like the set-ups he was used to from his Ganassi days, Rosenqvist started to flourish. With Hampson as his race engineer for 2022, he may become the star we expected.

ENTRY LIST

NO	DRIVER	TEAM
2	Josef Newgarden	Team Penske (Chevrolet)
3	Scott McLaughlin	Team Penske (Chevrolet)
12	Will Power	Team Penske (Chevrolet)
4	Dalton Kellett	AJ Foyt Racing (Chevrolet)
11	Tatiana Calderon	AJ Foyt Racing (Chevrolet)*
14	Kyle Kirkwood	AJ Foyt Racing (Chevrolet)
5	Pato O'Ward	Arrow McLaren SP (Chevrolet)
6	Juan Pablo Montoya	Arrow McLaren SP (Chevrolet)**
7	Felix Rosenqvist	Arrow McLaren SP (Chevrolet)
8	Marcus Ericsson	Chip Ganassi Racing (Honda)
9	Scott Dixon	Chip Ganassi Racing (Honda)
10	Alex Palou	Chip Ganassi Racing (Honda)
48	Jimmie Johnson	Chip Ganassi Racing (Honda)
TBA	Tony Kanaan	Chip Ganassi Racing (Honda)**
15	Graham Rahal	Rahal Letterman Lanigan Racing (Honda)
30	Christian Lundgaard	Rahal Letterman Lanigan Racing (Honda)
45	Jack Harvey	Rahal Letterman Lanigan Racing (Honda)
18	David Malukas	Dale Coyne Racing (Honda)
51	Takuma Sato	Dale Coyne Racing (Honda)
20	Conor Daly	Ed Carpenter Racing (Chevrolet)
21	Rinus VeeKay	Ed Carpenter Racing (Chevrolet)
TBA	Ed Carpenter	Ed Carpenter Racing (Chevrolet)**
23	Santino Ferrucci	Dreyer & Reinbold Racing (Chevrolet)**
24	Sage Karam	Dreyer & Reinbold Racing (Chevrolet)**
26	Colton Herta	Andretti Herta Autosport (Honda)
27	Alexander Rossi	Andretti Autosport (Honda)
28	Romain Grosjean	Andretti Autosport (Honda)
29	Devlin DeFrancesco	Andretti Autosport (Honda)
98	Marco Andretti	Andretti Autosport (Honda)**
77	Callum Ilott	Juncos Hollinger Racing (Chevrolet)
60	Simon Pagenaud	Meyer Shank Racing (Honda)
06	Helio Castroneves	Meyer Shank Racing (Honda)

*road/street courses only

**Indy 500 only

2022 INDYCAR CALENDAR

RD	LOCATION	DATE
1	St Petersburg	27 February
2	Texas Motor Speedway	20 March
3	Long Beach	10 April
4	Barber Motorsports Park	1 May
5	Indianapolis	14 May
6	Indianapolis 500	29 May
7	Detroit Belle Isle	5 June
8	Road America	12 June
9	Mid-Ohio	3 July
10	Toronto	17 July
11	Iowa Speedway	23-24 July
12	Indianapolis	30 July
13	Nashville	7 August
14	Gateway	20 August
15	Portland	4 September
16	Laguna Seca	11 September

HOW WILL THE ROOKIES FARE?

It's worth keeping an open mind about Andretti Autosport rookie Devlin DeFrancesco. And, as expressed in a feature in last week's issue, Kyle Kirkwood has the talent and fresh approach that could breathe new life into AJ Foyt Racing.

For one of his team-mates (on road and street courses), Tatiana Calderon, 2022 will be an uphill struggle because she's yet to prove herself in 'big' open-wheel cars, despite her competence in sports-prototypes.

David Malukas kept Kirkwood under pressure during the 2021 Indy Lights season, which says a lot about the 20-year-old from Chicago who has looked strong in testing for Dale Coyne Racing. He is deeply determined and eager to learn from veteran team-mate Takuma Sato.

Christian Lundgaard was startling in his one-off outing with Rahal Letterman Lanigan Racing last year, and is expected to be right on pace with team-mates Graham Rahal and Jack Harvey. He's surely the hot tip for Rookie of the Year.

Callum Ilott ran three races for Juncos Hollinger Racing last year and showed the flashes of promise you'd expect, given his and his team's junior formula credentials. But both will struggle to overcome the impediments caused by being a one-car outfit.

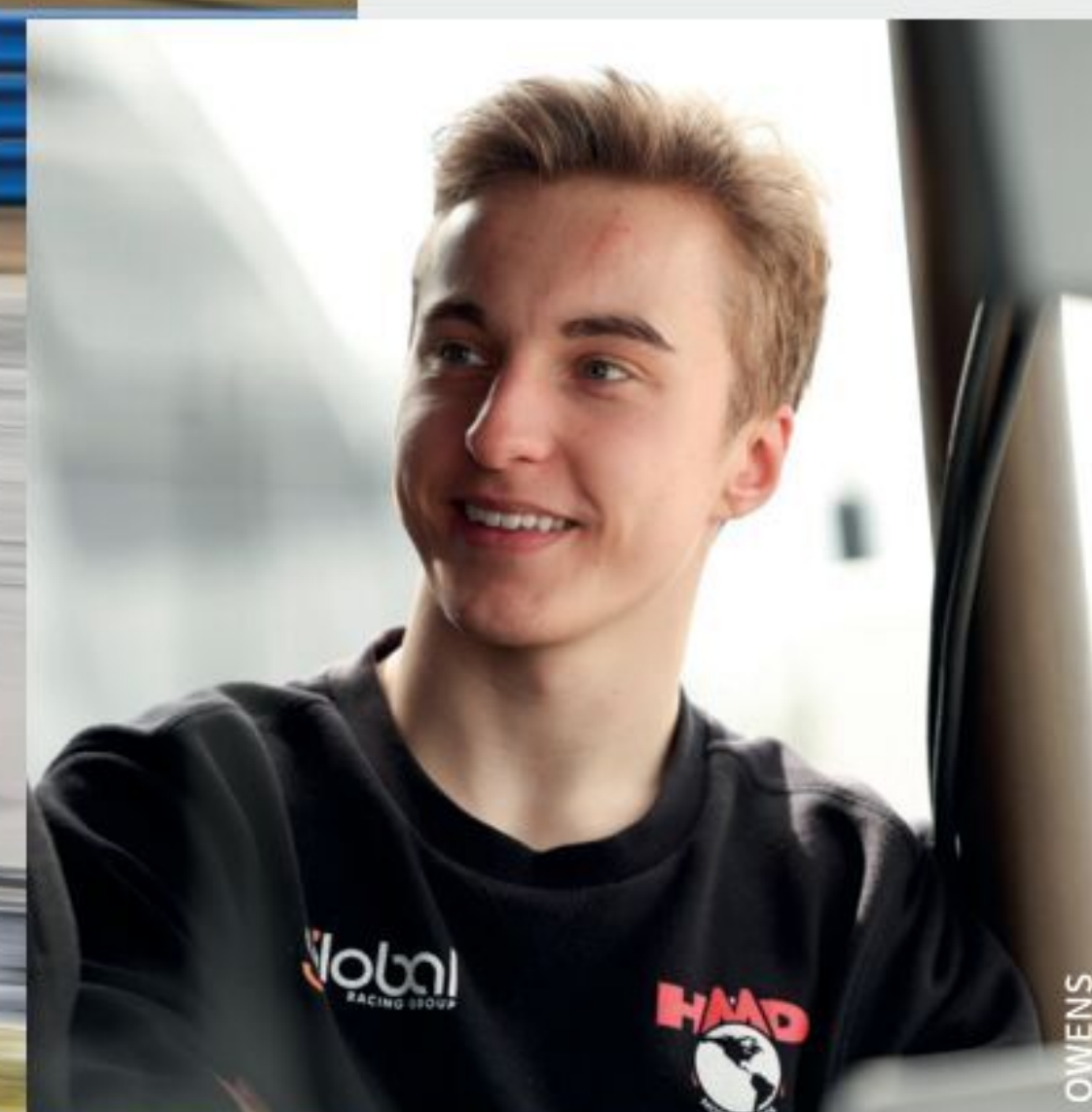


Dixon was regularly shaded by team-mate Palou last year

BLACK



Dale Coyne Racing's
David Malukas has
looked strong in testing



BLACK

OWENS



Lundgaard would
be a decent bet for
Rookie of the Year



OWENS

OWENS



Power got his act
together to retake his
place as a top qualifier



OWENS

IS THERE LIFE (ARE THERE WINS?) IN THE FORTYSOMETHINGS?

For both Scott Dixon and Will Power, 2021 was a scrappy, aggravating season, that resulted in only one win apiece (although there woulda/coulda/shoulda been at least one more for each), and at times both were left puzzled by being outperformed by a team-mate.

For Dixon, this was more troubling since it went on for much of the year, with Chip Ganassi Racing stablemate Alex Palou regularly outpacing him in qualifying and races, at least on road and street courses. Power's troubles in comparison to Team Penske partner Josef Newgarden were more sporadic, and appeared to afflict him in the middle third of the year, but then he got his act together not only in terms of set-ups but also his mental approach to qualifying. He stopped bailing out of any flying laps where he felt he'd made an error and instead pressed on, and thus re-established himself as a top qualifier.

Anyone who thinks these Antipodean rivals are spent forces should think again. Between

them they have 91 wins, and that's because they're always learning, always seeking ways to improve. They also drive for teams where there are enough facilities and research resources to tailor their set-ups to suit, to plough slightly more individual furrows should that prove necessary.

Helio Castroneves, as stated elsewhere, still needs to prove he's back on the pace, although practice at Portland and qualifying at Long Beach last year suggest yes, he has still got it. But there is another Indy 500 winner who needs a big year, and that's Takuma Sato. Following four years and four wins – including his second 500 triumph – at Rahal Letterman Lanigan Racing, he has moved to Dale Coyne Racing after a subdued 2021. Sato has had only one test day with the team heading into St Petersburg, but he has the experience, skills and motivation to boost himself and his team forward.

RACE CENTRE

DAYTONA 500 • WORLD OF SPORT

Cindric (left front) bumped Blaney (12) into wall before pipping Wallace (right)



CINDRIC AMONG THE SINNERS

NASCAR's big one turned into a festival of wreckage, and surprise winner Austin Cindric was certainly no choirboy

CHARLES BRADLEY

PHOTOGRAPHY  **motorsport
IMAGES**

The 64th running of the Daytona 500 took three and a half hours to complete but came down, as it so often does, to the final seconds. Austin Cindric – on his team boss Roger Penske’s 85th birthday – elbowed his team-mate Ryan Blaney into the wall and then fended off Toyota’s Bubba Wallace by 0.036 seconds for a remarkable victory.

On the debut of the Next Gen car in NASCAR’s Cup Series, and in front of a packed house of over 120,000 fans, it was ‘next-gen driver’ Cindric – running full-time in the series as a rookie for one of the US’s finest teams – who galloped with the hounds all day to become the second-youngest driver to win America’s Great Race at the age of 23.

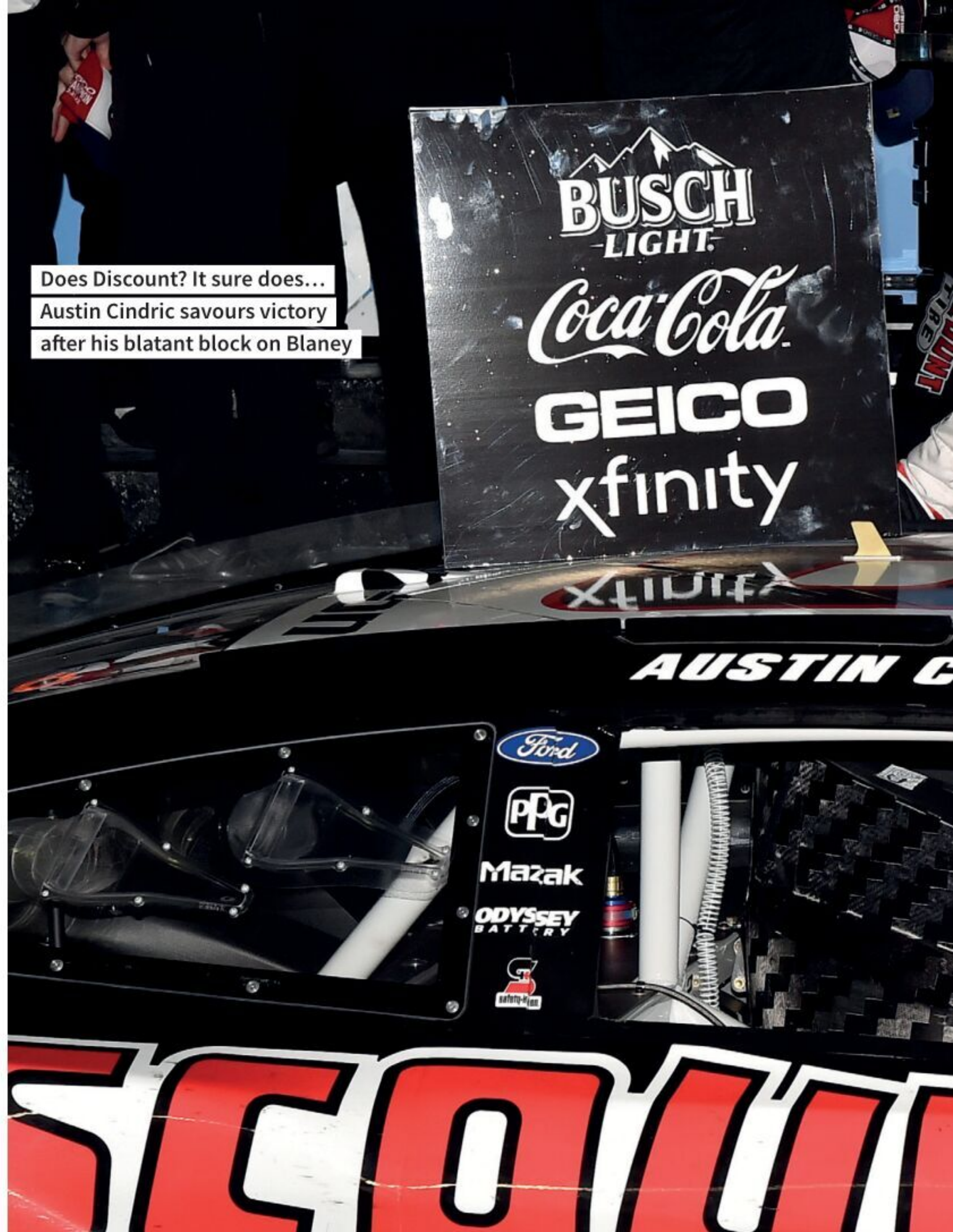
The 500-miler required an overtime finish, after the fourth multi-car pile-up of the day caused a red flag and clear-up with four laps to go. At the final restart, run over just two laps, Cindric’s Penske Ford Mustang was pushed into a clear lead by RFK Racing’s Brad Keselowski and cut across the bows of his Team Penske stablemate Blaney to hug the inside lane. Keselowski, who stayed in the outside lane, was now being shoved by another Ford, the Stewart-Haas Racing version of Chase Briscoe. The only rival to Ford in the frame was the 23XI Racing Toyota of Wallace, who was looking for all the friends he could muster after most of his colleagues had been wiped out of the race – most of them by the bad boy of the day, Keselowski.

As the white flag flew to herald the final lap, with 2.5 miles between himself and stock car immortality, Cindric led Blaney and Keselowski in a Ford 1-2-3. On the backstretch, where most of the momentum is generated by bump-drafting, Wallace shoved Blaney into Cindric before dragging his brake, so Aric Almirola (Stewart-Haas Ford) got into his tail in Turn 3. This was the final push for victory...

Cindric briefly left the sanctuary of the double-yellow line at the bottom of the track, to try to disturb the air for the chasing Blaney and Keselowski, but the race’s outcome would be decided by pushes and blocks in the following dozen seconds.

Firing off Almirola’s nose, Wallace bumped Blaney through the final corner, the top three cars now running nose-to-tail as, behind them, Briscoe and Kyle Busch got into the wall on the outside, pressing on with even greater momentum. Meantime, Keselowski found himself in no man’s land, stranded in a middle lane all of his own as he ran out of anyone who’d go near him.

As they raced to the finish in the tri-oval, Blaney jinked right to try to pass Cindric over the top in the frantic dash to the line, but his team-mate saw this coming and veered to the right himself, banging fenders and causing Blaney to brush and then tank-slap



“I WAS COMMITTED TO HIM UNTIL I WAS 100% SURE THAT ONE OF US WAS GONNA WIN... AND ONE OF US DID”

into the wall. To Cindric’s left side, Wallace was still coming hard too, and more contact was made as Cindric pulled down, which was enough to beat Wallace by a fraction.

As they all crossed the line in a heartbeat, Briscoe snatching third from Blaney, last year’s winner Michael McDowell was sent into a wicked head-on hit into the wall by a combination of David Ragan (who also crashed hard) and Keselowski (who’d wrecked just about everyone else in this race so he wasn’t about to stop now).

After the sparks had flown, one delirious celebration and many recriminations began, the curtain closing on a race that delivered





DAYTONA DUELS



KESELOWSKI AND BUESCHER SCORE DOUBLE FOR RFK FORDS

The Daytona Duels set the 500's starting grid and proved hugely successful for the renamed Roush Fenway Keselowski Ford team, which unexpectedly swept both races. Co-owner/driver Brad Keselowski, who left Penske in the off season, won the opener, and the way he outsmarted former team-mate Ryan Blaney was a sweet way to kickstart his new deal.

Sunday's pole-winner Kyle Larson led the opening stages, which went single-file by lap eight with a train of Chevys out front. This was the first-ever racing in anger for the Next Gen cars, and the potential for overtaking was clearly there – tempered by a paucity of spares and back-up cars.

This race pivoted on the pitstop cycle. Chevrolet clearly had a manufacturer strategy to change all four tyres – pitstops are much faster with the central-lug wheelnut system – but everyone else took right-sides only, which was worth 4s difference with only a splash of fuel required.

Chevy had shot itself in the foot, but learned a valuable lesson in handing the race to Ford. Blaney, who'd aced his stop, took control ahead of Keselowski, Chase Briscoe and Austin Cindric. The sole Chevy (Tyler Reddick) and Toyota (Kurt Busch) in the lead group quickly lost the draft as the Fords worked together in tandem.

In the closing laps, Keselowski – who'd bump-drafted Blaney hard – made his move in the tri-oval with four to go, completely catching Blaney by surprise. Blaney regrouped, but his chance of retaliation dissolved when Keselowski's Penske replacement Cindric hung him out to dry on the last lap to cheekily gain second. "Brad surprised me with that move so early," said Blaney through gritted teeth. "Nice move."

Duel 2 was won by Keselowski's stablemate Chris Buescher. The Fords again had the upper hand, outpacing the five-car Toyota fleet. That lost key man Denny Hamlin, the three-time 500 winner inexplicably spinning as he entered pitlane.

Joey Logano led until the very last lap, when Buescher made a clean move off Turn 2 and Logano blocked him way too late, effectively wrecking himself as they made contact. Logano later admitted to a "dumb mistake" that forced him to a back-up car for the 500.

Last year's 500 winner Michael McDowell just missed the wreck to finish second, ahead of rookie Harrison Burton, who collected the wall-bound Logano but continued. Kyle Busch led the Toyota train in fourth.

exactly what the crowd had come to see – even if perhaps their favourite driver wasn't in Victory Lane. Plenty of cheers rang around this packed-out superspeedway that's seen a thing or 500 in its time.

Standing victorious was Cindric, the 14th Ford driver to win the Daytona 500 since 1963, and the son of Roger Penske's right-hand racing president Tim. "I knew I had the car to do it, but there are so many things that have to play out correctly and putting yourself in position," he said. "Sometimes you have to force people to help you and I definitely didn't expect any help throughout the day. It's a racer's dream, and so many people get close to it, and I feel very grateful and very proud to be able to pull it off."

In his wake lay a field of angry men, none more so than Wallace, who beat himself up about finishing second in the 500 again. Only two Daytona 500 finishes have officially been closer: Denny Hamlin's 2016 win by 0.01s and Kevin Harvick's by 0.02s in 2007.

And there's nothing worse than being a close runner-up, right Bubba? "Just dejected," he rued. "But the thing that keeps me up is just the hard work that we put into our speedway stuff from everybody at 23XI Racing, proud of them, can't thank them enough. But just short. I thought our Toyota team-mates did good work until they got picked off one, two, three throughout the race, so we just had to survive. I'm going to be pissed off about this one for a while. I was happy on the first second place we got a couple years ago. This one sucks when you're that close."

Even more rueful was Blaney, who'd just been walled by his rookie team-mate in the biggest race of the year and finished fourth. That clearly stung. "The last lap I got good pushes on the bottom from [Wallace] and then I was able to get Austin in front," he recounted. "Off of four, where we were good enough to make a move, I got blocked and I ended up getting fenced."

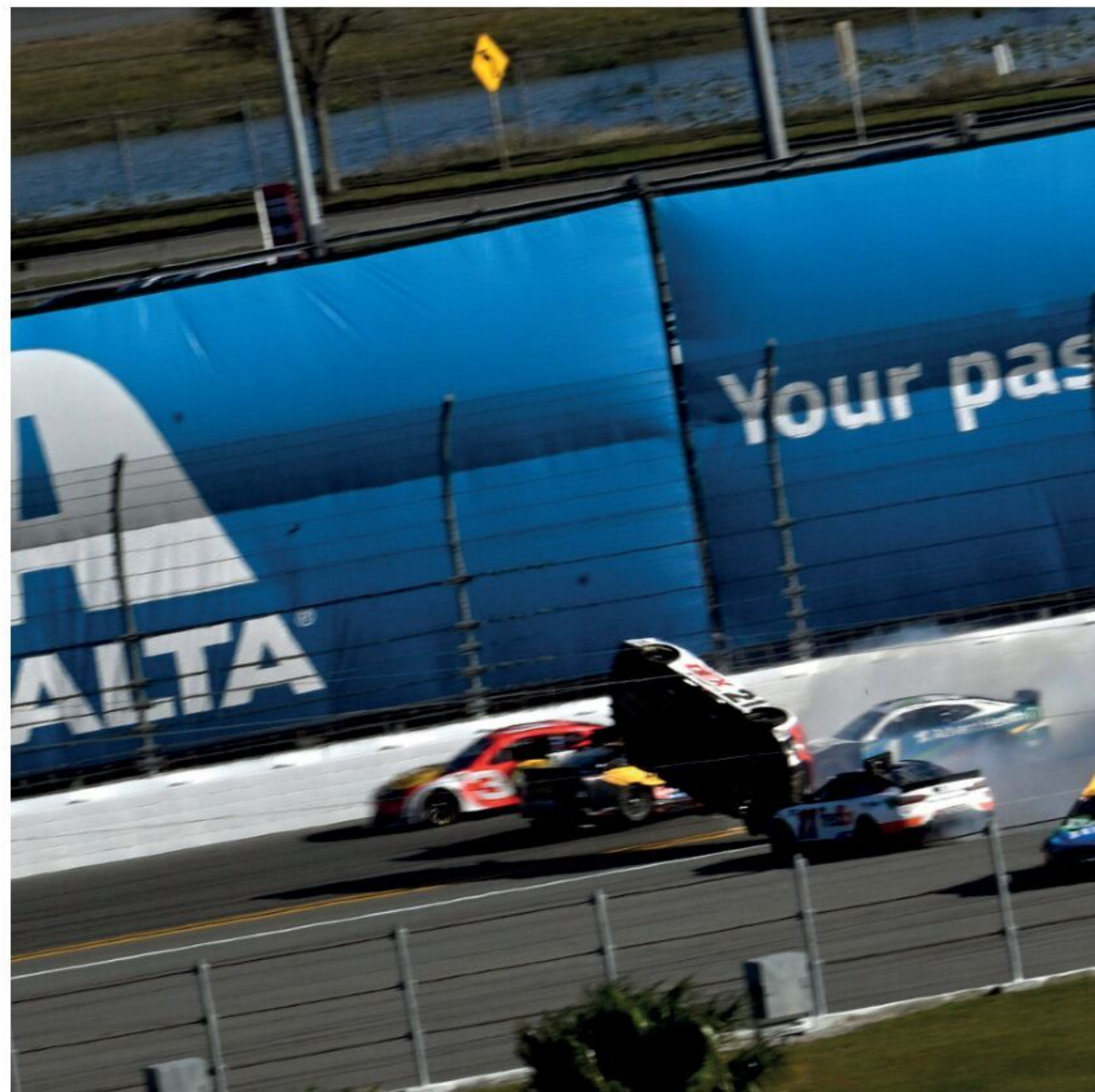
"I'm happy for Roger Penske, winning the 500 on his birthday. It's just one of those things. It didn't work out. We still ended up fourth, but I don't know another perfect position we could have put ourselves in to win the race. I was committed to him until I was 100% sure that one of us was gonna win... and one of us did."

Pushed if it was fair or foul, Blaney replied: "I don't know. Congrats to him, I guess. You've got to throw a block in that situation."

While Cindric's win came as a shock to many, if you rewind back to lap 41 – when he punted Briscoe into a spin under yellow >>



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– the outcome might have been very different. Backmarker Kaz Grala had lost a wheel after the opening round of pitstops, causing the race's first caution period, and at Turn 1 the drivers who'd finish first and third a few hours later got together when the field checked up in avoidance and Cindric sent Briscoe spinning off his nose. "Definitely an 'oh shit!' moment pretty early on," admitted Cindric.

"We were very fortunate that we didn't get any damage," explained Cindric's crew chief Jeremy Bullins. "I know Austin feels bad about turning [Briscoe] around there. I think the position he was in, he couldn't see the tyre, and I think those guys in front of him did and started checking up for it."

"Austin just kind of had too much momentum there, so I'm really glad it didn't ruin the day. It was just one of those things when you get – it's so hard to see past the guy in front of you that those guys were able to see something he wasn't."

Let's go back a little further: once the Chevrolets that had locked out the front row had fallen back, the early exchanges were all about Ford versus Toyota. Keselowski led by the end of lap one, easily sweeping past poleman Kyle Larson as Fords owned the outside lane. The Toyotas were fewer in number but more than equal on lap time, and Kyle Busch led their early charge.

That first caution for Grala/Briscoe followed a round of green-flag pitstops, which were enlivened by 1997 Formula 1 world champion





“OBVIOUSLY I’M NOT QUESTIONING BRAD’S ABILITY, BUT HE GOT WIDE AND KIND OF SHOT ME TO THE INSIDE”

Jacques Villeneuve entering the pits going backwards, a moment from which he recovered (he’d finish 22nd, two laps down).

After a second caution, when Justin Haley’s car broke a right-front wheel, the Ford-vs-Toyota duel turned nuclear coming off Turn 2 on lap 63. Keselowski was pushing the famed #21 Wood Bros car of Harrison Burton hard, too hard as it proved. “Can’t push on the right, Brad,” wailed Burton after he was sent spinning, first into the Chevy of William Byron, and was then struck by the colliding Christopher Bell and Ross Chastain.

Despite his roof flap deploying as designed, Burton’s car took off, performed a perfect flip, and landed back on its wheels. While he was out of the race, the real damage was sustained by Toyota when Kyle Busch spun, and three-time 500 winner Hamlin took enough damage to put him out on the spot, while Bell had to go to the garage for repairs. Byron’s car slammed the inside wall hard and Chastain’s Chevy was wrecked too among the eight cars involved.

“The bottom lane was nicely controlled but I noticed the outside line was squirrely,” sighed Byron. “We were doing a good job with our gaps, and [Burton] slid down the track. We were definitely going to finish in the top five in that stage, our car was really fast.”

Keselowski, who initiated the huge shunt, told his spotter: “I thought I was attached to [Burton] pretty good. I was surprised, that was not the area I was struggling with taking a push.”

Burton added: “Obviously, I’m not questioning Brad’s ability, but I think he just got a little wide on my right side and kind of shot me to the inside there. We were working good together up to that point. There were a couple moments where I was having to save it kind of sideways and obviously just one too many and we ended up upside-down. Once I got backwards I just blew right over.”

That prematurely ended the first stage, with Martin Truex winning out — his Joe Gibbs Racing Toyota was just in front of Byron when the wrecks ensued behind him.

The second stage ended with the same result, with Truex winning again, but in altogether different circumstances. In some >>

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ALL MAJOR SERIES**



hectic racing to the finish, Larson got shuffled out of the lead by a Keselowski divebomb at Turn 2, with Keselowski's old team-mate Joey Logano (Penske Ford) pushing him hard. Logano then bailed on Keselowski to pick up a draft from Briscoe, who was desperately trying not to go a lap down after overshooting his pit stall during green-flag stops, but it was Truex who got the best run of all off the final corner and took the stage victory.

The final stage was relatively tame until Tyler Reddick's rear suspension broke off Turn 4, and he was clipped by Villeneuve. In the mess that ensued, Truex collected Reddick, ending his hopes of a perfect day, while Kurt Busch and Logano also got involved and sustained damage that ended their hopes of further 500 glory.

With 41 laps to go, Cindric was now out front after a rapid two-tyre stop from Penske, heading Wallace, Blaney and Erik Jones who'd taken fuel-only. The earlier Ford vs Toyota battle was now resumed, with Cindric and Blaney racing hard side by side with Wallace and Kyle Busch.

Chevrolet's best bet was Ricky Stenhouse, who made a perfectly timed run to disrupt the Toyota line with 25 laps remaining, and entered the fray as a serious contender for the win.

The flow of the event was disrupted when Larson got a huge run in the tri-oval but came across a slowing Chris Buescher and Harvick just at the wrong time. Harvick's car turned into Noah Gragson, who'd been having a great run on his 500 debut, while Todd Gilliland also took a hard trip into the wall along with Jones. That red-flagged the race with nine laps remaining.

At the restart, Cindric was pushed into the lead by Blaney, while Stenhouse was being shoved by Keselowski. Another shunt then happened, when Keselowski pushed Stenhouse into a spin off Turn 4, moving TV commentator Tony Stewart to quip: "This is a movie we've seen before." The rotating Stenhouse was collected by Buescher, in a car ironically owned by Keselowski. Wallace took a whack in the shunt too, knocking out a toe-link in his suspension.

But Wallace carried on in battle, undeterred, just like Blaney (who'd suffered an early clash with Larson), just like Briscoe after multiple setbacks and near-misses, and just like Cindric (after biffing Briscoe) into that final overtime charge to the finish.

"I felt like I had a really good chance to lose it, and to lose it means you've got a shot to win it," chirped Cindric in a cross somewhere between *Talladega Nights* and *Anchorman*. "Being on

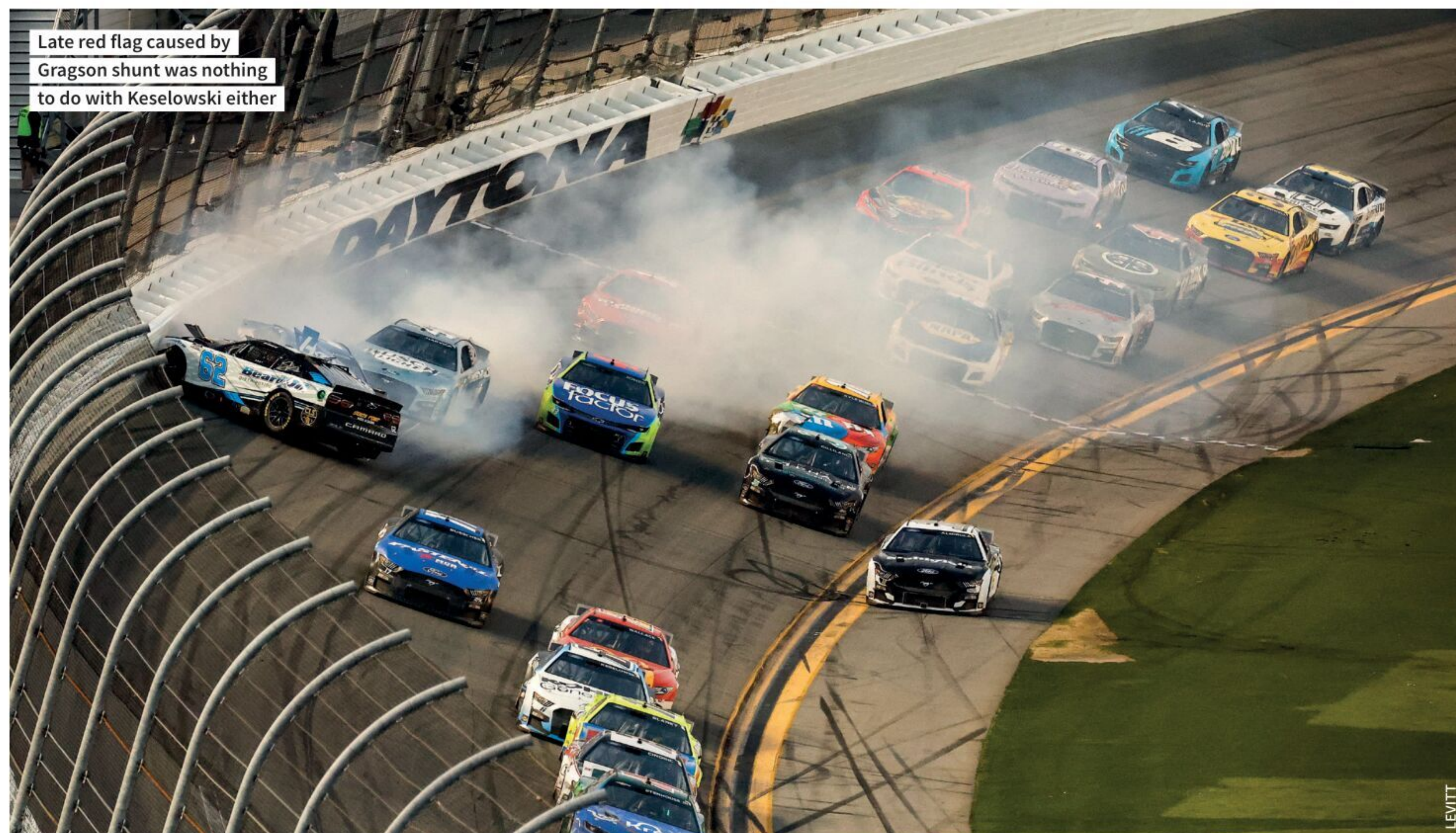


"I FELT LIKE I HAD A GOOD CHANCE TO LOSE IT, AND TO LOSE IT MEANS YOU'VE GOT A SHOT TO WIN IT"

the front row for the last couple of restarts of the Daytona 500, you can't really envision a better case scenario for you as a driver. That red flag, you definitely have time to reflect, and you can either reflect on what you're going to do when you succeed or how you're going to succeed, and I definitely lived in the moment there trying to figure it out.

"Once I crossed the start/finish line for the white flag, everyone behind me bailed. Everyone started lifting. Everyone was trying to get their runs, and I was probably 20% throttle for most of the last lap, just trying to stay relatively close to where I could at least defend something or be able to be close enough to be able to get to the tri-oval.

"I knew if I got to the tri-oval, and I was nose ahead, I would get it. For me, yeah, just holding off the wolves, it's the race that means everything to everybody. Once you come off of Turn 4, all gloves are off and everybody wants it." ❧



BURNT SNIDER BEFORE HILL CLIMBS TO TOP



Daytona's potential for 'the big one' was laid bare on Saturday night when the second-tier Xfinity race was concluded by Myatt Snider's car flipping into the catchfencing on the back stretch.

The accident was so violent that it tore the engine from his chassis, its fuel-filler socket was left jammed in the fencing 20 feet high, and a suspension arm was discovered lodged in the grille of basketball legend Michael Jordan's motorhome that was parked nearby.

Snider was in the mix for victory on the final lap, but he couldn't hold onto a massive bump-draft from behind, as Anthony Alfredo's big push turned him hard right and into the path of Jade Buford, who calmly radioed: "I believe a car just flipped over me." Snider hobbled away from the insane fiery wreck with a sore left foot.

Ahead of them, Riley Herbst had just pushed Austin Hill (above) ahead of AJ Allmendinger, which proved to be the winning move as the yellow flag ended the race. Hill, a Truck Series winner here in 2019, scored his maiden Xfinity victory in his rookie season for RCR, ahead of Allmendinger, Noah Gragson and Herbst.

Daniel Hemric won both stages, but a pitlane speeding penalty sent him to the rear of the field, and he then got caught in a 10-car wreck on the exit of Turn 4.

In Friday's Truck Series race, Zane Smith thought he had the thing won, but a 19-vehicle shunt caused a yellow just before he took the white flag. Smith (below) sealed the deal again in overtime – he had taken the white flag before another wreck ended the race.



RESULTS DAYTONA 500, NASCAR CUP ROUND 1/36, DAYTONA (USA), 20 FEBRUARY (201 LAPS – 502.5 MILES)

POS	DRIVER	TEAM	TIME	GRID
1	Austin Cindric	Team Penske Ford	3h31m53s	5
2	Darrell Wallace Jr	23XI Racing Toyota		16
3	Chase Briscoe	Stewart-Haas Racing Ford		9
4	Ryan Blaney	Team Penske Ford		7
5	Aric Almirola	Stewart-Haas Racing Ford		38
6	Kyle Busch	Joe Gibbs Racing Toyota		10
7	Michael McDowell	Front Row Motorsports Ford		6
8	David Ragan	Rick Ware Racing Ford		34
9	Brad Keselowski	RFK Racing Ford		3
10	Chase Elliott	Hendrick Motorsports Chevrolet		11
11	Ty Dillon	Petty GMS Motorsports Chevrolet		26
12	Daniel Hemric	Kaulig Racing Chevrolet		33
13	Martin Truex Jr	Joe Gibbs Racing Toyota		14
14	Corey LaJoie	Spire Motorsports Chevrolet		24
15	Landon Cassill	Spire Motorsports Chevrolet		27
16	Chris Buescher	RFK Racing Ford	-1 lap	4
17	Cody Ware	Rick Ware Racing Ford	-1 lap	32
18	Daniel Suarez	TrackHouse Racing Chevrolet	-2 laps	21
19	Kurt Busch	23XI Racing Toyota	-2 laps	17
20	Cole Custer	Stewart-Haas Racing Ford	-2 laps	31
21	Joey Logano	Team Penske Ford	-3 laps	20
22	Jacques Villeneuve	Team Hezeberg Ford	-3 laps	40
23	JJ Haley	Kaulig Racing Chevrolet	-3 laps	25
24	Alex Bowman	Hendrick Motorsports Chevrolet	-4 laps	2
25	Austin Dillon	Richard Childress Racing Chevrolet	-4 laps	36
26	Kaz Grala	TMT Racing Chevrolet	-5 laps	35
27	BJ McLeod	Live Fast Motorsports Ford	-5 laps	37
28	Ricky Stenhouse Jr	JTG Daugherty Racing Chevrolet	194 laps-accident	18
29	Erik Jones	Petty GMS Motorsports Chevrolet	191 laps-accident	13
30	Kevin Harvick	Stewart-Haas Racing Ford	191 laps-accident damage	22
31	Noah Gragson	Beard Motorsports Chevrolet	190 laps-accident	39
32	Kyle Larson	Hendrick Motorsports Chevrolet	190 laps-accident	1
33	Todd Gilliland	Front Row Motorsports Ford	190 laps-accident	29
34	Christopher Bell	Joe Gibbs Racing Toyota	152 laps-accident	12
35	Tyler Reddick	Richard Childress Racing Chevrolet	151 laps-accident	15
36	Greg Biffle	NY Racing Team Chevrolet	-65 laps	28
37	Denny Hamlin	Joe Gibbs Racing Toyota	63 laps-accident	30
38	William Byron	Hendrick Motorsports Chevrolet	62 laps-accident	23
39	Harrison Burton	Wood Brothers Racing Ford	62 laps-accident	8
40	Ross Chastain	TrackHouse Racing Chevrolet	62 laps-accident	19

Winner's average speed 142.295mph.

CHAMPIONSHIP 1 Cindric 54; 2 Keselowski 54; 3 Truex 49; 4 Wallace 47; 5 Briscoe 41; 6 Blaney 41; 7 McDowell 39; 8 Kyle Busch 38; 9 Buescher 35; 10 Elliott 34.



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IMAGES

Kristoffersson does his usual Extremely good job

**EXTREME E
NEOM (SAU)
19-20 FEBRUARY
ROUND 1/5**

Rosberg X Racing began its Extreme E title defence with victory in a red-flag-disrupted final at the Desert X-Prix in Saudi Arabia. Reigning drivers' champion Johan Kristoffersson produced a storming comeback after the stoppage, caused by a crash for McLaren's Tanner Foust, to deny Acciona Sainz a maiden triumph.

Mikaela Ahlin-Kottulinsky signed from JBXE for the new season, started the race for RXR, which only made the five-car finale after a penalty for Xite Energy Racing in the semi-finals. Nine-time World Rally champion Sebastien Loeb edged ahead of Ahlin-Kottulinsky off the line for Lewis Hamilton's X44 squad, but the pair were beaten into the first corner by Carlos Sainz Sr, who had started from the inside

line for Acciona Sainz. Three-time Dakar Rally winner Sainz used his desert experience to build a two-second lead over Loeb on the opening lap.

The spectacular race-stopping crash occurred when Foust — unsighted in the dust while following Ahlin-Kottulinsky — slammed into the back of the RXR machine, putting his car off-line onto a bump and into a roll. The remaining teams completed their driver changeovers during the stoppage before a staggered restart, with positions and time gaps restored from before the red flag. Acciona Sainz continued to lead in the hands of Laia Sanz from X44's Cristina Gutierrez.

After starting over 10s behind the pair, Kristoffersson caught up in the closing stages and used his hyperdrive boost to power past Gutierrez for second. The Swede then launched up the inside of Sanz through a downhill section, using a very wide line to carry the speed and stay in front, before claiming victory by 2.483s ahead of Sanz and

Gutierrez. Kristoffersson also earned RXR an additional five points for setting the fastest sector time of the weekend during the lap in the Continental Traction Challenge.

Kyle LeDuc and Sara Price finished a distant fourth for Chip Ganassi Racing, after taking a comfortable win in the second of the semi-finals ahead of Acciona Sainz. Andretti United was eliminated in the three-car encounter after 2019 World Rallycross champion Timmy Hansen rolled while challenging Sainz, after taking over from Catie Munnings for the second lap.

X44 won a highly eventful first semi-final, with Loeb prevailing in a battle with Xite's Oliver Bennett for second following the changeover before inheriting the lead when Ahlin-Kottulinsky hit a rut and dropped to third. Bennett held off the RXR machine by just 0.070s, but a time penalty for clipping a flag cost Xite a final berth.

XE debutant McLaren secured its place in the final by winning the 'Crazy Race' for the five slowest qualifiers. A spectacular double overtake from Emma Gilmour put the team second at the halfway mark, before Foust eradicated an 11.5s deficit to deny 2021 champion Molly Taylor on her JBXE debut. Kevin Hansen handed the car over to Taylor, but had suffered an injury during his lap and spent a night in hospital.

New Veloce Racing recruit Christine Giampaoli Zonca was also hospitalised with a fractured ankle after a heavy crash in the first round of qualifying, with the team having looked on course to beat RXR to the fastest time. X44 maintained its unbeaten XE qualifying record by winning the fastest of the heats in the second round of qualifying.

STEVE WHITFIELD



Swedish pair won for German team boss whose Finnish dad was born in Sweden

STALEY/MOTORSPORT IMAGES

Nielsen, CD, Inception get Le Mans spots

ASIAN LE MANS SERIES
YAS MARINA (ARE)
19-20 FEBRUARY
ROUND 2/2

British teams Nielsen Racing and Inception Racing plus French squad CD Sport earned the three automatic Le Mans 24 Hours entries for ALMS class titles last weekend.

Nielsen's ORECA 07 ended the four races with a maximum points haul, but this time its trio of Ben Hanley, Matt Bell and amateur Rodrigo Sales had to play second fiddle in the LMP2 ranks to United Autosports pair Paul di Resta and Josh Pierson. American Pierson only became eligible to race on the Monday when he celebrated his 16th birthday, but the team decided to maximise Pierson's experience by undertaking some additional testing not allowed by the regulations, therefore running *hors concours*.

Pierson started both races and did the bulk of driving before United unleashed di Resta in its ORECA, the Scot taking the flag by over a lap each time. A pair of third places – plus the Am title – went to Graff's trio led by talented LMP3 graduate David Droux.



DKR Engineering broke its LMP3 jinx on Saturday, when Laurents Horr, Sebastian Alvarez and Mathieu de Barbuat drove its Duqueine to victory. A fire struck the G-Drive Ligier, led by Xavi Lloveras, before an all-nighter allowed the team to bounce back and win on Sunday. Nielsen missed out on adding the LMP3 crown to its P2 glory when overheating caused by damage sidelined Colin Noble and Tony Wells. It then boiled down to a title duel between CD's pair of Ligiers, with Steven Palette, Antoine Doquin and Christophe Crespo bagging it despite not winning a race.

Twin brothers Robert and Alfred Renauer, with Ralf Bohn, won GT on both days in their Herberth Motorsport Porsche. A runner-up spot on Saturday for the Optimum-run Inception McLaren of Ben Barnicoat, Ollie Millroy and Brendan Iribe put them in the box seat for the title, which they secured with fifth on Sunday. The challenge of the AF Corse and Rinaldi Racing Ferraris faded, and both were beaten to the series runner-up spot by the Herberth trio.

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Leclerc wraps it up in opener

FORMULA REGIONAL ASIAN
YAS MARINA (ARE)
19-20 FEBRUARY
ROUND 5/5

Ferrari protege Arthur Leclerc secured the title with a dominant pole-to-flag victory in the first race of the final round. In a processional race, Leclerc was shadowed by Ferrari stablemate Dino Beganovic, his team-mate at the Prema-run Mumbai Falcons squad.

Reinforcing the Prema hegemony was Jak Crawford, representing the Italian operation's Abu Dhabi Racing arm, who held off fellow Red Bull Junior Isack

Hadjar (Hitech GP) for third. Pepe Marti was the only person who could overhaul Leclerc's points total, but he stalled from sixth on the grid and spent his race fighting through to 12th.

The reversed-grid race was much more entertaining. Gabriele Mini snatched the lead in his Hitech car from poleman Pierre-Louis Chovet, but was ordered to hand it back due to exceeding track limits. Following a safety car, Patrik Pasma jumped Mini and tried to pass Chovet, but ran both wide. Mini jinked his Hitech car into the lead, just holding off Beganovic, with Leclerc third.

Leclerc had scored points in all 14 races to date heading into the finale, so it was a real eyebrow raiser when he had an unforced spin on lap one. Hadjar and Crawford shared the front row, but a poor start from the Texan left the Franco-Algerian free to take victory. Mini claimed second from Paul Aron, who had Crawford swarming from behind.



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WEEKEND WINNERS

EXTREME E
NEOM (SAU)
Johan Kristoffersson/Mikaela Ahlin-Kottulinsky (Rosberg X Racing)

ASIAN LE MANS SERIES
YAS MARINA (ARE)
Races 1 & 2 Paul di Resta/Josh Pierson
United Autosports (ORECA 07)
LMP3 Race 1 Laurents Horr/Sebastian Alvarez/Mathieu de Barbuat
DKR Engineering (Duqueine D08)
LMP3 Race 2 Xavi Lloveras/Fabrice Rossello/Vyacheslav Gutak
G-Drive Racing (Ligier JSP320)
GT Races 1 & 2 Robert Renauer/Alfred Renauer/Ralf Bohn
Herberth Motorsport (Porsche 911 GT3-R)

FORMULA REGIONAL ASIAN
YAS MARINA (ARE)
Race 1 Arthur Leclerc (Mumbai Falcons)
Race 2 Gabriele Mini (Hitech GP)
Race 3 Isack Hadjar (Hitech GP)

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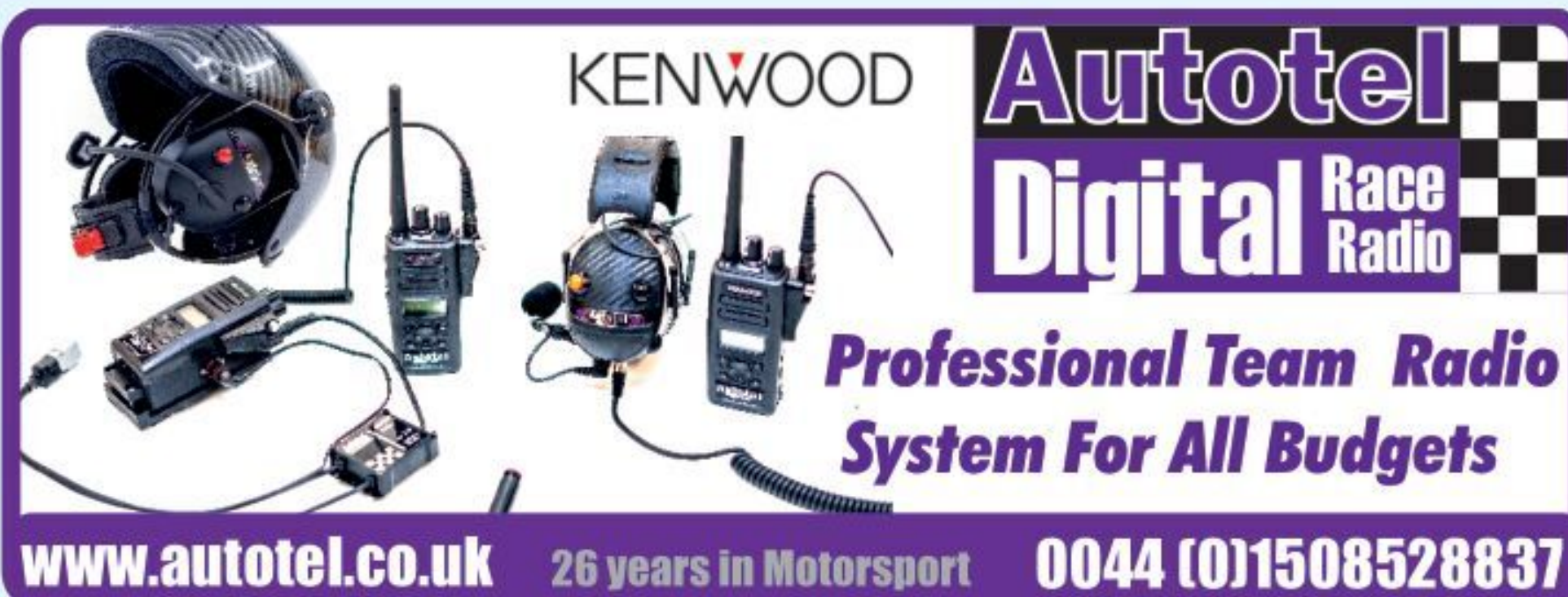
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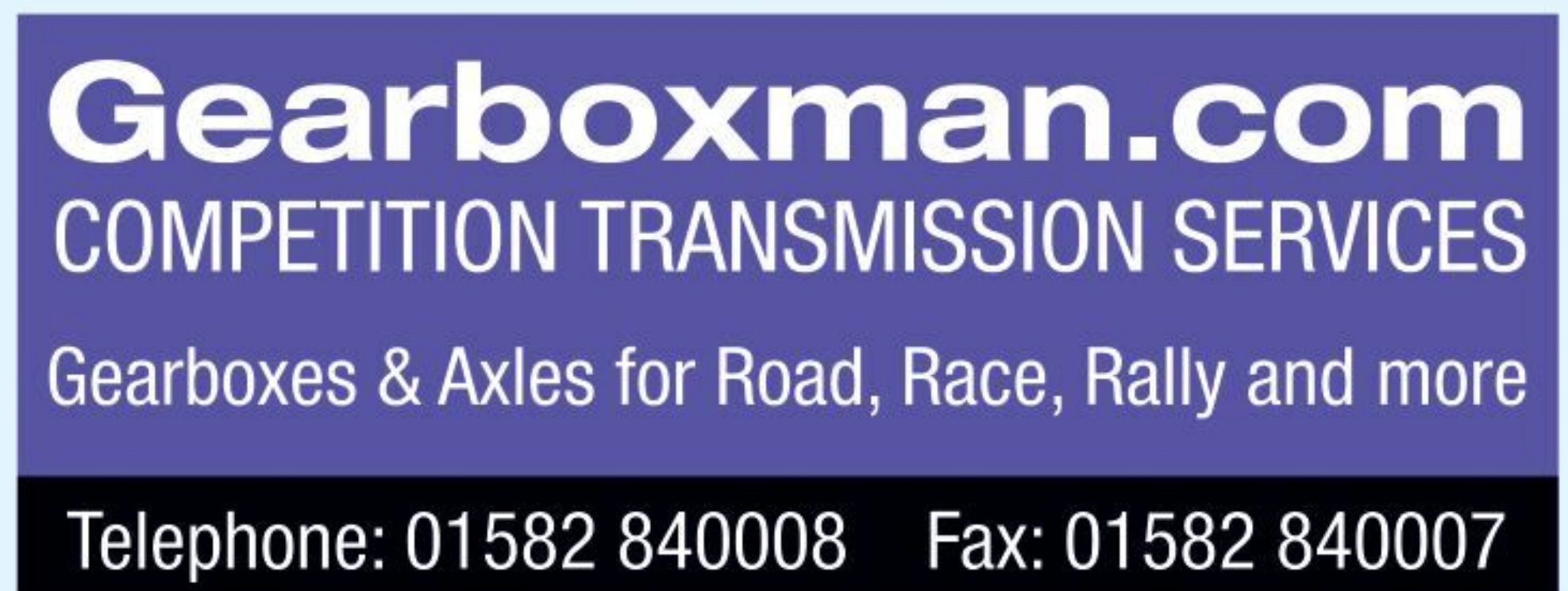


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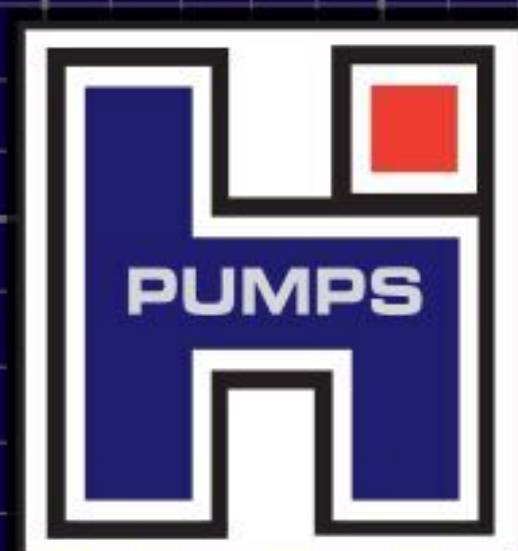


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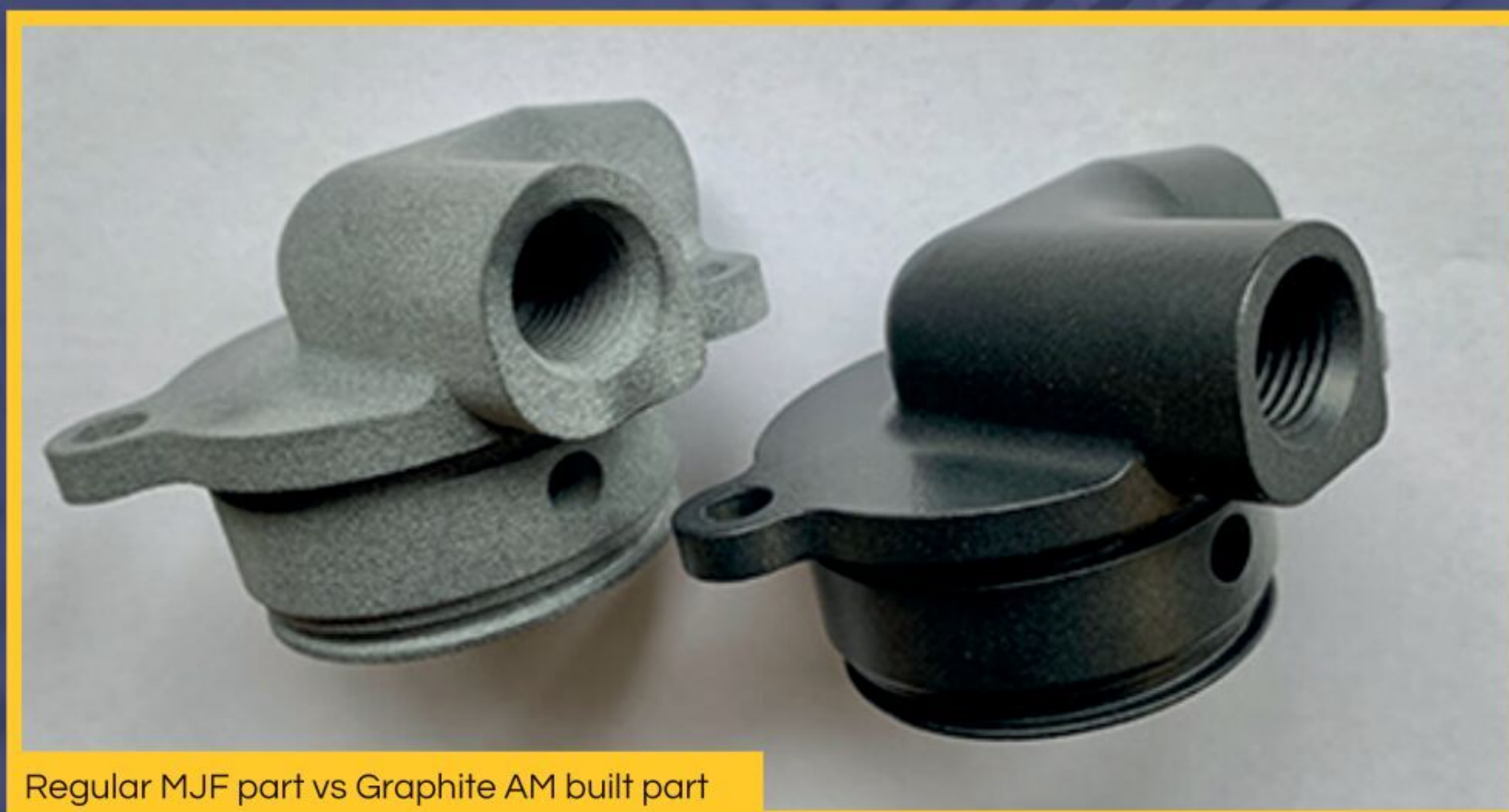
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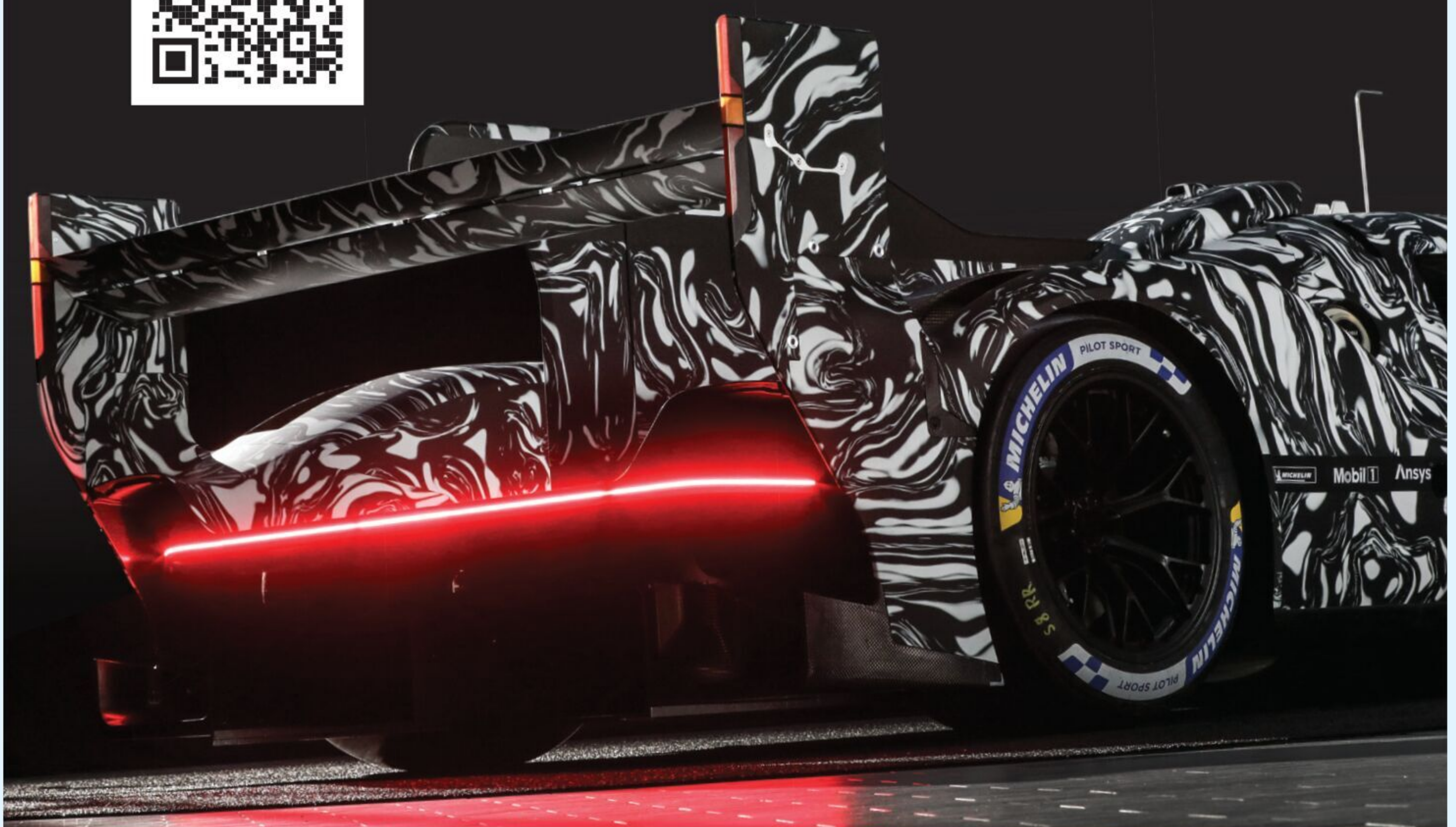
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BRITISH GT Carroll and Balfe among the latest GT3 entries

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Team will use Audi R8
LMS Evo GT3 in British
GT this season

ALL PHOTOGRAPHY: JEP



CARROLL JOINS FORCES WITH BALFE

BRITISH GT

Ex-Jaguar Formula E racer and 2008-09 A1GP champion Adam Carroll will return to the British GT Championship this year in a Balfe Motorsport Audi R8 LMS Evo GT3 alongside team patron Shaun Balfe.

Carroll, whose last British GT appearance came in 2016, raced the Audi alongside Balfe in last year's International GT Open series, in which they took sixth in the standings.

Balfe last contested a full British GT campaign as a driver in 2019, when he and Rob Bell finished five points shy of the title despite missing the Oulton Park double-header due to teething problems with their new McLaren 720S GT3. Autosport understands that Balfe – who has sold his 720S to Enduro Motorsport – has also put the team's GT4 McLaren 570S that won at Spa last year up for sale.

Balfe said: "Adam and I get on well and make a really good partnership. We really gelled last year and I'm sure we can take that forward. British GT is a true Pro-Am series so we should be competitive."

For Carroll, whose sole British GT win came at Oulton Park in 2016 with a Barwell Motorsport Lamborghini, it will be a first full attack on the championship. "Hopefully we can win a few races and score podiums along the way, and we'll be in the hunt for the championship," said the NIO FE reserve.

An additional programme for Carroll was also announced this week by Greystone GT. The Silverstone-based squad will pair him with ex-Formula Palmer Audi midfielder Tim Whale in the European GT4 championship aboard a McLaren 570S.

The Mark McLoughlin-run team, which has stepped up to British GT to run ex-Balfe drivers Stewart and Lewis Proctor in a GT3

McLaren, will run an additional 720S in Bute Motorsport's GT Cup for 2014 European Le Mans Series champion Oli Webb and GT4 graduate Iain Campbell.

TREGURTHA RETURNS; FOX STEPS UP

Last year's DTM Trophy runner-up Will Tregurtha will make his return to British GT to partner Mark Sansom aboard Assetto Motorsport's Bentley Continental GT3, which switches from Pro-Am to the Silver-Am class as a result.

Tregurtha, the 2017 GT4 champion in an HHC Motorsport Ginetta, moved on to ply his trade in GT3 aboard Grahame Tilley's Nissan NISMO GT-R in the GT Cup, and in 2019 contested a part season of ADAC GT Masters aboard a T3-Motorsport Audi R8.

The 21-year-old, who has regularly coached Assetto drivers in single-make Ginetta racing, was selected to replace previously announced BRDC SuperStars coordinator Andy Meyrick, who is already committed to the ELMS-supporting Le Mans Cup with United Autosports.

Another GT3 McLaren will be entered in British GT by Fox Motorsport, the team stepping up from the GT4 ranks with an unchanged line-up of Jamie Stanley and Nick Halstead. The pair took a best finish of third in 2021, and were second in the GT4 Pro-Am standings with two class wins.

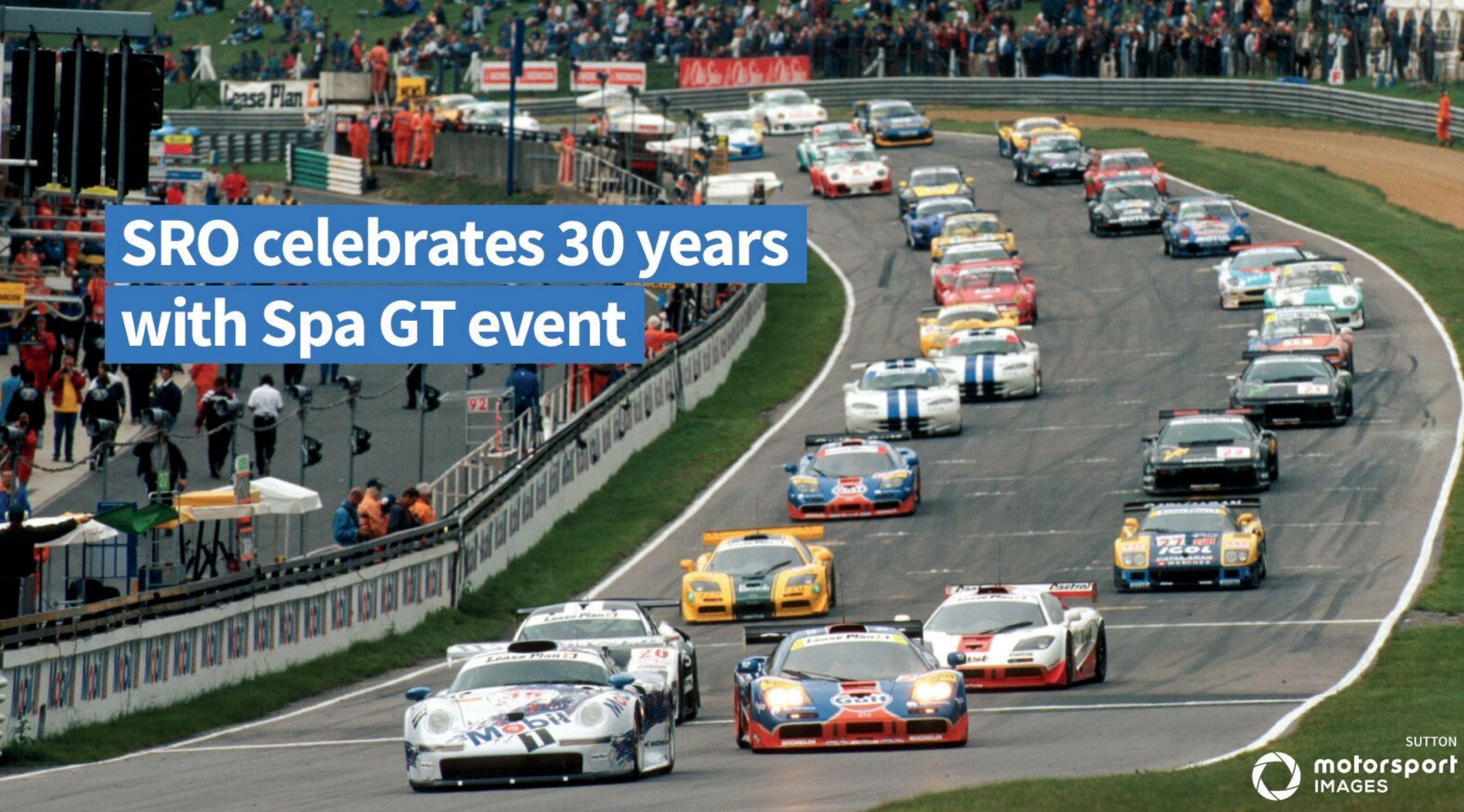
Halstead, who made a British Touring Car Championship cameo last year at Croft in an Excelr8 Hyundai, said: "I remember how good it felt when I first tested a 720S GT3 at Silverstone last summer and that was the point where I knew now was the time."

JAMES NEWBOLD



Fox Motorsport will
enter McLaren 720S
GT3 in British GT

SRO celebrates 30 years with Spa GT event



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GT

SRO Motorsport Group founder Stephane Ratel will celebrate the 30th anniversary of his involvement in GT racing with a historic event on the support bill of the Spa 24 Hours.

The two 60-minute races, run under the GT Anniversary 2022 banner, will be open to GT machinery built between 1992 and 2010. The second race will take place directly before the start of the blue-riband round of the GT World Challenge Europe on the weekend of 30-31 July.

“What better way to celebrate 30 years of GT racing than at

the biggest GT race of the year and bring all the types of car that have raced with me since the beginning in 1992?” said Ratel, whose current roster of series include the European, American and Asian arms of the GTWC, the Intercontinental GT Challenge and the British GT Championship.

“For 25 years we celebrated with a big party in Paris, so now was time to do something on the race track.”

Ratel has brought in Patrick Peter, one of his partners in the BPR Organisation that relaunched GT racing in the mid-1990s, to draw together

the grid. His Peter Auto operation runs the Endurance Racing Legends series, which is open to GT as well as prototype machinery built between 1994 and 2010. “He’s confident he can put together a very big grid of GT cars; he is aiming for 50 or 60,” added Ratel.

He also revealed that he is hoping for a representative grid of cars stretching back to the Venturi Trophy one-make series with which he began his involvement in motorsport. Cars that raced in series run by Ratel include the McLaren F1 GTR, the Porsche 911 GT1, the

Ferrari 550 Maranello GTS and the Maserati MC12, as well as early machinery from the GT3 category introduced in 2006.

Ratel revealed that he will be bringing cars from his own collection to take part. These include one of the original Venturi racers he has owned from new, an Aston Martin DBR9 and Lamborghini Murcielago R-SV GT1.

The historic grid will also take part in the traditional pre-event parade when the cars are driven on the public roads from the centre of the town of Spa to the circuit.

GARY WATKINS

Bearman, Browning, Priaulx and Rees next SuperStars

BRDC

The British Racing Drivers’ Club has announced the four drivers who have been added to its BRDC SuperStars programme for 2022.

Ollie Bearman, Luke Browning, Seb Priaulx and Matthew Rees join the scheme, which began in 2008 and offers tailored training, development, and fitness programmes for drivers.

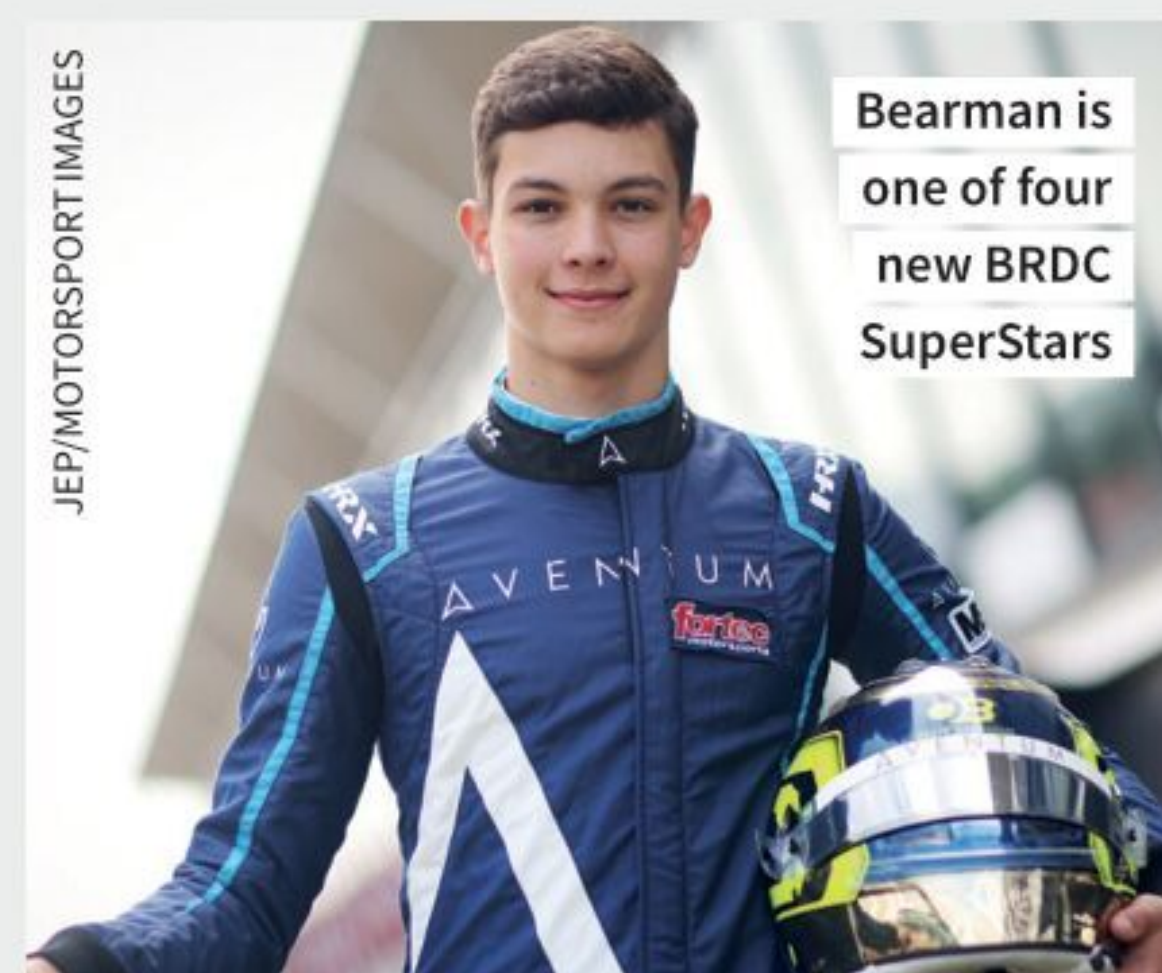
Bearman won both the Italian and German Formula 4 titles last year and will graduate into FIA F3 this season as a Ferrari junior, having also been a 2021 Aston Martin Autosport BRDC Award

finalist. Browning, the 2020 British F4 champion, finished third in German F4 last season and will move into the GB3 Championship this year with Hitech GP.

Rees, who won the British F4 title last year, will also move into GB3 this term, with JHR Developments. Priaulx became the first Porsche Carrera Cup North America champion last year, but has yet to announce his 2022 plans.

“I think they are four incredible talents that I know we can help nurture into top-line drivers,” said BRDC SuperStars director Andy Meyrick.

Those remaining as BRDC SuperStars include 2021 AMABA winner Zak



Bearman is one of four new BRDC SuperStars

O’Sullivan and 2018 victor Tom Gamble, Formula E driver Dan Ticktum, British Touring Car Championship race winner Jake Hill, Porsche Carrera Cup GB champions Dan Harper and Harry King, former European Le Mans Series champion Phil Hanson, GT driver Ben Tuck and FIA F3 racer Jonny Edgar.

Sherwood moves into
single-seaters with
Elite Motorsport



STYLES

Sherwood and Grant reveal GB4 campaigns for 2022

GB3/GB4

Two more drivers have been confirmed in the new-for-2022 GB4 Championship.

Jack Sherwood graduates from Ginetta Junior with Elite Motorsport, which carried him to 24th in the Junior standings during his maiden season of car racing.

“My main goals this year are to score some good points for myself and Elite,” said the 15-year-old. “I’m really looking forward to the challenges ahead. It’s a new car for all the teams on the grid so I think there will be an element of learning the car throughout the season for everyone.”

Chloe Grant, meanwhile, will be part of

an all-female line-up at Graham Brunton Racing alongside Logan Hannah, after racing in Junior Saloons last season. “My ambition has always been to step up from the karting circuit into single-seater racing, and now I’m taking on the new GB4 series – what an opportunity,” she said.

The announcements take the number of GB4 confirmations to four, with Jessica Edgar (Fortec Motorsport) the other driver revealed so far.

In GB3, Australian Marcos Flack will complete Douglas Motorsport’s line-up alongside Max Esterson and Tommy Smith. Flack was 11th in his maiden season of British F4 with three podiums to his name.

IN THE HEADLINES

XENTEK REVEALS GT5 LINE-UP

Xentek Motorsport, the team that powered Josh Steed to last year’s Ginetta GT5 Challenge crown, has revealed its four drivers for the 2022 campaign. Mikey Doble, who finished fourth in the standings in his rookie GT5 season, will continue with the team and be joined by series regular Connor Grady. Xentek will also field Am class frontrunner Bal Sidhu, and movie stunt coordinator and Caterham racer Neil Finnighan.

JAMES WINS SCHOLARSHIP

Jack James has been announced as the 2022 Junior Saloon Cars Championship Scholarship winner, after beating 28 other teenagers to the coveted prize at Croft last weekend. He has therefore secured a fully funded season in the Citroen Saxo category this year, a prize that is worth more than £30,000.

BRSCC’S CROOK DIES

Long-standing British Racing & Sports Car Club member and chief scrutineer Jon Crook has passed away. He began his motorsport journey in the mid-1980s, with his first event in the sport as a scrutineers’ marshal at Silverstone, before overseeing eligibility for series such as the TVR Tuscan Challenge, SEAT Cupras, FF1600 and British GT. Autosport sends its condolences to his family and friends.

BATEMAN BACK IN ACTION

Ex-British GT frontrunner Charles Bateman (below) will return to the Porsche Carrera Cup GB this year with Team Parker Racing after nine years on the sidelines. “I’d been thinking about what championship to do and, considering I wanted to get back into the Carrera Cup, I would only race with Stuart [Parker] and Team Parker,” he said. Meanwhile, Harry Foster, the older brother of Aston Martin Autosport BRDC Award finalist Louis, will continue with Team Parker in the Porsche Sprint Challenge this year.



WALKER

Irish ace Byrne switches to Minis

MINI CHALLENGE

Irish Fiesta ace Jack Byrne will progress into the Mini Challenge Trophy this year, running as a privateer.

Byrne, the 2020 Ginetta Junior Ireland champion and a star in Irish Junior Rallycross, graduated into senior racing last season and finished third in the Irish Fiesta ST standings. He now joins the Cooper class of the Mini Challenge after being selected as part of Motorsport

Ireland’s Team Ireland development programme.

“After a successful year in tin-tops in 2021 back home in Ireland, I hope to be a frontrunner in the Rookie Cup – but, ultimately, overall podiums are the aim,” he said. “Running the car through our own team means we will have a lot to learn in a few short months, but I hope to get my 2022 campaign off to a strong start at Pembrey.”

Joining Byrne on the Mini Challenge Trophy grid will be

2021 frontrunner Charlie Mann. He scored his first win in the series last year en route to fifth in the standings, and will again compete as an independent under the Mann Motorsport banner.

Elsewhere, Bradley Gravett – the son of 1990 British Touring Car champion Robb – will continue in the top JCW class. Gravett, who was 16th in last year’s points, is the fifth driver announced as racing for the expanding Graves Motorsport squad.

Equipe to run pilot races for new 70s series

HISTORICS

Equipe Classic Racing will run several pilot races this year for a new series that is open to a diverse range of 1970s machinery as it seeks to expand its offering.

The organiser has previously focused on pre-1966 cars, including FIA Appendix K machines in its popular Equipe GTS division, alongside its Pre-'63 and 50s categories, but Equipe partner Rob Cull believes now is the right time to start "expanding our horizons" with the new Equipe 70s series.

This will cater for five distinct groups of cars from the 1966-81 period, which will be broken into their own class structure. Group 1 and Group 2 touring cars will feature, as well as Group 3 and Group 4 sports and GT machines – all of which will run to FIA specification – while Equipe has created a 'Group R' for road-going cars of the era.

The additional series is launched at a time when ECR is expanding into organising its own meetings for the first time, enabling it to experiment with pilot races. The first



two 40-minute contests will be at its June Silverstone and August Snetterton events, while the cars will also be eligible for the Three-Hour Relay race in September.

"With the direction we're going with Equipe Classic Racing, it's one of those things I've been talking about to a few people for six-nine months and looking at what's going on in the market," explained Cull. "There are places to race these touring cars but not a Group 3 Porsche.

"The inspiration for the series came from the 1972-74 Le Mans where you had Porsches going head to head with Capris – I wanted to encapsulate the whole of the era."

Cull says 1970s grids often included a wide range of cars and he is wanting to replicate that with Equipe 70s, and therefore created the road-going class. "It was a big club racing period and there are lots of road-going cars that never got homologated but were really good club racing cars like TVR 3000Ms and Scimitars," he said.

Cull, who is preparing a Capri to race in the series, says there has already been strong interest in the concept. He says the regulations will be finalised over the winter with a full "eight-nine race" calendar then planned for 2023.

STEPHEN LICKORISH

Coates teams up with Lloyd to race TCR Opel Astra



BRITCAR

Mini Challenge frontrunner Max Coates and 2008 Welsh Sports and Saloons champion Rhys Lloyd will team up in an Opel Astra TCR in this year's British Endurance Championship.

Both have past experience of racing TCR machinery – Coates having shared a Cupra with Guy Colclough

in the Britcar category and Lloyd competing in the 24H Series in a VW Golf. Having previously shared a Citroen C1, the duo will now race the Dragon Sport by Amigo-run Astra.

The pair have tested the Astra and Coates was surprised by how different it was to other TCR cars he has driven, describing it as "more like a Clio Cup car".

"The aim is to go and win the title," said Coates. "Rhys is a good driver and we've both won races in them [TCR cars] so we should be in a good position."

Lloyd added: "I'm excited by the challenge of setting up a new team, working with Max and a new car, and entering the Britcar Endurance Championship."

STEPHEN LICKORISH

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RETURN OF THE POM One of the events with the most eclectic entries in club motorsport made a return last weekend as the Vintage Sports-Car Club held its annual Pomeroy Trophy contest at Silverstone. Having been cancelled last year due to the pandemic, the event was back for 2022 and featured everything from pre-war Frazer Nashes to a Fiat Seicento. The overall handicap winner was Jason Kennedy in his Nissan Skyline, while a Volvo 240 and Pontiac GTO (insets, above) were among the other cars taking part. **Photos by Jeff Bloxham**

Colin Gigner 1938-2022

OBITUARY

Countless Ford formulae racers over the past 40 years will be eternally grateful for the engineering experience and expertise of Colin Gigner, who died of cancer on Sunday, aged 83.

Fulham-born Gigner relocated to Lincolnshire and worked initially as a carpenter and roofer, when exposure to asbestos is believed to have triggered his underlying illness. He subsequently turned his abiding interest into the most enjoyable chapter of his career.

Son Steven – one of seven children, and inspired to forge his own career in motorsport composites – fondly recalls annual visits as a lad to British Grands Prix with his dad, the earliest at Brands Hatch in 1974.

Gigner Sr got into racing by chance in 1984 through a link to Dutchman Gerrit van Kouwen, living in Mark Blundell's

father's motel while running the works Lola T644E from the factory. "Colin started coming to tests and at weekends – he was a good mechanic, quick on gear ratios and set-up changes," said GvK. Being on the team with Ashley Sallis when van Kouwen won the Festival was his proudest moment.

Thereafter, he prepared cars for Phil Andrews, Paul Spooner and Richard Reynolds, among others, in frontline Formula Ford 1600, graduating to Formula Vauxhall Lotus, where he was on David Brabham's car. In later years, FF2000 and Sports 2000 became his speciality. Few knew more about the Pinto cars.

The rise of Classic and Historic FF2000 showcased Gigner's talent. Among the drivers he mentored and guided to championships were Andy Huxtable and Marc Mercer. His presence in pits and paddocks, ready even to help rivals, was of a bygone era and will be greatly missed.

MARCUS PYE

IN THE HEADLINES

YORKSHIRE RALLY HISTORY

History will be made on Sunday when Beverley & District Motor Club runs the first closed-roads rally in Yorkshire. The capacity 100-car entry includes current MN Circuit Rally leaders Neil Roskell and Andrew Roughead, who will be up against last year's champions Mark Kelly/Neil Colman in their Ford Fiesta R5s. Multiple Scottish Rally champions David Bogie/John Rowan head the two-wheel-drive entry in their Ford Escort Mk2, but there will be plenty of support for Yorkshire rallying legend Steve Bannister's Mk2 Escort.

NATIONAL ACES HONoured

National racing stars of the 1960s and 1970s, Peter Baldwin and Jon Fletcher, have both lent their support to the Historic Sports Car Club's new Historic Saloons and Modsports series. Saloon drivers will compete for the Peter Baldwin Trophy to honour the Mini ace, while Modsports competitors will battle for the Jon Fletcher Trophy, named after the Lotus Elan victor. Twenty drivers registered their interest in racing in the new category within the first week of the series' announcement.

ARMES AND STOREY REUNITE

Marking the 50th anniversary of his motorsport debut, former British Touring Car racer Ray Armes, who contested the 1989 and 1990 seasons in PG Tags Honda Civics, and Stephen Storey have teamed up again to campaign a Caterham in Magnificent Sevens. A 1200cc Honda Blackbird motorcycle engine keeps the Japanese motor giant's link.

HAMMERSLEY'S UPGRADES

Classic Sports Car Club chairman John Hammersley is set to contest his 48th successive racing season, sharing his Fives Garage-prepared VW Scirocco R-Cup (below) with stepson Nigel Tongue. Carbonfibre doors are largely responsible for a 90kg weight saving over the winter. A new livery reflects Hammersley's Airconstruct business heritage.





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ProConsul V8 Special Saloon breaks cover

SPECIAL SALOONS

Ford racing fanatic Martin Reynolds's most extraordinary creation to date, a rare V8-engined 1962 Ford Consul Classic destined for the Classic Sports Car Club's Special Saloons and Modsports series, turned its wheels for the first time at Donington Park last Tuesday.

Dubbed 'ProConsul27' – reflecting a thuggish prehensile stoop revealed on social media as it took shape over 14 months – the 5.7-litre Ford Windsor machine was not ready to be driven in anger on track, but turned heads on a photoshoot on the Melbourne Loop.

Although Consul Classic survivors are rarely seen these days, more than 111,000 examples, plus 18,000 sleeker Capri coupe derivatives, were manufactured by Ford of Britain from 1961-63. Very few of either body shape have ventured onto tracks, although a Capri has been drag-raced.

"My passion has always been for classic Fords," said modular building construction and fabrication group owner Reynolds. "We built the car in-house in our spare time, alongside our main work." He credits Peter Tea, Neil O'Shea and Dean Moat with the striking work.

"It's on a separate steel girder chassis



Reynolds's latest creation is Ford Consul Classic Special Saloon with 5.7-litre V8 engine

[true to the original] originally destined for something else, with independent front and rear suspension, again made in our workshop, with a Sierra Cosworth rear end," added Reynolds.

Originally built by veteran Alan Smith Formula 5000 engine man Dave Whitehurst, the Holley-carburetted V8 sits well back in the shell to give a 58/42% balance. It drives through a Tremec sequential-shift gearbox.

"My first impressions were that it felt good – I think it's going to be quite

a weapon," said Reynolds, who is targeting the CSCC's April Thruxton meeting for its debut. "There is a lot of work to do before then – we are remaking the wheelarches in fibreglass – but I'm looking forward to it."

Among those who gathered to see the Classic run were former Special Saloon racers Gerry Taylor (of Swish Anglia fame), Mike Berman (constructor of the fabled Ford E93A 'Berpop') and Bill Barrett (Mini), plus late Super Saloon prime mover Mick Hill's Renault Clio racer son Greg.

MARCUS PYE

Henderson dominates Snetterton Stages

CIRCUIT RALLYING

David Henderson and Sion Cunniff proved unbeatable as their Ford Fiesta R5 led the Snetterton Stages, round five of the *Motorsport News* Circuit Rally Championship, from start to finish last weekend.

Henderson's lead was over 30 seconds from the similar car of Neil Roskell and Andrew Roughead by half-distance, before the weather worsened. "Being first on the road wasn't an advantage with standing water in various places,"

said Henderson after securing the win by 1m36s.

Roskell had continued to consolidate second place and his championship lead, while the hopes of former champions Barry Morris and Tom Hutchings for a top three overall were dashed when a stone from a car they were catching hit their Darrian's ignition kill switch.

Andy Scott and Laura Connell moved their Fiesta R5 up to third, followed by the similar cars of Ollie O'Donovan/Ashleigh Morris and Darrell Taylor/Dylan Thomas. But Taylor slid off



Fiesta crew Henderson/Cunniff led throughout

into retirement on stage six, and O'Donovan managed to rear-end the Steve Hill/Patrick O'Donovan Hyundai R5 under braking on the next stage and was out too.

John Griffiths and Tom Rogers moved their Fiesta R5

up to secure fourth, after recovering from a massive hold-up on stage three, while Paul Murro/Callum Cross (Fiesta) completed the top five. Despite his collision, Hill's pace netted him sixth.

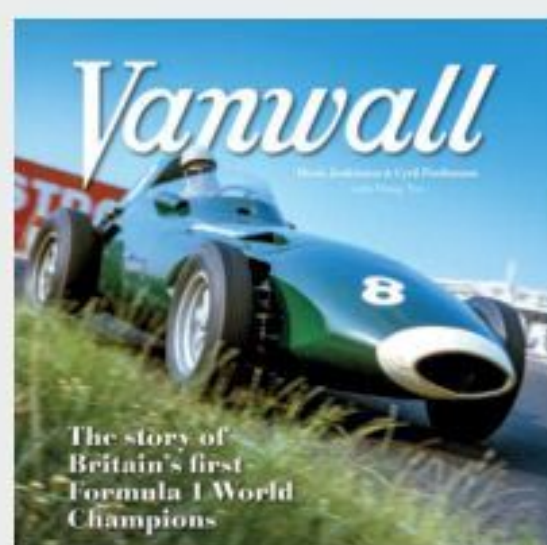
PETER SCHERER



Vanwall secured
nine F1 world
championship wins
across 1957-1958

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A BRITISH FORMULA 1 GREAT



BOOK VANWALL: THE STORY OF BRITAIN'S FIRST FORMULA 1 WORLD CHAMPIONS

Denis Jenkinson and Cyril
Posthumus with Doug Nye
RRP £90

Many racing teams have surpassed its achievements and become more famous, but Vanwall will always have a special place in motorsport history. As well as being the first British squad to truly break the Italian domination of Formula 1, it was also Vanwall that took the inaugural constructors' world championship in 1958.

The story of Tony Vandervell's team is an interesting and intriguing one, but that's not the only reason to buy this new version of a book first published in 1975 and re-released by Porter Press. The authors of the original witnessed many of the events first hand and knew those involved. Denis Jenkinson is one of the most celebrated motorsport journalists of all time – and lap-charted for Vanwall in 1958 – while Cyril Posthumus worked for several motorsport publications, including Autosport. Much of their text has been left as it was, with Doug Nye – currently one of the world's leading motorsport historians and who knew both – providing some extras.

As you might expect, this feels like the definitive Vanwall book. As well as their own experiences, the authors had access to extensive records and documents through the Vandervell Products archive, as well as the key figures. The only criticism is that these people aren't quoted, but this doesn't detract from the overall impression of this being a comprehensive and accurate history.

Some parts are almost aggressively patriotic. It's a bit grating for the 21st century but is probably in keeping with the era in which the original book was published – and also reflects what the feeling would have been like in the 1950s, when cars raced in their national colours and the Second World War was still fresh in the memory.

That aside, this is a fascinating book, much of it about one man's quest to get to the top of F1. Vandervell was initially involved with the BRM project but soon became disillusioned with its lack of progress. Thanks to his Thin Wall bearings and other business interests, including Norton motorcycles, he had extensive contacts and power in industry (not to mention enormous wealth), and was able to pull things together in a way BRM could not. The quality, high-precision approach required in other projects – he'd been involved in WW2 aircraft engines among other things – meant Vandervell was also able to take much of the production in-house.

He was also pragmatic and would use foreign components if it was deemed necessary, Vandervell's argument being that if a better British version could be produced he would use it. He therefore helped encourage and improve British industry in motorsport. Similarly, Colin Chapman, then still yet to move Lotus into F1, was brought in to design a new chassis when it was found not to be up to scratch, while changes were made on Stirling Moss's suggestion when the star finally signed for 1957.

Vanwall's successes are covered and there are chassis histories and race results, but the best insights come in how it got there – the lessons that had to be learned and the problems that needed solutions.

 **YouTube** youtube.com/AUTOSPORTdotcom



Why 2022 could be Mercedes' biggest challenge

Mercedes' 2022 Formula 1 contender, the W13, might not look extreme at first glance, but the closer you look, the more detailed the car appears. Autosport's Luke Smith and Motorsport.com's Jon Noble discuss the strengths of the team's line-up, the confidence within the squad, and what they'll be facing this year.

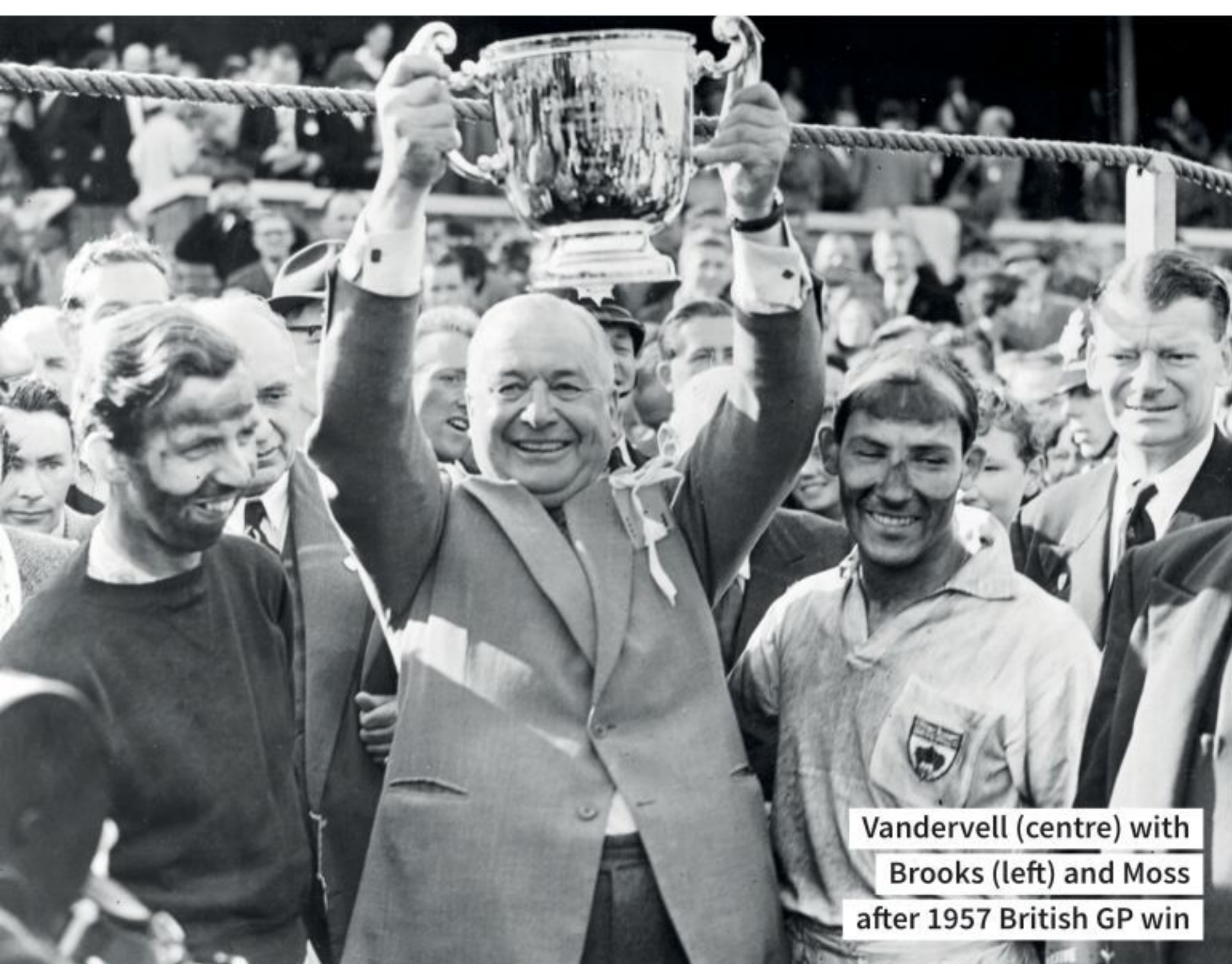


autosport.com/podcast



Assessing the storylines from MotoGP testing

The 2022 MotoGP pre-season testing phase concluded earlier this month, having been split between Sepang and the new Mandalika International Street Circuit in Indonesia. In the latest Tank Slappers Podcast, Autosport's Lewis Duncan and Motorsport.com's Oriol Puigdemont discuss who were the winners and losers.



Vandervell (centre) with Brooks (left) and Moss after 1957 British GP win

Some of the true gems can be found in the 'From the Archives' sections that intersperse the chapters. These include letters, receipts and correspondence to and from drivers, race organisers and suppliers. Those with Enzo Ferrari are particularly noteworthy. Ferrari relied on Thin Wall bearings and respected Vandervell's engineering knowledge. That meant the Briton could not only buy Ferrari GP cars (the first one initially ordered for the BRM project) that formed the basis of the famous Thin Wall Specials, but send letters back pointing out where the cars weren't up to scratch!

Short of a track test of one of the cars by a top driver (both Moss, in 1975, and his 1957-58 team-mate Tony Brooks, with a 2021 perspective, do contribute forewords) or a studio shoot with one of the surviving chassis, there's not a lot that could be added. This is a must for the many motorsport enthusiasts who won't have a copy of the original.

KEVIN TURNER

WHAT'S ON



Rally Sweden is back on the WRC calendar

INTERNATIONAL MOTORSPORT

Formula 1 pre-season testing 1



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Daily round-up Barcelona, Spain

23-25 February
TV Highlights Sky Sports F1, Wed 2000, Thu 2000, Fri 2000

Rally Sweden World Rally Championship Round 2/13

Umea, Sweden
24-27 February
TV Live BT Sport 1, Fri 1730, BT Sport 3, Sat 1100, Sat 1730, BT Sport 2, Sun 0700, BT Sport 1, Sun 1100
TV Highlights BT Sport 2, Fri 2330, Sun 0200, BT Sport 3, Mon 0300, Red Bull TV, Fri 2000, Sat 2000, Sun 2000, ITV4, Wed 2000

IndyCar Series

Round 1/16
St Petersburg, USA
27 February
TV Live Sky Sports F1, Sun 1700

Indy Lights
Round 1/11
St Petersburg, USA
27 February

NASCAR Cup Series Round 2/36

Fontana, USA
27 February
TV Live Premier Sports 1, Sun 2000

NASCAR Xfinity Series
Round 2/33
Fontana, USA
26 February

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TOP FIVE



Grosjean leads in GP2 Asia in 2011.
It's at Imola, which has never been
part of Asia – or indeed San Marino

DAMS DRIVERS

GIBSON/GP2

Following the Driot family's sale of DAMS to ex-Formula 1 driver Charles Pic, we select the best graduates of the French junior single-seater squad from its 30-plus-year history

JAMES NEWBOLD

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OLIVIER PANIS

5 After two years of being hampered by uncompetitive Lolas, DAMS returned to the forefront of Formula 3000 in 1993, and Olivier Panis secured the title in a Reynard-Cosworth. Panis too had been saddled with a Lola in his 1992 rookie year with Apomatox, and vindicated team boss Jean-Paul Driot's faith with a mid-season hat-trick of wins to overhaul Pedro Lamy and David Coulthard for the team's second title.



SUTTON

KEVIN MAGNUSSEN

4 With 13 podiums from 17 races – he lost another to disqualification after winning the Paul Ricard opener – Kevin Magnussen was the Formula Renault 3.5 champion's class act in 2013, giving DAMS its first title in the series. Aside from his relentless consistency, the Dane's one-lap pace was supreme, his eight poles eclipsing the combined tally of rivals Antonio Felix da Costa and Stoffel Vandoorne. Five wins added further polish.



VANDER LAAN

ROMAIN GROSJEAN

3 After being axed by Renault's Formula 1 team, Romain Grosjean rebooted his career at DAMS with three titles in two years. The first, in the 2010 Auto GP series, came despite missing four races, before he added a GP2 Asia/GP2 double in 2011 that re-established his team's credentials against ART and iSport. He got no points for it, but be sure to watch his mighty triple-pass in two corners at Barcelona on YouTube.



GIBSON/GP2

ERIK COMAS

2 The first DAMS champion, Erik Comas enjoyed two stellar campaigns with the team in Formula 3000. He finished his rookie year level on points with already crowned 1989 champion Jean Alesi courtesy of two late-season wins, then carried on where he left off in 1990. Stamping his authority from the off, Comas never relinquished the points lead and won thrice more, securing Lola's first F3000 title with a race to spare.

**SEBASTIEN BUEMI**

1 The bedrock of e.dams' Formula E effort since the beginning in 2014, Sebastien Buemi was always going to top this list. The Swiss could easily have had three titles, but narrowly missed out to Nelson Piquet Jr and Lucas di Grassi either side of his 2015-16 success. Despite a tough 2021, Buemi still tops the metrics for the most Formula E wins and pole positions. He is still the team's spearhead in its current Nissan guise.



FERRARI





FINISHING STRAIGHT

FROM THE ARCHIVE

Eric van de Poele (GA Motorsport Reynard-Cosworth 90D) leads Marco Apicella (First Racing Reynard-Mugen 90D) through the streets of Birmingham during the 1990 Superprix. Polesitter Apicella, striving for the maiden International Formula 3000 win that would prove elusive throughout a five-year stint in the category, had led away at the start, but a multi-car accident mid-pack brought out the red flags. At the restart van de Poele was super-quick off the line from his fourth-place grid slot to get ahead of Apicella, after which the duo dived, pulling away from the rest of the field. Apicella fought back past, but his luck deserted him and he was forced to retire with a punctured radiator, leaving van de Poele to take the flag for his second of three victories that year.



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Esteban Guerrieri

MY FAVOURITE... Track

Brno, Czech Republic

Even if its sequence of long apexes can be “a little bit monotonous”, there’s good reason for Honda World Touring Car Cup ace Esteban Guerrieri to cite Brno as his favourite track. The two Formula Renault 3.5 victories he scored at the Czech venue in 2010 effectively saved his career.

The cash-strapped Argentinian had proven a race-winning force at Spa with ISR, but was on a race-by-race deal to coach team boss Igor Salaquarda’s son Filip, and the arrival of a paying driver for Monaco meant he had to step aside. When Guerrieri returned on the team’s home ground, he duly took a brace of wins and went on to fight for a title that he was only denied by a controversial technical disqualification at Silverstone.

Guerrieri quickly gelled with Brno at

his first visit in the 2001 Formula Renault Eurocup. He was fifth at the circuit that year with the Lucidi Motors team, and in 2003 he kickstarted a successful assault on the title with Cram Competition with a double victory at the Moravian venue.

“Always in that racetrack I have been maximising potential of the car in every category I raced,” says the 2019 WTCR runner-up, acknowledging that it “sounds crazy” to pick a track that is “not very well known for single-seaters”.

“When I did 3.5 in 2010, I won both races there – that allowed me to continue the championship. Brno is a track that I have really enjoyed and suits my driving style very well.”

But it’s not only his record at the track that Guerrieri picks out. With its different cambers and rises and falls, the 14-turn, 3,357-mile Masaryk circuit is a “very technical” challenge to nail a lap.

“It’s so wide and you have so many corners one after the other that you really need to maximise the combined g’s on the corner entry,” he says. “All of the track, it’s quite on the limit and challenging in terms of positioning the car and handling the rear end. You really need to apply the power smoothly, and also you have uphill sections, so you really need to prepare the position of the car to get out of the corners well.”

JAMES NEWBOLD



Guerrieri won on Saturday and again on Sunday at Brno in June 2010

IN NEXT WEEK'S ISSUE

Test war part one

WHO WILL STRIKE FIRST IN F1 2022?



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Audi's Dakar adventure yielded four stage wins and has increased expectations for 2023



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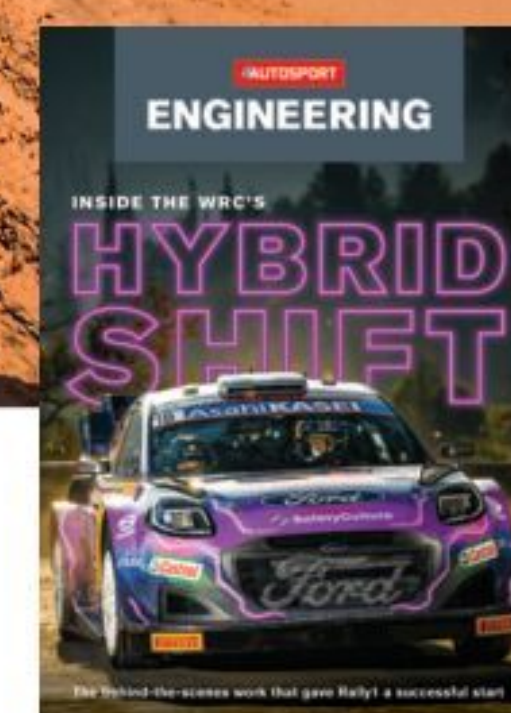
Hybrid power has been in Formula 1 since 2009 and the World Endurance Championship since 2012. But where prohibitive cost once limited the progress of electrification, this is no longer the case as the World Rally Championship and British Touring Cars have both taken adopted hybrid kits for 2022, while the World Rallycross Championship has gone all-in with fully electric cars. That much-maligned phrase, the 'trickle-down' effect, is truly under way.

That the WRC's Rally1 hybrid era got off to a successful start on last month's Monte Carlo Rally is thanks largely to the diligent efforts of kit supplier Compact Dynamics. As Tom Howard discovers on page 12, the German company's mission

wasn't without its difficulties, but it can already be deemed a success, and with more mileage the teething troubles will surely soon be ironed out.

That wasn't the only significant hybrid motorsport spectacle on show last month, as Audi made its eagerly anticipated Dakar bow with its RS Q e-tron, powered by a combination of electric motors and a combustion engine. Damien Smith speaks to the architects of the programme (page 18), while Matt Kew looks under the skin of the ground-breaking car (page 22).

Meanwhile, the sale of junior single-seater stalwart DAMS to ex-Formula 1 driver Charles Pic brings to an end a 30-year involvement of the Driot family in motorsport. But the core staff will remain, and its Formula 2 technical director Remi Decorzent (profiled on page 26) will continue aiding careers of many a future F1 driver for years to come.



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McKlein

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EXTREME E TO LAUNCH HYDROGEN SERIES

Hydrogen fuel cell to replace electric battery for offshoot series due to start in 2024

All-electric off-road series Extreme E plans to organise a hydrogen offshoot for 2024, known as Extreme H, that will run alongside its sister series.

Hydrogen has long been touted as a 'clean' energy source for future mobility, as the only byproduct following intra-cell electrolysis reaction is water. Championship founder Alejandro Agag, who first shared his intention to adopt hydrogen power in the SUV series at XE's launch in 2019, described the move as "a natural evolution of our mission to showcase the possibilities of new technologies in the race to fight climate issues".

The new Extreme H series will utilise the same spec Spark Racing Technologies-built Odyssey 21

chassis as XE, while participating teams can use the same custom-built drivetrain across both cars. A statement said that a hydrogen fuel cell will replace the Williams Advanced Engineering-produced battery "as the principal energy source".

XE already uses hydrogen power stations, produced by AFC Energy, on events to charge the car's batteries, but the Extreme H series would be the first directly hydrogen-powered series of its kind. The claim to being the first hydrogen racing series could be taken by the HYRAZE League concept that was announced in 2020. It plans to launch in 2023 with a fleet of 800bhp vehicles powered by two hydrogen fuel cells.

Agag said that the series will decide together with current Extreme E teams how to integrate the hydrogen cars into the XE race format, with "two separate categories, full transition to hydrogen or joint racing" under consideration. He added: "By using the existing Extreme E platform we can also utilise our transport, talent and operations to ensure we are minimising footprint in the process. This effectively means we can have double the race action, with marginal additional impact."

Praising the concept, JBXE Extreme E boss Jenson Button said: "To see racing of this calibre powered by hydrogen cells, which will allow for even more racing with less impact, is remarkable."



EXTREME E

SUPER FORMULA SUPPLIER YOKOHAMA TO PRODUCE SUSTAINABLE TYRES FOR 2023

Yokohama will develop sustainable tyres for Japan's Super Formula single-seater championship from 2023. The control tyre supplier to Super Formula since 2016, Yokohama will begin development work on the new tyres as part of the championship's Next50 project to improve its carbon footprint – with carbon-neutral fuel due to be tested this year in a mule car.

In a statement, Yokohama explained that it "plans to use various naturally derived compounding agents, such as silica produced from rice husks,



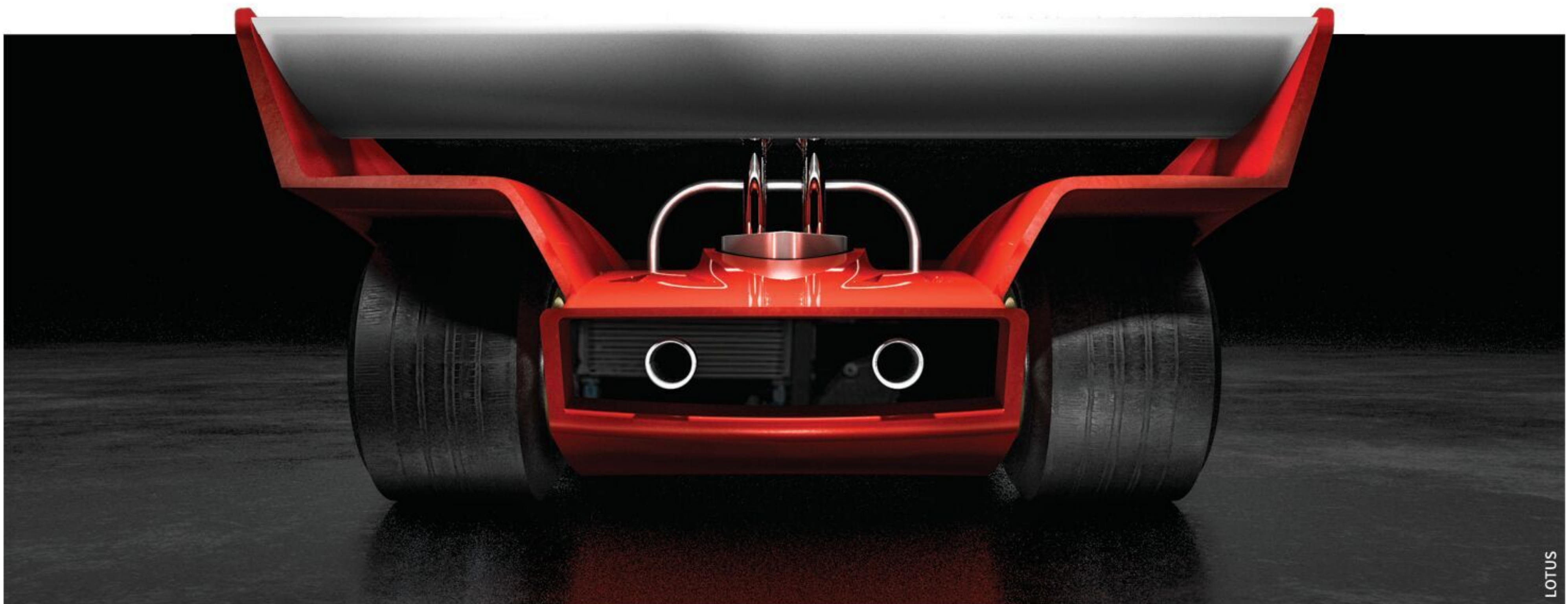
oil from oil palm fruit nuts, and orange peels", while also incorporating rubber recycled from scrap tyres. The development tyres will

be tested before and after all seven rounds on the 2022 Super Formula calendar, with the 2023 specification set to be finalised by the end of the year.

Beyond 2023, Yokohama will continue development on its sustainable tyres, with the stated aim of its 2025 product containing "a sustainable material content ratio of 35% or more without any sacrifice in sports performance".

Yoshihisa Ueno, president of Super Formula organiser JRP, expressed hope that the new tyres "will be a big step forward" both for the future of motorsport and the automotive industry. "From a promoter's perspective, we also strive to increase both the overall image and value of Super Formula," he added.

ISHIHARA/MOTORSPORT IMAGES



LOTUS

LOTUS CREATES ADVANCED PERFORMANCE DIVISION TO RUN FUTURE MOTORSPORT CAMPAIGNS

Lotus has created a new Advanced Performance division, which will oversee motorsport activities at the Norfolk manufacturer.

Led by automotive industry veteran Simon Lane, who joined the company last month from Aston Martin, LAP will be responsible for so-called ‘halo projects’, limited edition models, bespoke customisations for Lotus customers and the Hethel-based Lotus Driving Academy.

It will also encompass Lotus’s motorsport activities, the renowned lightweight sportscar marque set for a re-entry into the customer racing sphere in 2022 with the new Emira GT4, which is currently unhomologated. The car has been overseen by race programme manager Richard Selwin, who joined in summer 2020.

Since its buyout by the Geely Group in 2017, Lotus has diversified its activities with

its Engineering consultancy arm responsible for a track bike that claimed three gold medals with Team GB at the 2021 Tokyo Olympics. It has also announced plans to convert its automotive range to electric power, with the production Emira slated to be Lotus’s final petrol-powered sportscar.

Lotus Cars managing director Matt Windle said: “Lotus Advanced Performance is another significant opportunity to enhance our brand.”



FORD

LIMITED EDITION FORD GT FEATURES ALAN MANN LIVERY

Ford has paid tribute to top 1960s racing team Alan Mann Racing’s contribution to its Le Mans 24 Hours success by releasing a limited edition heritage model of its GT supercar in the British outfit’s signature red and gold colours.

The late Alan Mann, who died aged 75 in 2012, built his team into a works representative of the Blue Oval in tin-tops and sportscars, winning two British Saloon Car Championship titles and the 1965 European Touring Car Challenge. In 1966 Mann built a lightweight experimental prototype, AM GT-1, that raced at the Sebring 12 Hours, but it wasn’t used at Le Mans as Ford’s bosses elected to race the heavier seven-litre V8-powered Mk2 GT40 that swept the podium.

Ford GT programme manager Mike Severson said the new Alan Mann edition, that premiered at last week’s Chicago Auto Show, “honours the vehicles that helped lead Ford to its wins”. It is the seventh model in a production series that commemorates Ford’s quartet of Le Mans wins.

Alan Mann Racing closed its doors in 1969 but was revived in 2004 as a historics operation and is today led by Mann’s son Henry.

NEW EV SINGLE-SEATER SERIES FIRMS UP PLANS

The new electric single-seater ERA Championship has firmed up a tyre supply deal with Goodyear, as its first race edges closer. Billed as an entry-level category for young drivers, the series aims to offer comparable performance to Formula 4 and will stage its events on the support bill of the Pure ETCR electric touring car series.

The ERA Championship comes under the umbrella of Zolder-based trackday and race organiser The Driving Force, which is responsible for the Porsche Carrera Cup Benelux. Rudi Penders, the boss of prolific Porsche outfit ProSpeed Competition, is the fledgling

championship’s managing director.

Its one-make car, based on the Dome F110, will be known as the Mitsu-Bachi F110e and is capable of a top speed of 130mph from its 24kWh battery.

Two 20-minute races will be held at each of the five rounds, with 10 cars set to be entered. Following a demo event at Pau on 7-8 May, the championship will get under way on the Beyoglu Street Circuit in Istanbul on 21-22 May.

The championship is also targeting universities and technical colleges to sign up for what it calls CONCEPT Competition and the ERA Cup, akin to Formula Student.



New ERA Championship will support Pure ETCR

ERACHAMPIONSHIP

SAUBER CONSOLIDATES COMPANIES

The Sauber Group has consolidated its Hinwil-based engineering and aerodynamics businesses into a new company, Sauber Technologies, to give customers the benefit of its Formula 1 expertise.

The organisation behind the Alfa Romeo F1 team, which celebrated 50 years in motorsport in 2020, had previously operated as three distinct entities to capitalise on its capabilities in cutting-edge design and manufacturing.

While Sauber Motorsport will continue running the F1 team that gave its new C42 a successful shakedown at Fiorano last week, the newly formed Sauber Technologies arm “will be fully focused on third-party business, providing a holistic service for complex engineering problems, from the idea stage to the finished products” according to a company statement.

Recent projects include the ultra-lightweight OT FOXX M1 wheelchair used by Swiss Paralympian Marcel Hug to claim four gold medals in the 2021 Tokyo Games, a hydropower turbine using CFD and 3D printing, and a potato harvesting system optimised for lightness and efficiency.

“The birth of Sauber Technologies is a logical step, yet an extremely exciting one, in the growth of our company,” said CEO Axel Kruse. “Having a standalone company incorporating the skills and know-how of its previous component entities and being fully dedicated to external customers allows



ALFA ROMEO F1 TEAM

us to offer not only world-class skills, but also an equal level of service to current and prospective clients. The team at Sauber Technologies is looking forward to bringing our innovation to the world.”

Meanwhile, Sauber’s F1 arm announced a new “multi-year partnership” with safety equipment supplier Sabelt, after concluding

its relationship with Sparco. Italian company Sabelt, which celebrates its own half-century this year, has expanded its operations from manufacturing seatbelts to the creation of seats, safety nets and racewear. Its safety harnesses are used by several F1 teams, including Ferrari, Red Bull, AlphaTauri and Haas.

Alfa Romeo F1 team principal Frederic Vasseur labelled the partnership “a very positive development for the team and the company as a whole”.



ALFA ROMEO F1 TEAM

BRABHAM MOVES TO NEW HEADQUARTERS, ENDORSES LIMITED EDITION SIMULATORS

Storied constructor Brabham has moved to a new premises in Bicester, and partnered with Base Performance Simulators on a limited edition run featuring the team’s classic Formula 1 liveries.

Now back under the control of David Brabham, youngest son of three-time world champion and company founder Jack, Brabham has relocated to Bicester Heritage, a growing

hub of automotive businesses. Brabham Automotive created the BT62 GT car in 2018, and plans to race its new BT63 GT2 in the GT2 European Series this year. David Brabham said its new HQ offers

opportunities “to grow Brabham Branding and our ambitions to support pioneering organisations within the motorsport, automotive and future green-tech mobility sectors.”

It has also linked up with Darren Turner’s BPS operation with officially endorsed simulators in the colours of its 1966 title-winning BT19, the 1978 BT46B ‘fan car’ and 1983 BT52 title-winner. Brabham and Turner have a history of successful collaborations, taking back-to-back GT1 class wins at the 2007 and 2008 Le Mans 24 Hours with Aston Martin Racing.



Enthusiasts can use BPS sims in ‘fan car’ livery

BRABHAM

Constructor behind LMP2 racer will be able to test hydrogen engines



GALSTAD
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IMAGES

ORECA DEVELOPS HYDROGEN TESTING CAPABILITY

The engine division of French sportscar manufacturer ORECA has developed its first hydrogen-engine test bench, which will be fully operational next month. Hugues de Chaunac's company, responsible for the ubiquitous Gibson-powered 07 LMP2 car, has long had the capacity to develop its own engines from its Magny-Cours site located close to the former Formula 1 venue. It is the exclusive supplier of the R4 kit, which sits just below R5 on the rallying ladder.

It has four on-site test benches to simulate real-world engine usage, one of which has been upgraded to evaluate hydrogen-powered projects. On behalf

of Le Mans organiser the ACO, ORECA is collaborating with Red Bull Advanced Technologies and Green GT on a chassis for the Mission H24 hydrogen-powered class targeted for 2024. An ORECA statement said that it is also "working on a future hydrogen engine that can be fitted to Dakar competitor vehicles in the coming years".

"Competition has always proven to be a formidable research laboratory," said ORECA Magny-Cours boss Serge Meyer. "It's with this in mind and driven by everyone's desire to contribute to the future that ORECA is investing in the new technologies that will power the vehicles of tomorrow."

IN BRIEF



NKP/MOTORSPORT IMAGES

AP RACING OPENS U.S. HQ

NASCAR's brake and clutch supplier AP Racing is opening a new US base in Charlotte to improve its customer support. The Coventry company, owned by Italian giant Brembo, had previously operated its US arm out of North American distributor Essex Parts Services. The new site, due to open in April, was described by managing director David Hamblin as "a major milestone in the history of AP Racing".

TITAN MANAGERIAL BUYOUT

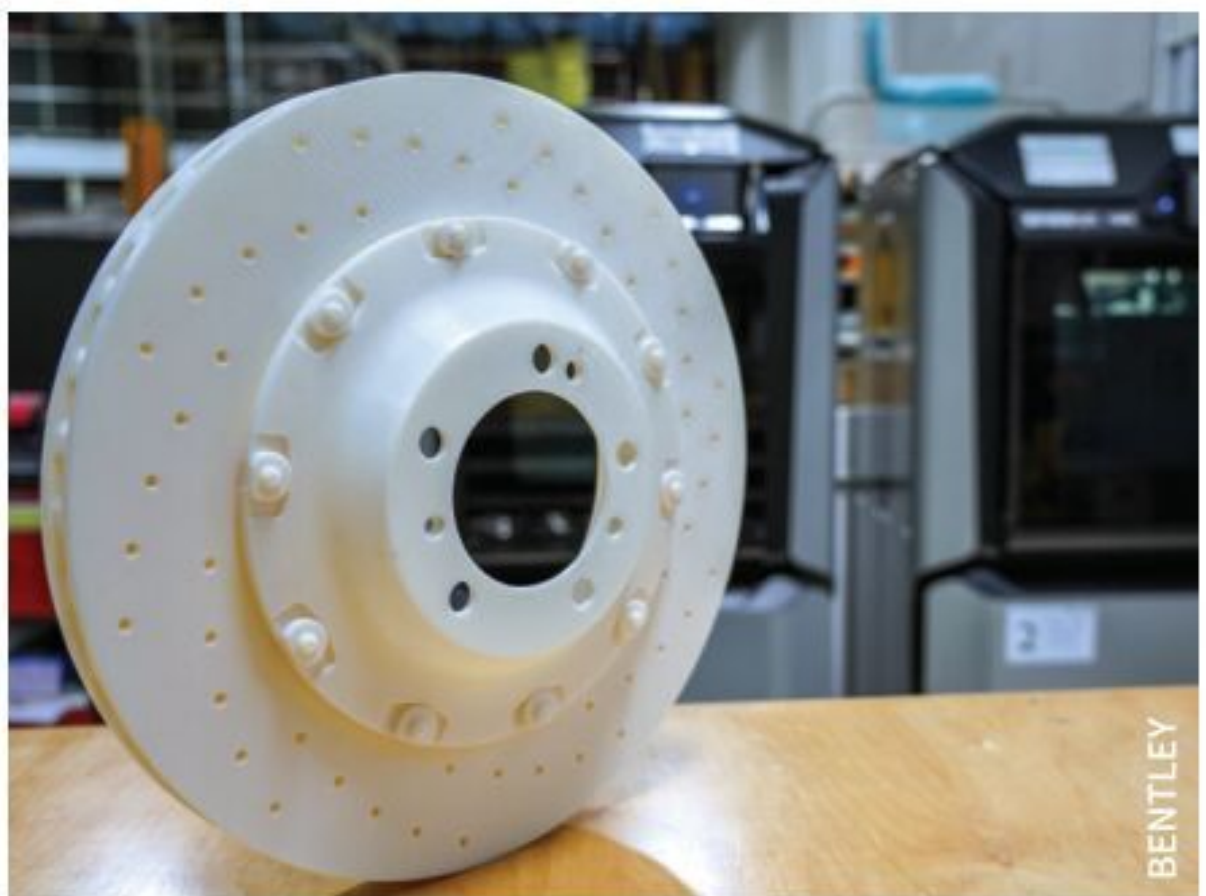
The owners of engineering firm Titan are retiring after 40 years, as senior staff in the company complete a management buyout. Oz Timms and Diana Thomas have stepped down, with a new shareholder team comprising George Lendrum, Eamonn Byrne and Michael Sheridan taking over. CEO Lendrum pledged: "We will continue along the same path which we have overseen in recent years."

NEW WET TEST TRACK

Bridgestone has opened a €3million wet handling track at its European proving ground near Rome to develop new tyres. The layout can be driven in either direction and employs an innovative water system utilising 6km of piping that can recycle up to 90% of water in a 4,000,000-litre reservoir to reduce its environmental impact.

BENTLEY INVESTS IN 3D

Luxury automotive brand Bentley has invested £3m into additive manufacturing at its Crewe factory, which doubles its AM capacity. The British company, which is evaluating an entry into the FIA's new-for-2023 Electric GT series, produced a record-high 15,000 components using additive techniques in 2021, improving efficiency by reducing lead times and waste.



BENTLEY

Kreisel will now be under American ownership



KRISELELECTRIC

BATTERY GIANTS WAE AND KRISEL IN INDUSTRY BUYOUTS

Two of the biggest battery suppliers in the electric motorsport world will shortly be under new ownership, as Williams Advanced Engineering and Kreisel Electric have agreed buyout deals.

Formerly part of the Williams Group before it sold a majority stake to EMK Capital in December 2019, WAE produced the battery for the original SRT_01E Formula E car and has lent its expertise to numerous other electric motorsport projects, including powering Extreme E and Pure ECTR.

WAE's £164million acquisition by Australian company Fortescue Metals Group, described in a statement announcing the deal as "one of the

largest iron ore producers in the world and a heavy carbon emitter", will give FMG "critical capabilities needed to help decarbonise this industry".

Kreisel, which provides the battery for the World Rally Championship's hybrid kits and powertrain for the newly electrified World Rallycross Championship, has been bought by American agricultural machinery specialist John Deere. Announcing the deal, which will see Kreisel remain in Austria, Deere cited increasing demand "for batteries as a sole or hybrid propulsion system for off-highway vehicles" and a desire to reduce the environmental impact of its new products.



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DRIVING CHANGE LUCAS DI GRASSI

WE NEED TO KEEP DRIVERS AS THE MOST IMPORTANT AGENTS

Software, sensors and data's increased influence have reduced the driver's impact on performance, but this can be improved



Di Grassi says drivers have an important say in strategic decisions

I am often asked whether the driver or the engineer is the most important element in Formula E, because the cars run so close together for the whole race. Clearly I am biased, but I would say it's still the driver who makes the biggest difference, as you need a set of skills that is different from virtually every other racing series.

Take for example the brakes in Formula E – we have carbon brakes that only operate well when they are hot. But you don't want to heat them up like normal combustion racing series for the start and waste energy, so you put zero heat in the brakes, which means they're completely cold, the tyres too. As the battery is completely full, you can't have regenerative braking and, for the first few braking zones, you don't have any recuperation. Braking with cold brakes and cold tyres is just one of the unique techniques you need to master, especially on tracks that only exist once a year before they go back to being public roads.

It's not like the ultimate fine-tuning process of Formula 1, where drivers know every corner like the back of their hand. Normally in a Formula E weekend you only have around 12 to 20 laps, depending on the conditions, at full power before the race starts to run through everything. We practise most scenarios on the sim,

but you can't experience everything in that environment. In-race strategies come down to game theory because there's no one best outcome. It depends on what the other drivers do, and you have to react.

It's down to the driver to decide how much energy you're willing to use to maintain or gain places, because when you fight you go slower and use more energy. The engineer can tell you not to waste time fighting someone with 2-3% more energy, or tell you if you have enough of a gap to use attack mode without losing lots of places. But in the end it's a driver's decision.

That said, the importance of the driver has clearly reduced a lot. In Formula E, every

so computers already optimise a lot of stuff. That's not only the case in Formula E, but across several series to make the cars easier and more consistent to drive.

We can't go back to an analogue world of 'pure driving', when you would see Gilles Villeneuve powersliding around corners without any computer interference. As with everyday life, it's almost impossible for racing to exist without software input. It's an integral part of the systems we have, such as cars with hybrid systems, turbo engines, brake-by-wire and so on. All sports rely on development and motorsport is no different. It's not realistic to reduce the influence of computers altogether, but that doesn't mean

“During a race, you can change the mode to a strategy that is more defensive or offensive”

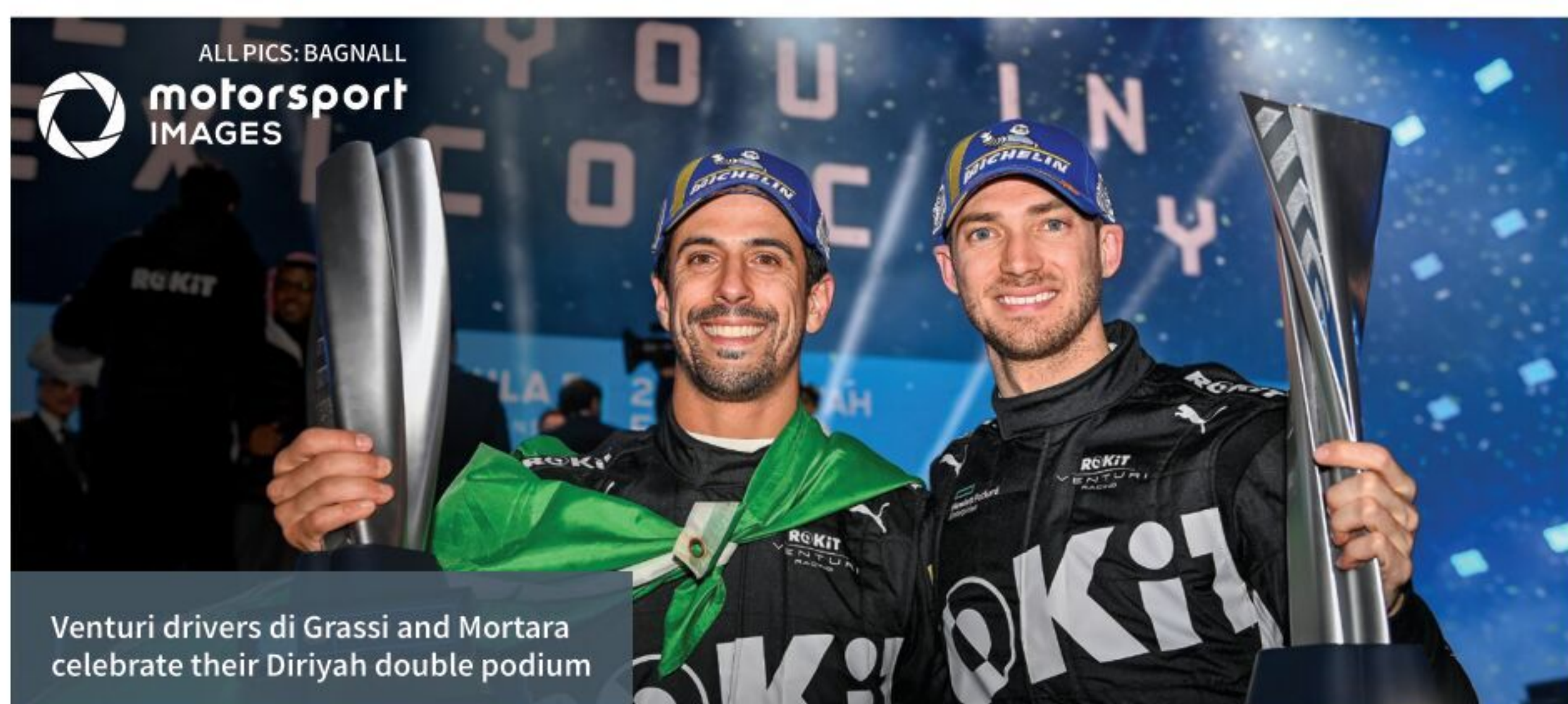
team has a computer deciding for the drivers what the optimum energy-saving strategy is. This is transmitted in a specific part of the track, either with sound signals – a 'beep' to lift and save energy, a 'bop' to use the regenerative braking – or different coloured lights on the steering wheel. And during a race, you can change the mode to a strategy that is more defensive or offensive,

that we leave a computer to drive the car.

I think in general the FIA understands that the driver needs to remain the most important agent. The current direction is good, but we are evolving so fast with autonomous tech and software development that we need to keep finding ways to integrate these systems in such a way that drivers stay as relevant as possible, having control of the most important elements, while closing the options for software-assisted driving where it's not relevant.

A bit more specific development, such as torque vectoring or rear-wheel steering to help rotate the car in hairpins – even if this would be software-assisted – is more road-relevant than the beeps and bops we have in our ears. What can't be integrated to give the driver more control of the car can be used in specific cases, for example in developing fully autonomous pitstops.

It is important that drivers continue to be in control as technologies develop, but this doesn't have to be at the expense of motorsport as a vehicle for progress. ■



Venturi drivers di Grassi and Mortara celebrate their Diriyah double podium

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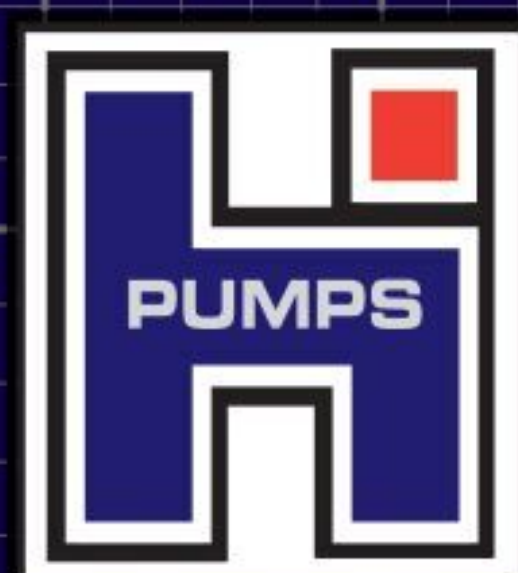
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ENGINEER'S VIEW JOHANN WACHT

THE SUSTAINABLE ANSWER TO USING COMPOSITE PARTS

Natural fibres are increasingly being used as a sustainable alternative to carbonfibre composites. Bcomp's Manager of Motorsports and Supercars explains the eco-friendly revolution

The picture of what a composite is has for many years been carbon first. But this is changing as society becomes more aware of sustainability and the technology used in natural fibres has improved. Carbonfibre has some amazing mechanical properties, but significant sustainability drawbacks too. That's where Bcomp comes in.

I first discovered Bcomp's patented powerRibs™ technology while working on a student project, so I made the same journey many of our customers take from knowing very little to understanding how an alternative to carbon is feasible. I used to make everything using carbonfibre in Formula Student, without even thinking about an alternative, until I was challenged by my professor to use natural fibre composites on a super-lightweight structure for a road vehicle. When he showed me the material, I said, 'It's not possible to build a high-performance product with that'. So I started researching into other suppliers and found Bcomp.

Our founders studied at the prestigious EPFL university in Lausanne, Switzerland, so everything we do starts with hardcore material science. We are bringing this very technical approach to natural fibre

composites to deliver a solution in the ampliTex™ and powerRibs™ package that matches the stiffness and weight of monolithic carbon parts in a specific weight window, while outperforming everything else in terms of sustainability.

Natural fibre fabric alone often can't compete against carbonfibre in terms of pure performance, but we overcome this by using the high specific bending stiffness of flax fibres in powerRibs™. If you imagine a leaf, it is super-light but strong and stiff enough to withstand wind thanks to ribs on the B-side. That's what we replicate with natural fibre composites. The twisted

“Now we're in a period where successor cars from GT4 partners are entering the market”

yarn in powerRibs™ is engineered for use at very high pressures in different manufacturing techniques from autoclaved F1 components to high-volume production processes for large-scale mobility.

In addition to sustainability, natural fibres also bring safety benefits. When a part breaks, the edges are blunt so the

debris doesn't cut tyres – unlike with carbon splinters. Our partner YCOM has built and crash-tested a single-seater nose box, which would see benefits in this regard. Also, sportscar racing organising body SRO changed the GT4 regulations in 2019 so that non-standard aerodynamic surfaces like the splitter and diffuser – parts that are crashed first – must use natural fibres, which was a good step towards reducing the risk of punctures.

Our products are widely used in GT bodyworks and interiors, where motorsport is more automotive industry-relevant and cost-effective compared to the super-light

structures F1 currently uses for bodywork. GT cars are a perfect use opportunity to showcase and test new technologies for OEMs while already being close to road applications. With GT4 cars for example, parts can be easily exchanged.

Porsche was one of the first on the GT side that really embraced natural fibres and now we're in a period where successor cars from several partners are entering the GT4 market. People have confidence from using the first car with the product and now have more natural fibre parts in the next car.

Each series needs to find their own route on whether they prioritise pure lightness or sustainability. Extreme E and the new eSkootr Championship fall into the second camp. That said, F1 is open to using natural fibres and we have partnered with McLaren on its racing seats, engineering island and timing stand. The latter don't influence car performance, but have a huge impact on CO₂ output and are one of many ways that natural fibre composites can be used instead of carbon with zero time loss. ■



GT4 regulations require natural fibre aero and body parts



Panels on GT4 cars are easily exchanged for natural fibre composites

DEVELOPING THE BIGGEST WRC INNOVATION FOR A GENERATION

Compact Dynamics was selected to provide the hybrid kits for the 2022 World Rally Championship. Here's how the German company went about the challenge

BY TOM HOWARD

If you've been following the World Rally Championship recently, then Compact Dynamics will likely have entered your consciousness. That's because it's the organisation responsible for developing arguably the biggest technical innovation to hit rallying for a generation.

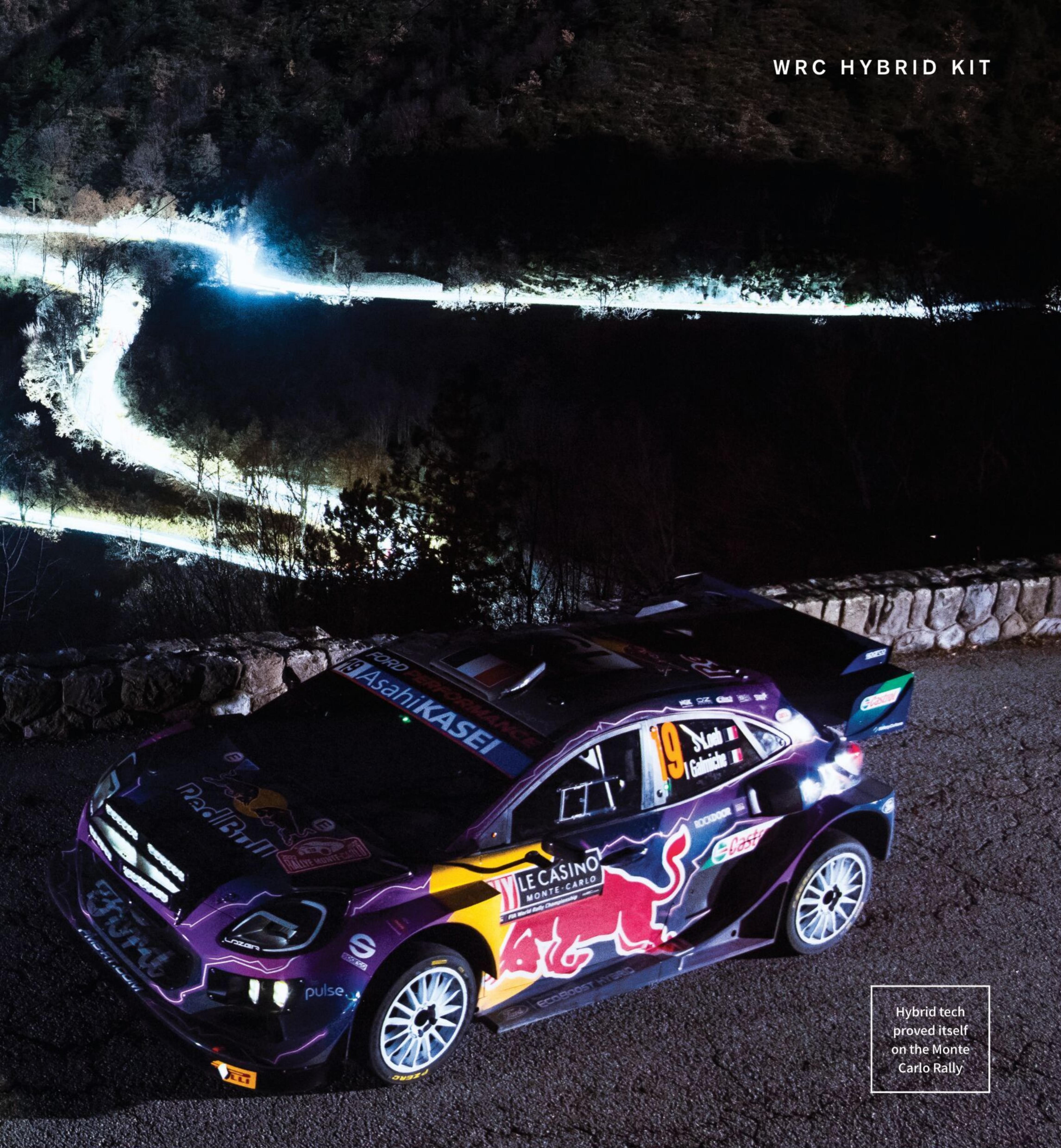
Compact Dynamics has been charged with producing the all-important hybrid kits utilised by Toyota, Hyundai and M-Sport Ford that underpin the all-new Rally1 regulations that came into force

this year. A move to hybrid power and 100% sustainable fuel, requiring teams to construct brand-new cars, is the WRC's first step towards a more environmentally friendly future.

Founded in 2000, Compact Dynamics has been plying its trade in the hybrid powertrain business for the past two decades. The German firm, owned by automotive giant Schaeffler, designed the original KERS systems for BMW's and Honda's 2009 Formula 1 cars (although the latter never saw action,

with the project taken over by Ross Brawn electing to run without KERS), produced hybrid powertrains for Audi's LMP1 machines in the World Endurance Championship between 2012 and 2016, and also worked with its Formula E squad prior to its departure last season. Now it's taking on the WRC, which Compact Dynamics managing director Oliver Blamberger tells Autosport is its biggest project yet.

"I would say it is the most complex [project we have taken on]," says Blamberger, whose company has also



Hybrid tech
proved itself
on the Monte
Carlo Rally

developed technology solutions for the aviation industry, proving its versatility and underlining the significance of his statement. “[The WRC project] was very interesting and very demanding. We are not only responsible for the electric motor and the power electronics, which we are used to doing in WEC, F1 and Formula E, but we are also responsible for the clutch system, the safety clutch and for the battery system. The whole hybrid system is in the responsibility of Compact Dynamics.

“In Formula 1 we only supplied one team

in BMW or Honda, but for the WRC we are supplying all of the teams and therefore I think WRC is the most important project for Compact Dynamics. Also, we are very much in the public eye and everyone is aware of us. I think we can gain a lot in the motorsport area with this project, but we can also lose a lot if we are not performing as expected.”

On paper, the extent of the task is plain to see. The journey for Compact Dynamics began by winning an FIA tender, in April 2020, to supply all WRC teams with

mandatory 100kW hybrid kits. After defining a more detailed specification for the system alongside the FIA, work in earnest began in May 2020 to design, develop and manufacture a bespoke system, compatible with all three WRC manufacturers and capable of withstanding some of the toughest roads in motorsport. Adding to the already monumental undertaking was the impact of the COVID-19 pandemic and a tight turnaround time, with less than a year to complete the first prototype for testing. ►

That prototype was built around a strict brief from the FIA, which stipulated that the hybrid power would be delivered using the throttle pedal, rather than pressing a KERS-style push-to-pass button. Months of development has resulted in a 100kW kit that, when coupled to a 1.6-litre turbocharged combustion engine, delivers 500 horsepower in short bursts when working alongside a 12,000rpm electric motor, connected to the propshaft.

An extra 130bhp can be delivered through hybrid boosts, lasting no longer than 10 seconds, initiated by the throttle pedal. These boosts only become available if sufficient energy can be recovered when off the throttle or under heavy braking. The extra power is delivered through the use of three bespoke homologated engine maps selected by teams, depending on the type of stage and conditions. In full electric mode the car has a range of 20km, while its 3.9kWh battery, operating up to 750 volts, can be plugged in and recharged in the service park within 30 minutes.

Each team received tailored attention in Monte Carlo to deal with issues specific to their cars



Battery can be plugged in and charged within 30 minutes

COMPACT DYNAMICS

To protect the crew in the event of an accident, the hybrid unit can withstand an impact of 70G.

While the system is perhaps unusual and complex, in the way drivers deploy the power using the throttle alone, Blamberger believes this is the right direction for the WRC.

"This was in the initial tender document that it has to be activated by the throttle and there wouldn't be a push-to-pass button," says Blamberger. "At the end of the day, all of the manufacturers are using WRC or other race series as an advertising platform. Therefore, I recommend that they bring the electric system as close as they can to the latest system in the road car."

That aside, one of the first objectives to achieve this feat of engineering was for Compact Dynamics to source a battery partner. It opted to form a partnership with Austrian firm Kreisel, a perfect fit in many ways, with the company a relatively short 200km hop across the Bavarian border. Like Compact Dynamics, Kreisel has a passion for motorsport. The company supplies batteries for use in World Rallycross Championship cars and has developed its own electric Skoda rally car capable of competing in the Rally2 arena.

Kreisel's battery knowhow, combined with Compact Dynamics' hybrid powertrain pedigree, meant the project started off on the right foot. But this

was only one piece of a large jigsaw that needed to be completed against the clock.

"The first big challenge was the very limited timeframe," says Blamberger. "We only won the tender in April 2020 and we started development with the FIA in May/June. The expectation was clear to have the first systems on the test bench in the first quarter of 2021."

"The development time was less than a year and it was of course very

demanding. We had the base power electronics and the base motor in place, so we had a base to jump off. Kreisel did the same — they had a battery cooling system that was already proven and in place.

"To bring all these components together for the very first time in a car, and for three brands, makes life not very easy — especially as the FIA decided not have a mule car. We did not have a chance to test the system at its first stage in a mule car to figure out the system.

"It was helpful that the FIA was a kind of moderator and together with the teams they made the requirements and the specification. We aligned the specification for the car and it fits to all three types of car."



MCKLEIN

“The development time was less than a year and it was of course very demanding”

As Blamberger explains, this was not without its difficulties: “The workflow of Toyota is different to that of Ford, because Toyota is a team directly from Toyota and M-Sport is more a customer team from Ford. The workflow and the processes are different, but Compact Dynamics is used to working with different customers and therefore we have a good way to treat all manufacturers equally.

“We delivered the first systems direct to Toyota, Ford and Hyundai. For example, to put the system in a Ford, the communication between the system and the Ford is different to the communication between the Toyota and the hybrid system. That was very painful at the first stage, but at the end we made it happen together as a team and we saw very stable systems in Monte Carlo [the WRC season-opener in January].”

There were plenty of nervous moments ►



WRC URGED TO ALREADY BE LOOKING TO THE FUTURE

The World Rally Championship's Rally1 regulations are only in their infancy, but motorsport categories can ill-afford to sit still and be left behind. That's why the FIA is already urging the WRC to start thinking about its next set of regulations, that could arrive as early as 2025, to ensure it continues to grow and remains a relevant arena for manufacturers. This is an important factor, considering that only Toyota and Hyundai are currently operating full works operations.

Leading the charge is the FIA's new deputy president, Robert Reid (above). While the 2001 WRC title-winning co-driver believes that Rally1 is a good step for the championship, he admits it's a move that came later than anticipated.

“Certainly one of the things I have already said to the promoter is we need to start thinking now about the next car,” says Reid. “We need to make sure that we continue to make steps. This is a good step we are making now. I would say we are probably a few years behind where we wanted to be, but I don't think the house is burning down.”

Asked what the regulations may

look like for the next homologation cycle, Reid admits there are several options on the table.

“It is tied in with the manufacturers, let's see where the manufacturers want to go,” he says. “It's clear that a lot of the industry is driven by probably political decisions, as much as anything, and it is going very EV.

“I think there is a huge opportunity for the FIA and motorsport in general to be the testbed for lots of different solutions. We've got hydrogen gas, we have liquid hydrogen, we have got hybrid, we have got EV and sustainable fossil-free fuel, and E-fuel that is 100% synthetic. That is possible today, but is expensive, although that will come down in price.

“We have got lots of different options and solutions for lots of different problems and different disciplines that we can adapt those technologies to.”

But going fully electric is unlikely in the near-future, due to the limitations in current battery technology.

“I would say full electric would be [for] disciplines that have a short duration and easy access to charging, rather than a discipline that goes all over the countryside,” he adds.



Three different manufacturers carrying out the same set of tests was a challenge for Compact Dynamics

as Compact Dynamics witnessed its months of hard work thrust into the spotlight on tests with each of the WRC manufacturers. This leap of faith meant its own processes and in-house bench tests were put under intense scrutiny.

“What we did was have a three-stage test procedure,” Blamberger adds. “The first test is to bring the motor and the electronics together with the safety clutch, and then we have a test profile which was aligned with the FIA and the teams. It was a kind of worst-case scenario, and then we test against this profile. We then bring all the components together – the motor, the power electronics and the battery – and we have an additional system test against this profile. This was done before the first test in a car.

“It was very strange. In the past, Compact Dynamics was only the supplier for one team, for example Audi. Of course,

“We have to treat everyone equally, so we had all the same tests going on with the teams”

Audi would ask us to join the bench tests and the track tests. We have never done it like this before, to have three different manufacturers and to treat everybody equally. That was an important issue as we cannot be in favour of Ford and give a disadvantage to Hyundai for example. We have to treat everyone equally, so we had all the same tests going on with the teams.”

Testing with the teams proved invaluable in honing the product for competition, while ensuring its safety met the required

FIA standards. All three teams suffered notable heavy crashes in testing – the biggest of these befalling Hyundai’s Thierry Neuville, whose car ended up in a river at the bottom of a ravine during a test with the i20 N in France. Remarkably, both the Belgian and his co-driver Martijn Wydaeghe avoided serious injury, while the Compact Dynamics hybrid kit’s structural integrity passed with flying colours. Despite the car being stranded in a riverbed for two days, no water had entered the unit – which remained unharmed.

“Compact Dynamics is used to developing to align with the wishes of the customer and the g-force impact of components have to be fulfilled,” says Blamberger. “We have strong stress test procedures, we have a shaker test for example which we can test in-house, and therefore we are confident the system will fulfil this requirement.

“If I look back to the extent of the damage on the Hyundai car in testing, this was a very strong accident. The car went downhill and landed in a river – it was not easy to bring the car out. The car had been parked in the river for two days but after we brought the car out, we had no water in the hybrid system. This was impressive and made me very confident that we would have no problem in Monte Carlo.”

Having passed this significant test, Blamberger says he was confident that the experience of his team would shine through come its first taste of on-event



Compact Dynamics crew ironed out problems as they arose on Monte



First hybrid winners: Loeb and co-driver Isabelle Galmiche

running. “I had no big worries,” he says. “We had enough experience, self-confidence and trust in our experience that I was convinced we would sort out any problems in Monte Carlo and give all the teams a chance to have a car in place which was able to win.”

When January rolled around and the teams descended on the principality’s mountainous stages, the hybrid system came under intense scrutiny. Teething issues are commonplace with the advent of new technology and all three teams encountered problems of varying degrees. The bulk of these gremlins centred around the software delivering the hybrid power, with Hyundai appearing to suffer the most. But as the weekend progressed, Compact Dynamics’ team of five technicians on the ground managed to provide solutions for all the teams, as returning legends Sebastien Loeb and Sebastien Ogier stole the show with a titanic battle for victory. There were moments when drivers were without hybrid power, even eventual rally winner Loeb struck by an issue on his Ford Puma during stage seven, but overall the system ran smoothly.

“On the whole it was good,” says Tim Jackson, M-Sport’s lead development

engineer. “As you can imagine, we have been working quite closely with Compact Dynamics for a while now and in the lead-up to the event they also ramped up their on-event support accordingly. It was pretty good, we only had one issue on Seb’s car during one of the stages, but aside from that there was no surprises, which was really good.

“We have obviously done a good amount of testing mileage, but still the rally is 350km, so in the grand scheme of things I don’t think it was a surprise with the performance we got. It was pretty much in line with what we are expecting.”

Blamberger was equally impressed with the results from the first weekend, but also proud of his team for finding solutions to the inevitable teething issues that arose in Monte Carlo.

“Let’s say the problems are very individual based on the set-up and situation of the team and the driver,” he says. “We had a team of five people in Monte Carlo plus one expert from Kreisel in order to find workarounds. This is what we did properly.

“For Hyundai, we had set dedicated people to give expertise only to Hyundai and found a solution to improve the

software. This was the same for Toyota and M-Sport. In the future we aim to have three experts at each rally, one for each team and to have a remote support at Compact Dynamics and at Kreisel if we have some problems for other support.

“If you have problems, you have to create solutions quickly and this is what my team have learned in the last 10 years in a very strong way. At the podium ceremony, I was happy that everything went OK and people are happy with it.”

The next challenge the Compact Dynamics hybrid system faces comes this weekend, when it competes in the sub-zero temperatures of Rally Sweden. The kit has undergone successful tests in those conditions, but there is no substitute for seeing how technology performs once it is put through a three-day rally.

For the immediate future, the pressures should ease on Compact Dynamics as there are no plans to further develop the hybrid system at this stage. Development is frozen until the end of 2024. And if the events of Monte Carlo are anything to go by, the biggest talking point is likely once again to be the battle at the front, rather than the new kit – which is just how it should be. ■

INSIDE AUDI'S DAKAR GAME-CHANGER

Four stage wins and all three cars reaching the finish was no small achievement for Audi on its first attempt at motorsport's toughest event with a brand-new car. The key men behind the project explain why it was such a momentous feat

BY DAMIEN SMITH

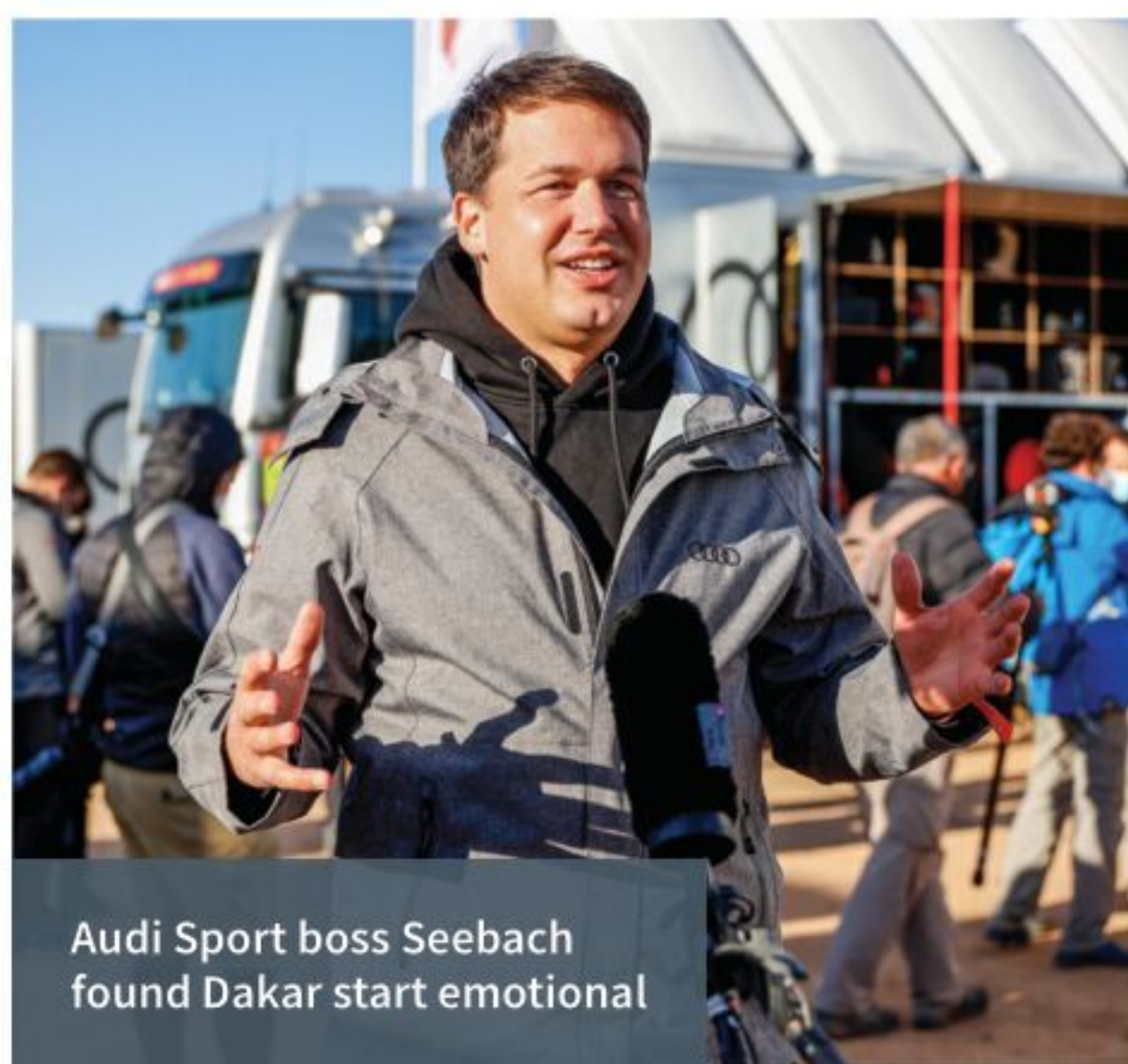


Julius Seebach admits he had a lump in his throat when Audi's ground-breaking RS Q e-tron off-roader rolled away from the startline at the Dakar Rally in January.

"Stephane Peterhansel was the first to start as he was the winner last year [in a Mini JCW buggy]," explains the managing director of Audi Sport, "and it was a very emotional moment given the car had only been finished just two hours beforehand."

"When he started you could hear this electric sound, a whine... The second starter was Nasser [Al-Attiyah, the eventual winner, driving Toyota Gazoo Racing's Hilux] who left with the sound of conventional technology: vroom! There you could see, feel and hear the difference between the two concepts."

Nearly two weeks later, all three of Audi's RS Q e-trons returned to the Jeddah finish of the epic adventure in one piece, each with rollercoaster tales



Audi Sport boss Seebach found Dakar start emotional

of exhilarating highs and frustrating dips. Such is life on what has a strong claim to be motorsport's toughest event.

On paper and at first glance, the results of Audi's maiden Dakar campaign might not look spectacular: ninth place overall for two-time DTM champion, former

World Rallycross title winner and Dakar car category rookie Mattias Ekstrom; 12th for rally legend and three-time Dakar victor Carlos Sainz Sr; and a lowly 59th for 'Mr Dakar' himself, 14-time event winner Peterhansel. But among the setbacks in Audi's debut on the rally based these days in the Saudi Arabian desert, of more significance were the epic stage wins each of the trio took: four in total out of the 12 legs run. The pace of the new racer was all too clear, and perhaps more impressively and certainly more surprisingly, not one of the problems the Audis encountered was caused by failures within its complex, pioneering hybrid battery-powered technology. The Audi is a genuine game-changer for the Dakar and its rally raid world.

"We are very pleased with our success because it is much more than we expected for our first Dakar, especially when you take into account we only had 12 months



Quandt (left, greeting Ekstrom) leads the Q Motorsport operation

“There were no issues with our powertrain concept, just down-to-earth stuff with suspension dampers”



All three RS Q e-trons made the finish, a major achievement for Audi

of preparation,” says Seebach. “There were no issues or problems with our powertrain concept, just down-to-earth stuff with our suspension dampers. This is a proof of concept and shows what the future will look like. Electric mobility is our future and I also think this was a big contribution to the sport of rallying to show what is possible with this kind of technology.”

Eyebrows were raised when Audi announced at the end of November 2020 that it was quitting Formula E in favour of two new campaigns. A return to Le Mans with an LMDh programme? Not exactly a shock for the 13-time winner of the 24 Hours. But a maiden Dakar

campaign? With an electric-powered hybrid off-roader? No one saw that coming. So what was the attraction?

“The Dakar is a competition in the toughest conditions in the world,” says Seebach. “So far it has been a competition just for the internal combustion engine: all the stage wins and overall wins were with conventional technology. But the new regulations gave us the freedom to do our own concept for overall victory.”

He’s referring to the new T1 Ultimate class, designed to encourage renewable energy motorsport and in which Audi is so far the only entry.

“The Dakar is the only race in the world

where you can go 600km in one day in open terrain,” says Sven Quandt, whose specialist Q Motorsport concern runs the Audi assault, on the back of Quandt’s three decades of rally raid experience and his company’s six victories on the epic event. “The new class means you can join with whatever technology you want and it’s the best option as a showcase, to show new technology is working, over two weeks in the toughest conditions. It shows a car that is able to finish the Dakar can be produced and sold to the public with similar technology. It’s a proving ground.”

“And we are challenging the status quo,” adds Seebach. ►

The concept chosen was centred around that old, familiar mantra of *Vorsprung durch Technik* that has served Audi so well through its Quattro rally years, the pioneering diesel and hybrid Le Mans campaigns, and in Formula E. The drivetrain is complex, inevitably heavy and must have required a doctorate in Jenga for packaging, thanks to its three motor generator units (MGUs), TFSI petrol engine, clever software-driven centre differential with variable torque distribution, plus a high-voltage 50kWh battery (see page 22). Even a man of Quandt's experience must have wondered what he was letting himself in for, especially in a timeframe that left little more than a year for build and preparation, and made the toughest demands on Audi's hard-pressed suppliers of componentry.

"Honestly, in the beginning all of us were underestimating what was waiting for us," Quandt admits. "With Axel Loeffler [Audi's chief designer on race cars], who is basically the father of ideas from the Audi side, we spent quite some nights discussing the options we had. It is not so easy to find something that we can be sure would work, where you can run the full kilometres and a stage without refuelling. This was a very important point on our calculation. We looked at hydrogen, but it is not an option because of a lack of range. Efficiency was also very important. Our concept was the best to achieve our goals."

"We had a concept, we discussed it in depth and went through everything to decide it was possible. Then when we started to develop the car we realised space was an issue because there is no space for everything! You have so many more components than in a regular car, but you don't want to make it big. On software I don't know whether we are



Audi bosses describe the RS Q e-tron as its most complex car ever

"They can try and stop us on the political side, but our aim absolutely is to win"

up to 20 or 50 [update iterations]. It's an incredible amount. We wanted to do 8000-9000km [of testing] with a more or less finished car, but in the end we couldn't do everything because the car was basically only ready on 31 December 2021."

The rally started the next day, on 1 January...

"The last things we changed were at the hotel in the parking lot, where we made the final software updates," adds Quandt. "It was one and a half years from the first thought to the finished car, which is very short for something as complex as this."

Seebach also talks up the team effort and 'can-do' spirit as a big contributor to the successful debut. "It is obvious this is the most complex car we've ever done at Audi Motorsport, in the smallest timeline we've ever had," he says. "To

bring together three electric engines, the highly efficient TFSI engine from DTM, in a new car on a terrain you don't know... but also we were in the desert with about 80 people from Q Motorsport and Audi, including marketing and press. Everything worked better each day, which was really good to see. We overcame all the challenges."

The setbacks represented all-too-familiar Dakar troubles. Peterhansel incurred big damage to his RS Q e-tron on the very first day when he smashed into a rock, then a subsequent time penalty left him far out of contention for a 15th win. Meanwhile, both Sainz and Ekstrom were among the victims of roadbook inaccuracies that led to navigational errors from which they could never recover.

But then on day three, Sainz scored

Audi is targeting a victory at its second Dakar attempt in 2023





THE HYDROGEN OPTION

Sven Quandt dismissed a hydrogen-powered option for Audi if it wanted to contend for overall victory on the Dakar Rally. But that's not the end of the story for the 'other' big alternative power solution expected to play a major part in our future mobility.

Green Corp Konnection, better known as GCK Motorsport, showcased its hydrogen-powered contender at the Dakar Rally this year, which it hopes to race at the 2024 edition. The project is a collaboration with German company FEV and revolves around a fuel cell containing 20kg of hydrogen maintained at a pressure of 700 bar, with a power capability of 200kW (268bhp). The fuel cell is connected directly, like the Audi, to a 50kWh lithium-ion battery and a twin-gear electric motor for a final output of 320kW – about 430bhp.

Lag on and off the throttle is a problem with hydrogen power, but GCK's concept uses the battery as a 'buffer' to counter this disadvantage. As with all battery solutions, weight is an unavoidable issue at a hefty 2200kg, equivalent to the Audi.

But Quandt has a point on range. The Q Motorsport boss reckons only 250km is possible with a hydrogen fuel cell, which is less than half the job required for a Dakar stage. GCK predicts exactly that for its prototype too, but is banking on a rule change for mid-stage refuelling in line with what is allowed for the T3 and T4 'lightweight prototype' classes.

GCK is also the company behind the exciting all-electric Lancia Delta Integrale set to race in the new-look World Rallycross Championship this year. It's all good fuel for the ongoing debate on motorsport's future.



GCK Motorsport's 2024 hydrogen challenger broke cover in January



Audi's first stage win – third time lucky on the Dakar? No mean achievement, only to then suffer a series of suspension failures that required help in the desert from Peterhansel (who gave up a likely stage win to lend a hand) and some quick thinking from the team to find a solution. But thereafter and into the second week, all three drivers won stages to leave their rivals with furrowed brows for the future.

Before the event was over, there was talk that a Balance of Performance to throttle back the Audi's apparent performance advantage is vital if the Dakar is to remain competitive for 'traditional' power. It clearly grates with Quandt. "It's always the same," he says. "When you have a good performance everybody is jealous and wants to bring you down and try to do it

in a political way. I can tell you I have encountered this many times. But look at the drivers: at the moment there are only four or five who have the maximum speed.

"We also know Nasser was not pushing after day three, [the competition] was finished for him because he could just bring it home. So we will never know what the Toyota is really able to do. Until we know, there is no discussion about Balance of Performance. For sure they will try, but I think it is totally unfair."

Work is already under way on an evolution of the RS Q e-tron, while the current car will undertake a limited campaign of other events this year, with the 2023 Dakar the only focus in mind. "Obviously we will do a bit more work on the suspension, and on the weight because

we are over by quite a bit," says Quandt. "We have here and there issues that need a quick fix. We need to be more service orientated because at the moment we are not service-friendly. But that's about it."

So what would a successful 2023 Dakar Rally look like for Audi?

"Overall win," fires back Seebach.

"No question," says Quandt with a laugh. "They can try and stop us on the political side... but our aim absolutely is to win the Dakar. We all know you cannot guarantee anything because it is one of the most difficult races. Previously I've lost on the last day and this is always possible. But after this year's performance we all know our goal." ■

▶ P22 AUDI RS Q E-TRON TECH

AUDI RS Q E-TRON

The prototype for this T1 Dakar Rally raid machine was developed in just 12 months. Yet Audi Sport head of development Stefan Dreyer rates it as the most sophisticated competition car in the manufacturer's history. Here's why

BY MATT KEW

ENERGY CONVERTER

If a driver was to spot an electric vehicle charging station in the desert, chances are they've been duped by a mirage. As such, the RS Q e-tron needs to keep its battery topped up to complete 600 miles per day. That explains the low-pitched purr the car often makes. Audi has revitalised the range-extender concept for its off-road mission, meaning the RS Q e-tron houses a two-litre turbocharged TSFI four-cylinder engine developed for use in the DTM in 2019 and 2020. The combustion engine is coupled via a shaft to another Formula E MGU. The petrol motor works as an onboard generator to spin the MGU to produce electricity, which recharges the battery at up to 220kW. It never drives the wheels. Because efficiency is the name of the game, the TSFI unit spins at an optimal 4500-6000rpm to produce under 200 grams per kWh. In other words, a conventionally powered Dakar car needs a 600-litre fuel tank. The RS Q e-tron makes do with half that.

BRAKES

In addition to the trick energy converter, the RS Q e-tron relies on regenerative braking – commonplace in electric vehicles – to juice the battery. Internally ventilated steel discs are operated by a brake-by-wire system and, under load, they convert the kinetic energy into electric energy that can then be stored. This runs across both axles, meaning a tug of the handbrake mid-slide will still boost the range.



BATTERY

Audi is tight-lipped on the origins of the high-voltage lithium-ion battery, only saying it relies “on proven cell technology” and so is likely outsourced. The spec chosen has 52kWh capacity, two shy of the McLaren Applied-Atieva design the manufacturer knows very well from Formula E. Nestling in the middle of the chassis, the battery has a wet weight of 370kg to factor in the cooling medium Novec, chosen because it does not conduct any electric currents. The high voltage cables are not quoted as part of the 2.5-mile-long wiring loom.

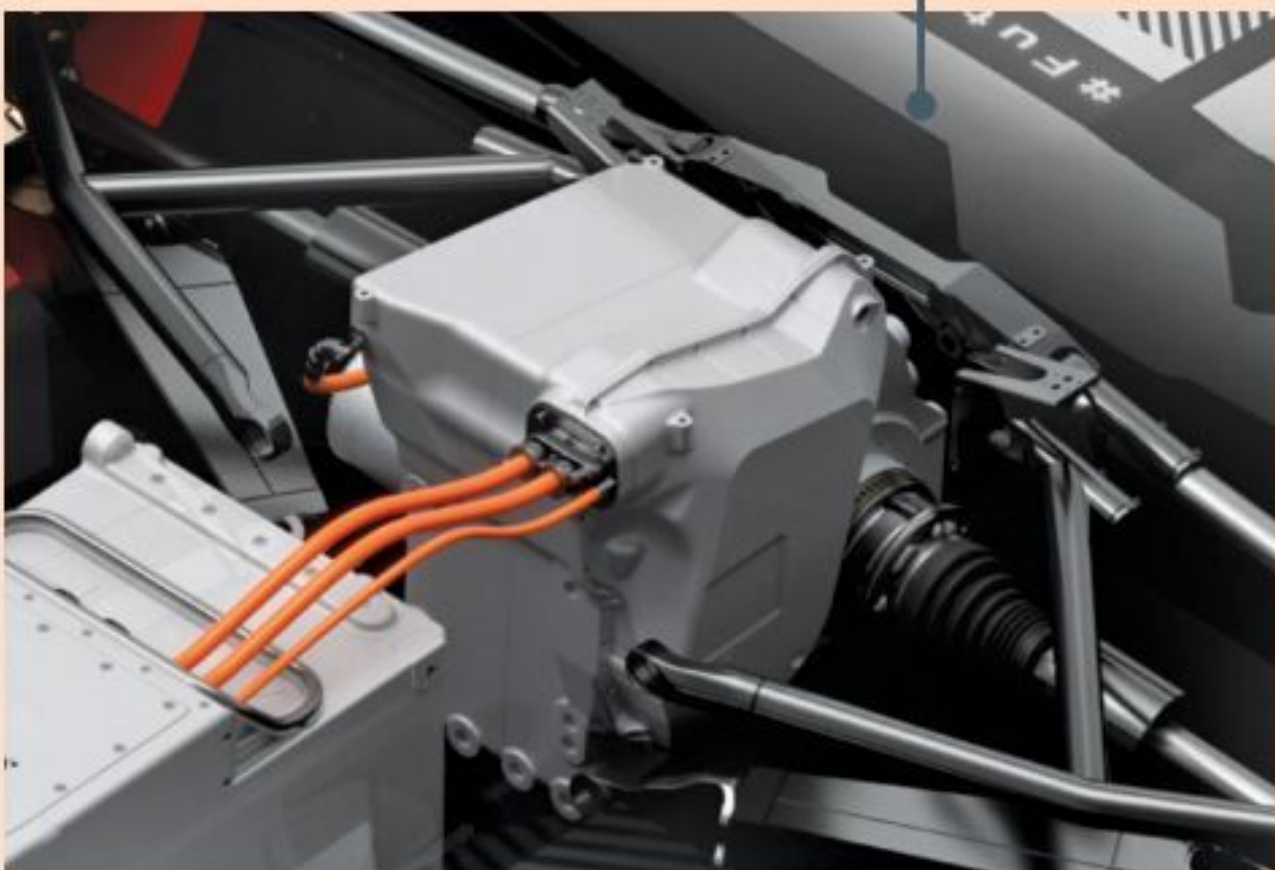
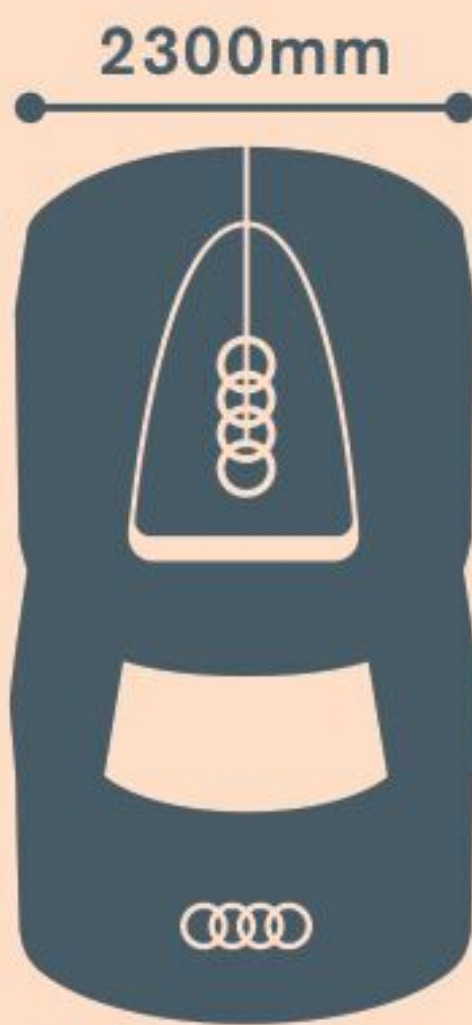
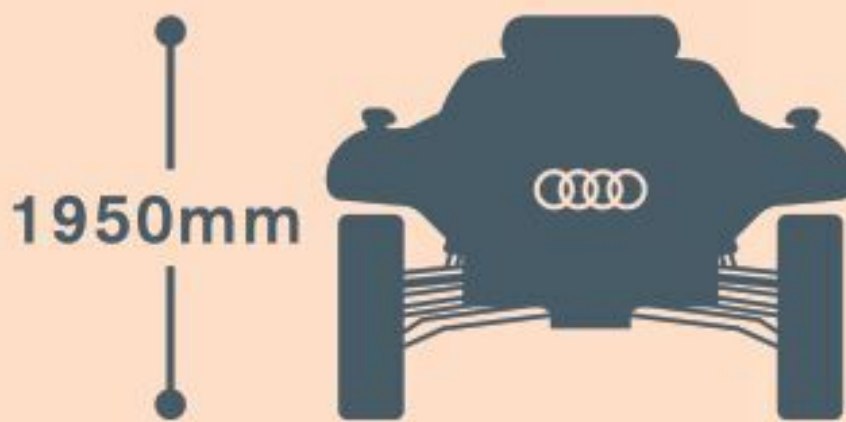
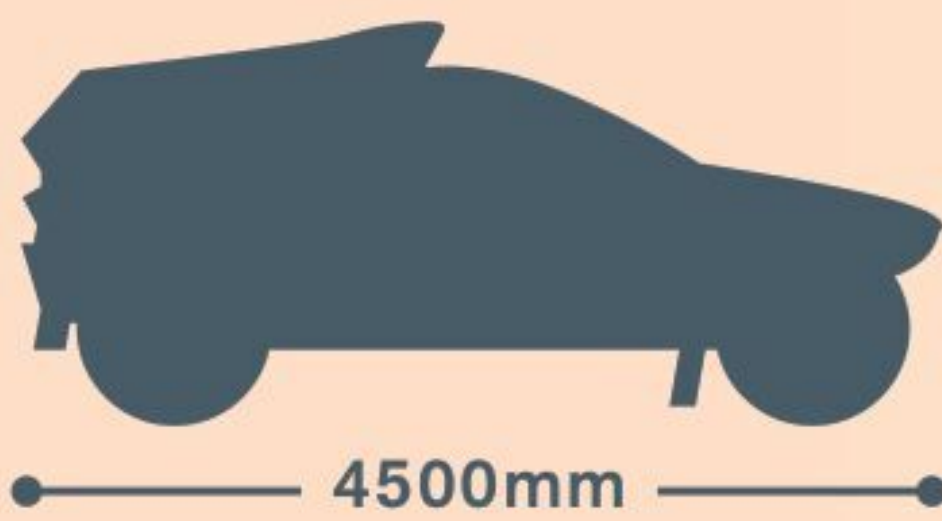


CHASSIS

It would be unkind to liken the RS Q e-tron to reheated leftovers or a parts bin special, but the chassis borrows heavily from Audi's motorsport back catalogue. The load-bearing structure is a tubular frame, the spec of which is textbook DTM during the mid-to-late 2000s. In this application, it's heat-resistant, tempered, aerospace-grade steel that contains the alloys chromium, molybdenum and vanadium as used in World Rallycross. To better protect the occupants, carbonfibre-reinforced plastic has been used to build the seat shells and passenger cell panels that fill the space between the tubes. That's a blend of LMP1 and Formula E expertise. CFRP also forms the last line of defence in a three-part underbody to protect the battery, which is placed low down in the chassis for optimum weight distribution to minimise how much the car is upset over jumps. An initial aluminium plate soaks up the scrapes before a foam layer absorbs the bulk of the leftover kinetic energy.



DIMENSIONS



POWERTRAIN

Why would Audi quit Formula E at the end of the 2020-21 campaign, the same season it developed an all-new powertrain in-house for the first time at great expense? Perhaps safe in the knowledge that the motor-generator unit would live on nestled in a Dakar Rally car. The one-speed drivetrain developed for street circuit racing is dubbed the MGU05, and the RS Q e-tron uses one per axle to provide four-wheel drive via a virtual centre differential – there's no mechanical link. Each MGU contains an internal rotor, external magnets, an efficient cooling system and six electric phases, yet weighs under 35kg and is over 97% efficient. As per the regulations, total power is limited to 288kW (386bhp), but that still gives the two-tonne-plus SUV a loose-surface sprint to 60mph in 4.5 seconds. Power is transmitted to the 17-inch forged aluminium wheels, shod in BF Goodrich tyres, via a single-speed racing gearbox, and a limited-slip differential, on each axle with a ratio of 20:1.



The National Motorsport Academy - The Most Popular Choice for F1 Engineers & Motorsport Professionals

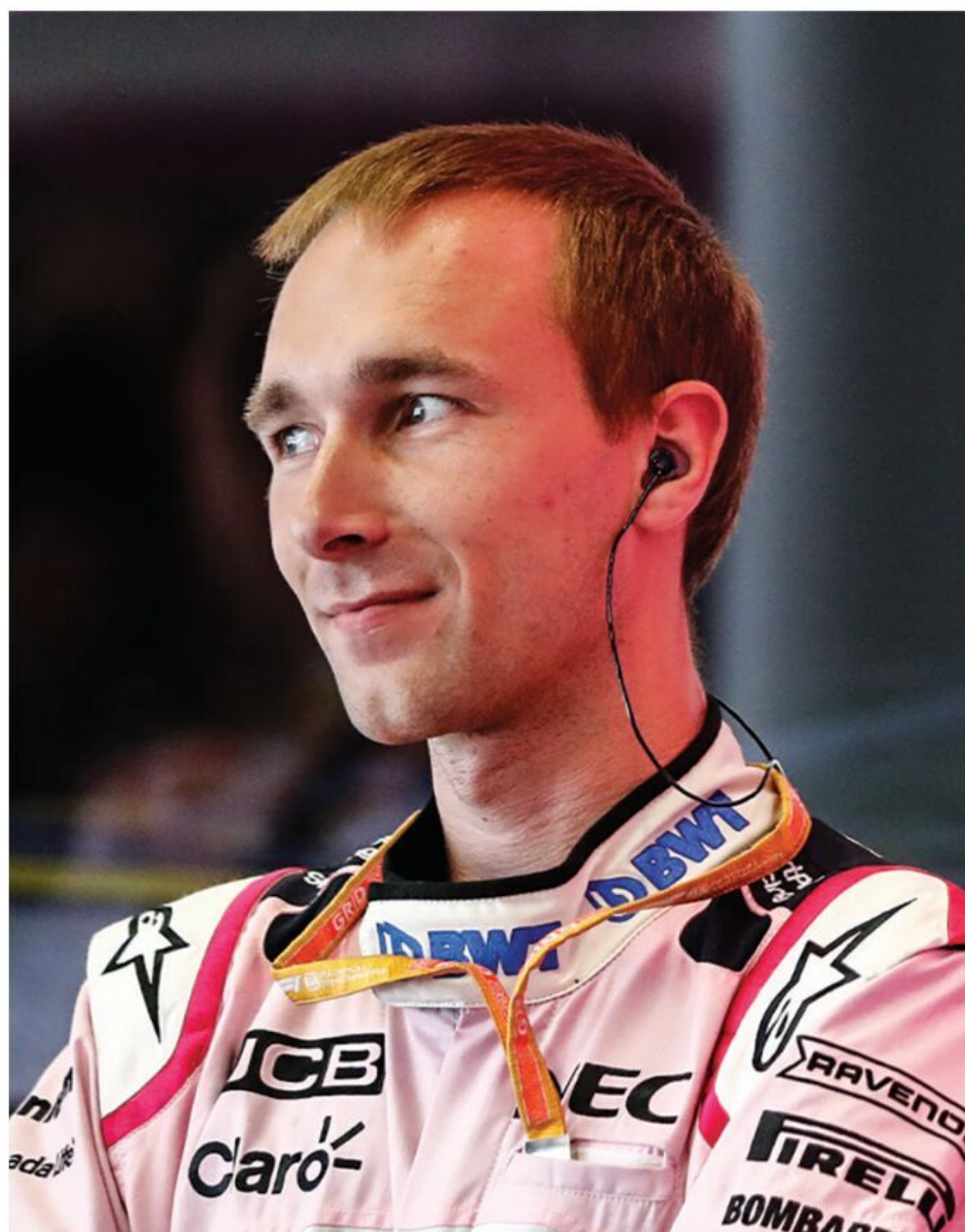
The National Motorsport Academy was founded in 2014 to allow people in motorsport to gain a degree without putting their career on hold. Backed by De Montfort University, the National Motorsport Academy online motorsport degrees enable you to study flexibly from anywhere in the world, making them the degree of choice for top-flight professionals in Formula 1, the World Endurance Championship and World Rally Championship.

Unlike many motorsport courses, the National Motorsport Academy Motorsport Engineering Degrees are industry-led, commercially relevant, include the latest software and are entirely centred on top-level motorsport. Experience counts for as much as qualifications and many vehicle technicians transfer their practical knowledge to the motorsport industry by studying the online BSc Motorsport Engineering or Final Year Top Up degree.

In 2021, with the launch of a Business School, the National Motorsport Academy moved into the commercial space, offering the world's first MBA-style degree specifically tailored to the world of motorsport. The course covers hot topics such as governance, contracts and change management and has been designed to help graduates from other industries to forge a career in motorsport.

With over three-decades' experience in distance learning, each course also offers unrivalled support from personal tutors who specialise in the areas that they teach. The National Motorsport Academy is digital by default, with online degrees engineered to deliver educational content on demand, via the Virtual Learning Studio. You can start your course at any time of year and work at your own pace.

Get your career on track Visit motorsport.nda.ac.uk



Glenn Dunbar (for Racing Point)/Motorsport Images/Autosport

Matthew Bold

FIA F1 Technical Team & NMA Graduate

"I left school and went straight into the motorsport industry with an apprenticeship at Radical. Formula 1 was always my aim and after four years at Radical Williams gave me my chance and I worked my way up to gearbox technician. In 2018, I moved to Mercedes and that's when my career stalled. I hadn't really considered that I'd need a degree up until that point. To have any chance of promotion, everyone wanted a degree. It seemed impossible. F1 is full on enough as it is and I didn't want to put my career on hold and go back to university for three years. Thank God for the National Motorsport Academy! Without them I'd never have been able to do a degree.

"The National Motorsport Academy gave me the chance to get my degree whilst working and because of the flexibility of the course, I managed to complete it in a little over two years. I was doing work from hotel rooms, on flights; downloading all of my course content onto my iPad. It's all available on the Virtual Learning Studio. I've seen videos of people saying it but it really doesn't matter where you are in the world, you can pick a mobile device up, download the content and spend an hour, two hours, whatever you can spare to study.

"My job now is slightly different. I work on the FIA's Technical Team for Formula 1. It's a lot of responsibility and without a doubt, it wouldn't have been an option without my degree from the National Motorsport Academy."



Laurent Charniaux www.charniauximages.com / Alpine F1

Ellie Williams

Alpine F1 Team & NMA Graduate

"In my early teens, I was sat at school one day and googled 'motorsport college' and from that moment on, my life changed! I left home at 16 and completed my BTEC Diploma and then started a Foundation degree in Motorsport Engineering. Whilst I was completing a work experience module at Force India F1 team, I applied for a trainee composite technician role and I was successful so went to work full time and left my degree.

"As my career developed, I soon realised that in order to progress further I would need an engineering degree. With working full time at Renault, now Alpine F1 team, I needed something flexible, so I did some research into online degrees and came across the National Motorsport Academy.

"I finished my BSc Motorsport Engineering last year and at the same time took a new job with Alpine and now work on the race team full time as a sub-assembly coordinator.

"Aside from working with great people, the best part of my job is the satisfaction of finishing a race weekend with a good result, especially if it's been a challenging week!

"Even though I am female in what some people would call a 'male dominated' industry, I don't feel like I'm treated any differently. I'm hoping that my current role will open up new opportunities for me in the future and having my degree will certainly help."

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HOW TO BE AN ACE ENGINEER

DAMS technical director Remi Decorzent shares his tips for a successful career

BY JAMES NEWBOLD

Curiosity may have killed the cat, but it's a powerful tool for engineers. And for DAMS Formula 2 technical director Remi Decorzent, it's been the driving principle of a career that led him to spend a decade in Formula 1 with Sauber and Toyota, bookended by spells in the junior formulas. Central to the stalwart French team's six titles in the GP2/F2 era, he's also sampled life on the Indycar beat, worked on sportscars, and designed a downhill world championship-winning mountain bike.

After studying mechanical engineering, Decorzent discovered the ins and outs of car engineering by reading books in English. "I learned motorsport by myself," he says. "It's important to be curious, to go to the end of things. We often meet young engineers that don't know basic stuff – they haven't been curious enough."

His first job was for French Formula 3 team Daniel Gache Racing in 1989, working as a mechanic for rookie Laurent Aiello. But at Gache's insistence, Decorzent left after six months to engineer his son Philippe at the Apomatox Formula 3000 team. A maiden podium came in Birmingham with Didier Artzet in 1990, but funds were limited. "It was difficult to compete," he says, "so I decided to go to Danielson."

There came one of the best learning experiences of Decorzent's career, running Peugeot Spiders and F3000 cars alongside Jacky Eeckelaert – "He taught me a lot, like a stepbrother" – and being afforded considerable freedom by company boss Joseph LeBris to indulge in side projects.

These included creating his own lap time simulation software, aero-mapping, and the "very high-level" mountain bike that Nicolas Vouilloz rode with great success. "[LeBris] never stopped anyone in their will to do better," says Decorzent. "It was for me a very good school."

But the team hit the skids in 1996 when backer Shannon failed to pay its invoices, leading Decorzent to join Lola as an Indycar support engineer. It didn't last: "Everybody shouted at me, I was the representative of a car that wasn't working..."

On his return to F3000 with McLaren's new junior team, he ran Nick Heidfeld to second in 1998, and welcomed its process-driven methodology. "It's this philosophy of why you are fast that I try to put in place in DAMS," he says. "In my life, without the English teams, I will never be what I am."

His F1 break came with Sauber, initially as a performance engineer in 1999. But by the end of the year, he'd been promoted to race engineer Pedro Diniz, scoring his first points with Mika Salo in 2000 and then

being reunited with Heidfeld in 2001. Decorzent struggled for confidence during this time, and frequently threw up after qualifying to dispel his nervous energy. "I always found I am really stressed, but I wanted to face the hardest challenge."

Toyota came calling for 2004. He ran Cristiano da Matta before being switched to Olivier Panis's car and then onto the test team for 2005, a move made to appease new signing Ralf Schumacher.

When Toyota left F1 in 2009, Decorzent landed at DAMS, overseeing its run of titles with Romain Grosjean (2011), Davide Valsecchi (2012) and Jolyon Palmer (2014), plus three teams' crowns in 2012, 2014 and 2019. For the foreseeable future, he's happy in F2, which "is giving a good balance".

"I try to form young drivers and young engineers – and I try to keep them," he says. "To build a team that is not an empty box, you need to have the same people or to build a reserve of people coming from school to a level in engineering. That's why I stay in DAMS." ■



Decorzent (left) has been at the heart of DAMS's F2 efforts for the past 12 years



Decorzent found the pressures of F1 race engineering stressful

TOP TIPS FOR ENGINEERS FROM REMI DECORZENT

- When you hit a problem, try to have an approach that could be different from others. But make sure to respect what others have done too.
- The very strong engineers have not only scientific knowledge, they know what the driver wants, what will be the impact of changes, because they are more curious than others.
- It's important to have a goal, because if not you will look only to a better salary.



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