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ALONSO How rainmaster took Daytona win



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POINTERS TO THE FAR AND NEAR FUTURE

McLaren's 2050 Formula 1 concept isn't the first example of designers trying to imagine what the pinnacle of the sport could look like in future, but it is the most extreme.

It is, of course, unlikely that F1 machines of 2050 will actually look like the MCLExtreme but, as Scott Mitchell and technical expert Jake Boxall-Legge show in our cover piece on page 16, much of the technology incorporated in the design is closer to fruition than you might have thought.

Perhaps more importantly, it also shows how different F1 could be if those involved were prepared to be more radical. Many fans have had enough of minor changes that make little difference to the racing, so the much-heralded 2021 regulations will need to do a lot more than fiddle with the front wings and endplates.

In the here and now, two giants of the sport started 2019 with impressive performances last weekend. Fernando Alonso once again starred on his way to winning the Daytona 24 Hours (above) alongside Kamui Kobayashi, Jordan Taylor and Renger van der Zande (p38), while Sebastien Ogier managed a remarkable seventh Monte Carlo Rally victory for a fourth manufacturer (p30).

While Alonso will now turn his attention to Sebring in March as he tries to claim the World Endurance Championship, Ogier knows he is in for a tough fight to retain his World Rally crown. Hyundai's Thierry Neuville ran him very close and the Toyotas – particularly in the hands of Ott Tanak – proved extremely rapid. We've already got some great storylines developing this season.

- Next week we take a look at the big F1 questions of 2019 with ex-grand prix driver and TV pundit Karun Chandhok.



Karun

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McLaren Applied Technologies;
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TODT SLATES RALLY LETH

WRC

There were no surprises when the covers were pulled off this particular Citroën – a Red Bull livery; *quelle surprise*. Then things got interesting. The other side of the car was from the future. It was white and green. Welcome to the C4 WRC Hymotion4.

Welcome too to the Paris Motor Show, although that ‘future’ was 10 years ago last October. That was when we saw the fruits of the labours of a few of the more insightful folk at Citroën Racing, who in 2008 had decided to do the job of the FIA and predict the direction of a sustainable future for the World Rally Championship.

The C4 WRC Hymotion4 ran a KERS system feeding a 125kW electric motor-generator bolted to the rear differential, with a pack of 990-cell batteries positioned over the car’s existing fuel tank. The thinking was that it could offer a short burst of power or torque in the stages, or electric power could be harvested for road sections or for moving about in the service park.

Superb. With KERS arriving in Formula 1 in 2009, this was just what rallying needed to stay, if not ahead of the game, then at least in the game. How much of that tech was taken up and implemented by the white-shirted rulemakers? Er, none.

A decade down the road and the WRC continues to be driven entirely by high-octane petrol. Were it not for World Rallycross shooting itself in the foot last year, the WRC might have been in danger of looking like an isolated dinosaur.

Regardless of how much you may love the sight, sound and smell of unburned fuel being fired from an exhaust – preferably side-mounted – times have changed. And the WRC has busied itself with procrastination and deliberation for far too long.

Last week, FIA president Jean Todt admitted to a select group of journalists that he shared those frustrations. The time had come to make a move, so he made it.

“I’m completely in favour of taking into account the evolution of motoring for rallying,” said Todt. “And clearly it is a big frustration for me not to see that rallying has engaged on at least some hybridisation and some new technology.

“The reason is, I am told by people

“THEY DON’T WANT TO CHANGE THE RULES. IT’S ALWAYS THE REASON”



Bottas is fifth again, but not in a Merc

RALLYING

Even for a 'normal' Finn, -30C is a bit much. For a Monaco-based, Formula 1-driving Finn, -30C is plain unreasonable. But not for Valtteri Bottas. The Mercedes star last week swapped the Riviera for Rovaniemi, located on the chillier side of the Arctic Circle, and began his rally career in the car Sebastien Ogier used to win last year's World Rally Championship.

And Bottas totally wowed the Arctic Lapland Rally. Driving an M-Sport-run Ford Fiesta WRC, he finished fifth overall (admittedly against lower-powered R5 cars) and was fastest on one of the stages run through deeply frozen Finnish forests. It was his fifth consecutive fifth place, following the final four grands prix of 2018.

Co-driven by two-time world champion Timo Rautiainen, Bottas said: "This was a very nice experience. One goal I had before the start was to get to the finish line and we made it. We learned a lot during the rally and the speed got higher all the time – and confidence on my driving also got better. Everything went as planned: we started quite calmly and then gradually increased speed. We were able to avoid big mistakes, even though we had few moments. I feel great and it was nice to be able to drive the quickest time on one of the special stages.

"My co-driver Timo was a huge help in the project and I learned from him a lot. I'm very happy with our cooperation and the project."

So happy is Bottas that he is already planning his next outing between the trees. "[At the] latest next year we will drive our next rally here in Rovaniemi," he said.

Bottas is the latest Finnish F1 racer to tackle the Arctic, after Keke Rosberg, Mika Hakkinen, Kimi Raikkonen and Heikki Kovalainen.

DAVID EVANS



ARGY ON ELECTRIC TECH

who are there to run the business, that manufacturers don't want it. They don't want to change the regulation. They don't want... it's always the reason. For me, this is completely no position; when I go to motor shows in Frankfurt, Paris, China, Japan, Geneva, I only see new technologies. For me it's frustrating to see in an FIA world event they don't want new technologies.

"But now, finally the manufacturers say we need some hybridisation. The technical people at the FIA, with the input of the manufacturers, are working to implement it in 2022. The reason this didn't happen earlier is because they did not want it."

FIA rally director Yves Matton added further detail, involving specific regulation change. The current five-year homologation cycle runs from 2017-21. "We know very well what is our timeframe," said Matton. "It will be in 2019 when we release the regulations and this gives [the manufacturers] more than enough time."

Asking motorsport manufacturers to come up with a workable, unified solution to regulation change is a little bit like asking Theresa May to sort Brexit. In principle, sensible enough. In reality? Naive. But laying the blame for the absence of planning at the door of the manufacturers seems a bit harsh. The C4 WRC Hymotion4 would apparently

demonstrate a desire to see action. And what is it that speaks louder than words?

M-Sport Ford team principal Rich Millener says the timing of the rule change is perfect, coming at the end of the current five-year cycle of World Rally Cars.

"This is the only way some of the [current] manufacturers will stay in the sport and it's the only way for us to attract new manufacturers," said Millener. "If we can have the regulations in the middle of this season, that gives the sport six months to go to possible new manufacturers to say, 'This is what we've got, do you want it?'"

Millener admitted that the process of bringing a hybrid solution to the WRC had taken longer than it might have done.

"The manufacturers all want this," he said. "We all know we want it, but the problem is agreeing what we want; everybody is putting forward the ideas for the best solution that will suit their own product and that's understandable. The FIA needs to take those views away and come back and tell us what we're going to do. We need to know, for example, will there be common [FIA-supplied] parts and, if so, what will they be."

The ball, it would appear, is back in the Parisian court.

DAVID EVANS

Caterham F1 staff given small payouts – four years on



HARFORD
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IMAGES

FORMULA 1

More than 200 ex-Caterham Formula 1 employees have been paid a small sum as the long-running legal saga following the team's collapse finally nears its end.

Caterham went into administration in 2014 amid a dispute between founder Tony Fernandes and a group of investors who had bought the team that summer, and the team died early in 2015.

Autosport has learned that earlier this month, administrator Smith & Williamson was able to pay 216 employees who were transferred to their control under TUPE regulations from Caterham. It is claimed that

the reason it took so long was because of the time taken to convert various assets into cash and complete the relevant tax affairs.

While the specific amounts are unknown, last year the administrator reported it had received £217,495.06 worth of claims from employees, who were entitled to a maximum of £800 in unpaid wages plus holiday pay of up to six weeks and some occupational pension payments. Anything above that is deemed as an unsecured claim.

The payments have been made after tax and National Insurance contributions, which have been paid to HM Revenue & Customs.

Unsecured creditors include the companies who have sought outstanding

payments from Caterham, which administrators said last October, in their latest progress report, comprised 25 creditors claiming £66.8million. According to the administrators "there remains a good prospect for a small dividend for unsecured creditors. We anticipate that such payment will be made in the next six months", after which the case will be concluded.

The most recent administrator's progress report stated that the administrators had drawn £713,502 in fees from November 2014 to August 2018. They anticipated that future costs in respect of outstanding matters would total £15,000-30,000.

SCOTT MITCHELL

Monteiro back in the saddle full-time

WTCR

Tiago Monteiro's long wait for a full-time return to racing is almost over thanks to his confirmation as a Honda driver on the 2019 World Touring Car Cup grid.

Monteiro (right), who was injured in a testing crash at Barcelona in September 2017, spent more than a year on the sidelines before making a one-off return at the Suzuka WTCR round in October in a Honda Civic.

His current agreement

with Honda was originally set to cover the 2019 season. Although he skipped the season-ending Macau round on doctors' advice, Monteiro told Autosport at that event that he had "basically" been given a green light to return full-time and had started preparations with Honda.

The team with which he will compete has not yet been announced, but Autosport understands that Boutsen Ginion Racing will not be back this season and will likely be replaced by the

KCMG squad that last year ran Hungarian Attila Tassi to fourth in TCR Europe.

Argentinian Esteban Guerrieri, third in the 2018 WTCR standings, has also been retained as a Honda driver and will remain at the Munnich Motorsport squad, where he will be partnered by double Super TC2000 champion and compatriot Nestor Girolami. A works Volvo driver in 2017, Girolami returned to Super TC2000 last season.

JACK COZENS



MARIN/DPPI



Women down to last 28

W SERIES

W Series has selected the 28 women who will continue onto the next stage of its selection process for its inaugural season.

The all-new, all-female championship hosted three-days of assessment at the Wachauring in Melk, Austria last weekend, where the successful 28 were picked from an initial field of 54 by a panel of judges that included advisory board chairman David Coulthard, series director Dave Ryan and former IndyCar driver Lyn St James.

Alexander Wurz also served as a judge, with the assessment programme using the ex-Formula 1 star's Test and Training International programme, also employed for the FIA Institute's Young Driver Excellence Academy from 2011-15.

"The 54 drivers who we've assessed over the past three days have all been committed and ambitious, and that's been great to see," said Wurz. "But it's not only an assessment programme; it's also a selection programme. That being the case, some have made the grade and others inevitably haven't."

"I hope that it'll have a positive and profound effect on developing the careers of women racing drivers for years to come."

Candidates were evaluated over the course of 10 modules, which included tests of driving ability in snowy conditions, using Ford Fiesta ST and Porsche Cayman S road cars. Fitness, mental agility and media training were also taken into consideration before a Race Of Champions-style challenge informed a final decision.

All five of the British entrants — BRDC British Formula 3 race winner Jamie Chadwick, former GP3 racer Alice Powell, Carrera Cup GB competitor Esme Hawkey, 2009 Ginetta Junior champion Sarah Moore and Jessica Hawkins — successfully qualified for the next stage.

The selection process will move to Almeria in March, where candidates

QUALIFIERS

Sarah Bovy	GT
Jamie Chadwick	British F3
Sabre Cook	USF2000
Natalie Decker	ARCA
Marta Garcia	Spanish F4
Megan Gilkes	US FVee
Grace Gui	Asian FRenault
Esme Hawkey	Porsche Carrera Cup GB
Jessica Hawkins	Minis/VW Cup
Shea Holbrook	Lamborghini Trofeo
Vivien Keszthelyi	Audi R8 Cup
Emma Kimilainen	STCC
Natalia Kowalska	MSV F2
Stephane Kox	Asian Le Mans Series
Miki Koyama	Japanese F4
Francesca Linossi	Lambo Super Trofeo
Milou Mets	LMV8 Series
Sarah Moore	Britcar
Tasmin Pepper	South African VW Polo Cup
Vicky Piria	GP3
Alice Powell	GP3
Gosia Rdest	Euro GT4
Naomi Schiff	GT4
Shirley van der Lof	Historics
Beitske Visser	FRenault 3.5/GT4
Alexandra Whitley	NZV8 Utes
Fabienne Wohlwend	Ferrari Challenge
Caitlin Wood	GT

will test the W Series Tatuus F318 F3 car for the first time, before a final grid of 18, plus two reserves, is selected ahead of the first round at Hockenheim in May.

Notably absent from the Wachauring was ex-GP3 driver Carmen Jorda, who was on the initial longlist of candidates and has been a vocal supporter of a women-only series in the past. A W Series spokesperson said: "In the end, not everyone who we long-listed opted to take their chance, and that's up to them. We wish them well."

LUCY MORSON

IN THE HEADLINES

TORO ROSSO ON POLE

Toro Rosso was first in the queue to launch its 2019 Formula 1 contender as we went to press, with the STR14 set for its unveiling on February 11 – seven days before pre-season testing kicks off at Barcelona. Renault is next up on February 12, with Racing Point on the 13th, McLaren on the 14th and Ferrari on the 15th. Sauber will roll its weapon out in the pitlane on the first morning of testing, as likely will Haas. Mercedes, Red Bull and Williams hadn't communicated any plans.

MICHELIN MAN AT REGIE

The ex-CEO of Michelin is to take over at the helm of Renault following the resignation of Carlos Ghosn last Thursday. Jean-Dominique Senard has been elected by the board as the new director and chairman, with Thierry Bollore, who recently took on Ghosn's responsibilities, staying on as CEO. Ghosn, the architect of the revival of Renault's F1 team, is in jail in Japan on a charge of financial irregularities, which he denies.

RICARD PIT ENTRY SHIFT

The controversial pitlane entry at Paul Ricard will be revised in time for this year's French Grand Prix. Race director Charlie Whiting had to cut the speed limit in 2018 from 80km/h to 60km/h because of a sharp left turn that exposed the Mercedes pit. The pit entry will now be between Turns 14 and 15, the final two corners on the track. The chicane on the Mistral Straight will remain, as it is deemed to provide an overtaking opportunity.

VILLENEUVE'S F4 PLAN

Jacques Villeneuve, the 1997 world champion, has launched a scholarship to promote a new talent into Formula 4. Villeneuve and his mate Patrick Lemarie, who was BAR test driver for four seasons, are the men behind Feed Racing France, which says it will direct its protege into a top European F4 series in a prize worth €400,000. Assessments will take place at Magny-Cours in a Mygale F4, the same chassis as is used in the French and British series.

CONWAY TRAVEL SNAFU

World Endurance Championship Toyota star Mike Conway had to miss last weekend's Daytona 24 Hours, which he had planned to contest with an Action Express Racing Cadillac alongside Christian Fittipaldi, Joao Barbosa and Filipe Albuquerque. Travel delays meant that he would not have made the circuit in time for the final practice session on the Friday, whereupon the decision was taken for him to stand down. He is expected to rejoin the team for the Watkins Glen and Petit Le Mans enduros.

IN THE HEADLINES

WICKHAM RETIRES

Veteran team manager John Wickham is retiring from Bentley Motorsport after his second stint with the British manufacturer. The 69-year-old former boss of the Spirit Formula 1 squad was Bentley TM on its return to racing at the Le Mans 24 Hours in 2001 before becoming team director for its successful assault on the French enduro in 2003. He returned to Bentley to help mastermind its latest motorsport comeback in the GT3 ranks and was joint team manager of the factory M-Sport effort in 2014-15.

ARMSTRONG IN FRONT

Ferrari protege Marcus Armstrong has moved into the Toyota Racing Series lead after winning the New Zealand Motor Cup main race at Hampton Downs last weekend. Title rival Liam Lawson crashed out when he tangled with Lucas Auer as they fought for second. Auer's car later slowed, allowing Artem Petrov into second from Cameron Das. Armstrong also won on Saturday, from Raoul Hyman and Lawson. The reversed-grid race provided a win for Lawson. There was another reversed-grid race, postponed from the Teretonga round. Petrov won that after a chaotic restart shunt between Das and Lawson caused an early red flag.

SIROTKIN IN WEC...

Williams F1 refugee Sergey Sirotkin will contest the final three rounds of the 2018-19 World Endurance Championship with SMP Racing, but not – as was expected – in place of Jenson Button. Sirotkin instead replaces Matevos Isaakyan alongside Stephane Sarrazin and Egor Orudzhev in the #17 BR1 LMP1 car. Button will be at the Le Mans 24 Hours, but stands down from the #11 machine for Sebring and Spa due to Super GT commitments in Japan.

...AS MALAYSIANS LEAVE

WEC LMP2 title contenders Jazeman Jaafar, Weiron Tan and Nabil Jeffri are title contenders no more. Sepang circuit has pulled its backing for the all-Malaysian trio, so Jota-run Jackie Chan DC Racing will replace them with IndyCar racer Jordan King, ex-F1 driver Will Stevens and silver-rated David Heinemeier Hansson.



Can Fewtrell win in F3?

FORMULA 3

Reigning Formula Renault Eurocup champion Max Fewtrell has secured a plum seat with GP3 dominator ART Grand Prix in the new FIA Formula 3 Championship. He'll line up alongside main 2018 rival – and fellow Renault F1 protege – Christian Lundgaard plus late-season '18 GP3 form man David Beckmann. That's a tough pair of teammates, so how does 19-year-old Fewtrell view his prospects?

FEWTRELL... ON ART

The environment is really similar to R-ace GP [his Renault team]. That was a nice shift over to ART, it didn't feel like a big change for me. It made me feel comfortable and really confident for this year. I'm really excited in that department. I like how the team works. The drivers they've had before have all gone on to do great things. That's exciting for me.

...ON THE NEW F3 DALLARA

I'm really confident in the team and that I have the right guys around me to adapt to the new car. I think the car is not too far away from what it was [the old GP3 car],

but it definitely helps me and the other rookies. We'll see at the shakedown how different the car is.

...ON HIS CHANCES

Judging how the [post-season Abu Dhabi GP3] test went, and what we know we are capable of, the test went really well. I'm really confident for this year. I'd want to be challenging for wins; I need to make a good impression on the F1 team straight away. I need to turn a few heads by being fast straight out of the box. Obviously Renault know it's difficult to do that and I have a bit of time to adjust and learn, but I think it would really help me to be on it straight away rather than taking the whole year.

...ON PRESSURE

It's an added pressure because they see I have won the Eurocup – it's definitely a target on my head for people to say, 'He should be good in this straight away'. Obviously it's different with the new car and tyres and you have to learn it all. But it doesn't affect me when I'm on track. It motivates me to do better, knowing that I'm the Eurocup champion, that I can do it, I can win races in F3.

JACK BENYON



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INDYCAR SERIES

Last March, Jack Harvey was lying in between Sebastien Bourdais and Graham Rahal in the IndyCar Series opener at St Petersburg – on the same off-sync strategy – when a puncture put him in the wall. Bourdais went on to win from Rahal...

Two months later, he was second to fellow Brit Stefan Wilson on the final restart in the Indy 500, trying to eke out fuel to the finish. Neither could, but had there been another caution this was another one in which Harvey could have taken a podium...

That's the 'what might have been' out of the way. For now Harvey has an expanded – up from six to 10 races – IndyCar programme with the Schmidt Peterson Motorsports-affiliated Meyer Shank Racing team for 2019. The 2012 British Formula 3 champion will compete in the first six races up to the Indy 500, and will then contest the Road America, Mid-Ohio, Portland and Laguna Seca rounds.

"We're extremely excited to be extending our programme," said Harvey. "That has always been the goal for 2019 and it's amazing to achieve that and continue to grow what we are doing. I believe in the team and in myself to do what we have to do."

Team co-owner Michael Shank added: "Starting off with only six races is not easy, but Jack did a great job and really hung in there. With 10 races, Jack will have much more seat time and it will help us all around." Shank, whose team also competes in IMSA SportsCar, is targeting a full-time IndyCar programme in 2020.

MARCUS SIMMONS

Superlicence confusion for Ticktum

FORMULA 3

He brilliantly won last November's Macau Grand Prix to bring himself to just five points away from the cut-off point to earn a Formula 1 superlicence.

But Red Bull Junior Dan Ticktum's bid to vacuum up the last few points with a programme in the Asian F3 Winter Series has stumbled badly – he hasn't won a single race and lies down in eighth in the standings with one round remaining. And now it looks as though there are no superlicence points on offer anyway...

The confusion arose when the FIA last month included

the Asian Winter Series (AWS) on its list of series eligible for points. But then there appears to have been an update, stipulating that series must take place over a minimum of five weekends on at least three different circuits. AWS – whose calendar was submitted to the FIA last September – was still listed on the chart, despite taking place over three weekends on two different circuits.

In a statement to Autosport, FIA safety director Adam Baker has hinted strongly that drivers cannot score points from competing in the AWS.

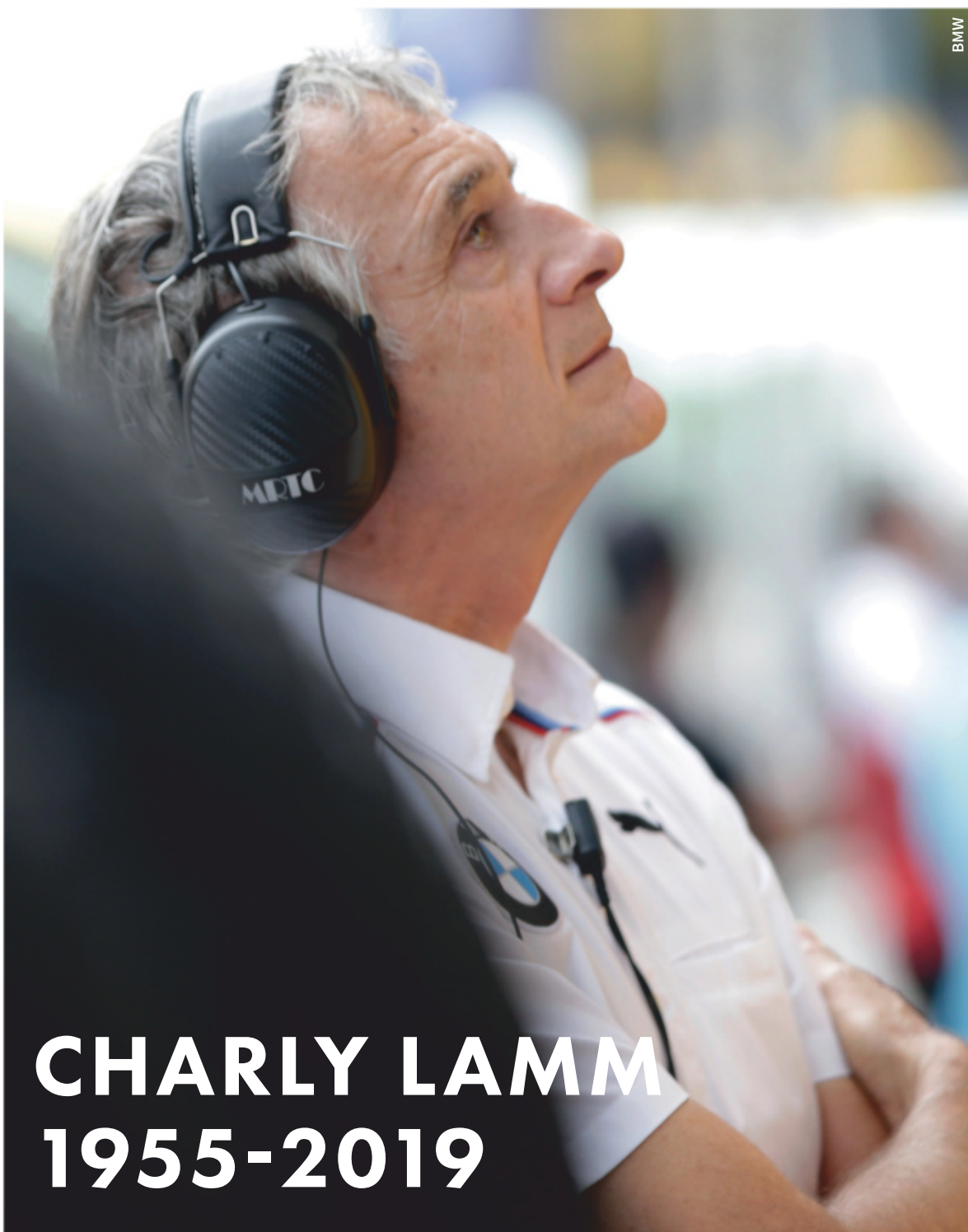
Davide de Gobbis, boss of

series organiser TopSpeed, told Autosport: "When the AWS was listed by the FIA on their allocation table, and given that the Single Seater Group was presented with all details of the AWS, including the schedule, on September 18, we understood that to mean that we had in fact been allocated superlicence points."

"We believe we acted in good faith based on Appendix L published by the FIA. We are currently seeking clarification from the FIA regarding some issues, but obviously we are disappointed by recent developments."

MARCUS SIMMONS





CHARLY LAMM 1955-2019

OBITUARY

He was far too modest to admit it, but Charly Lamm was responsible for turning the German Schnitzer Motorsport squad into the greatest touring car team of all time. The German, who has died suddenly at the age of 63, was the architect of its tin-top successes with BMW across five decades, not to mention its accomplishments in the sportscar ranks.

Schnitzer won just about every prize worth winning in touring car racing under Lamm's stewardship, and a fair few in sportscars too. He'd already claimed the team's first title – the DRM in Germany with Harald Ertl in 1978 – while still a student, when in 1981 he became full-time team manager of the family operation started by his half-brothers, Herbert and Josef Schnitzer. Victory in the European Touring Car Championship, then known simply as the ETC, followed in 1983, and the

titles and big wins kept flowing for the next 30-plus years.

The team's sustained success straddled endurance and sprint racing, multiple generations of BMW touring car and the odd sportscar, and different continents around the world. Schnitzer was a

“HE DIDN'T REGARD ANY FACET OF HIS JOB AS A CHORE. HE WAS A FAN WITH A DEEP PASSION FOR THE SPORT”

winner, either of championships or big races, in Europe, Asia, North America and Australasia. And it did it all with Karl 'Charly' Lamm at the helm until his retirement just two months ago.

Schnitzer won the 1993 British Touring Car Championship with Joachim Winkelhock, the 1999 Le Mans 24 Hours with the V12 LMR Bimmer, and the German manufacturer's comeback victory in the DTM in 2012 with Bruno Spengler. Those are among its biggest triumphs, the ones people remember, but there were plenty more besides. Schnitzer claimed the 1995 Japanese Touring Car Championship with Steve Soper and took no fewer than 14 victories on the streets of Macau in the Guia touring car race and, in Lamm's final race before his retirement last November, the GT World Cup.

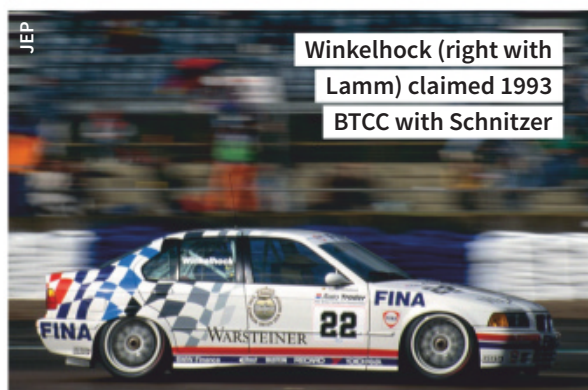
Lamm was a natural organiser who brought an attention to detail and discipline to the touring car paddock that had been missing before. The pitstop provides the perfect example of how he revolutionised his branch of the sport. “Some teams could build fast cars, but would say a pitstop takes as long as it takes,” said Lamm on his retirement. “I suggested that we needed to work out a choreography for the stop to see who had to do what. Then we had to practise to become more efficient.

“That's where we got our reputation as being top endurance guys in the ETC,





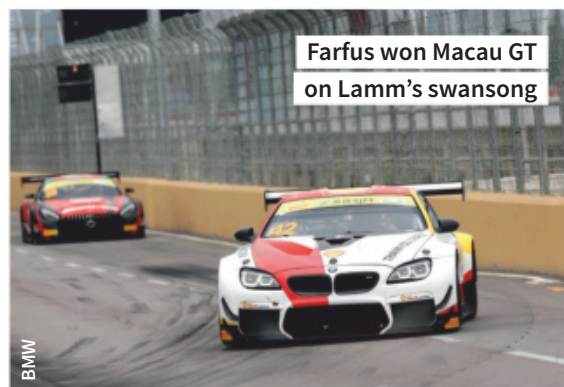
World champions: Ravaglia claimed one-off 1987 WTCC with Schnitzer-run BMW M3



Winkelhock (right with Lamm) claimed 1993 BTCC with Schnitzer



DTM return with BMW resulted in 2012 crown for Spengler



Farfus won Macau GT on Lamm's swansong

and I think we deserved it. In pitstops, race strategy and calls on tyres we were always very strong. Rarely were we on the wrong tyres for the conditions."

Lamm believed in leaving no stone unturned when Schnitzer went racing. He was a workaholic who put in a three-shift day at the team's Freilassing base in Bavaria when he wasn't away at the races. He'd return home after shifts one and two for lunch and dinner respectively before working deep into the evening and sometimes beyond. Many an ex-Schnitzer driver can recount a tale of receiving a phone call from the boss past 10 o'clock at night and having to discuss preparations for an upcoming race or test or perhaps some minute detail of strategy.

Yet Lamm didn't regard any facet of his job as a chore. He loved motor racing, and not just the area in which he was involved. He was at heart a fan with a deep passion for the sport. That shone through in every conversation this

writer ever had with Charly. He was definitely a natural communicator who cared about people, and that probably had a lot to do with why Schnitzer was such a well-oiled organisation.

Lamm was held in a mixture of regard and affection by everyone who worked with him – and raced against him – over his long career. Drivers loved racing for Schnitzer, and not only because of the success they enjoyed with the team. An hour or two after taking his maiden grand prix win in Mexico City with Benetton in 1986, Gerhard Berger was talking to Lamm (Berger had a parallel programme in the ETC with Schnitzer) on the phone. But it wasn't Lamm who had called Berger to congratulate him; it was Berger who'd rung to find out how the team had done at Jarama. The fact that Roberto Ravaglia and Emanuele Pirro had taken victory in Schnitzer's 635CSi just made that the perfect day.

GARY WATKINS

VOICES FROM LAMM'S FLOCK

STEVE SOPER

Won the 1995 Japanese Touring Car Championship with Schnitzer

"Charly was non-stop, a perfectionist who would work 24/7 if he had to. He put 1000% into his racing. For us to win in Japan working out of the back of a truck was a testament to his organisational skills. But the best thing about Schnitzer in my time was the communication. Everyone in the team would know exactly what was going on and exactly what their job was. An ability to communicate was one of Charly's star qualities. There were always two or three team meetings a day."

TOM KRISTENSEN

Won the 1999 Sebring 12 Hours with Schnitzer

"Charly was simply the best, a man of dignity who cared about every individual on the team."

HANS STUCK

Drove for Schnitzer during the 1980s and 2000s

"Charly planned every strategy down to the last detail. I remember before the 2004 Nurburgring 24 Hours he came to stay at my house and we spent half a day talking only about strategy. That was Charly, but he was also the most human of team managers I worked with. He was never harsh with his drivers, because he knew that wasn't the way to get the best out of them."

AUGUSTO FARFUS

Claimed the final Schnitzer victory of the Lamm era at last year's GT World Cup in Macau

"Charly is the most important person in my motorsport career along with my father. He lived and breathed motorsport, and loved what he was doing. Even when I wasn't driving for Schnitzer, I'd still call him regularly. You couldn't have a five-minute conversation with Charly, but you always came away having learnt something."



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CROWN CAUGHT

Fernando Alonso has publicly set his sights on motor racing's 'triple crown'. But as his Daytona victory demonstrates, he has the calibre to exceed even that

EDD STRAW

" If I want to be the best driver in the world there are two options. I win eight Formula 1 world championships, one more than Michael [Schumacher], which is very unlikely. The second one is to win different series in different moments of my career and be a driver that can race and win in any car, in any series."

This was the mission statement Fernando Alonso laid out when his first assault on the Indianapolis 500 was announced ahead of the Bahrain Grand Prix almost two years ago. Last weekend, he was part of the Wayne Taylor Racing crew that won the Daytona 24 Hours, adding the Florida endurance classic to his 2018 victory in the big one at Le Mans.

The question is, what next?

To take the question literally, obviously it's his second crack at the Indy 500 in May. Victory there is possible, but difficult, and would complete the triple crown he set his sights on back in 2017. But why stop there? What else should be on Alonso's checklist as he bids to be the driver who can race and win in anything?

As well as the two triple crown races, Le Mans and the Monaco Grand Prix (yes, we know Graham Hill originally coined it as including the F1 title, but consider it more logical to go with the race-based definition rather than including a championship), Alonso has also ticked off Daytona. Running with Alonso's own mission statement, we can build up something far more ambitious. Let's call it the 'Decimal Crown' of 10 racing events that the ultimate driver should aspire to win.

The obvious first step is to add the Sebring 12 Hours, which along with Daytona and Le Mans forms the endurance racing triple. Alonso will race at Sebring in March, but that will be in the shorter World Endurance Championship round that runs on the same bill as the 12 Hours itself, which is part of the IMSA SportsCar Championship that started with Daytona. While some drivers are doing 'double duty' and contesting both, Alonso and his Toyota team-mate Kamui Kobayashi can't.

GTs lend themselves to these big centrepiece races, so it makes sense to add what is arguably their most significant 24-hour race in Europe – Spa – to the list, although that's arguable because of the existence of the Nurburgring 24 Hours. Every great driver should master the Nordschleife and Alonso should want to race there.

To win those races, currently Alonso would need to get into a GT3 car. If he does that, it's only a small leap to November's Macau Grand Prix to contest the FIA GT World Cup. Winning any of what is now the big three events at Macau would suffice although, fun as it is, it's difficult to see Alonso taking on the Macau Grand Prix itself in an F3 car – fascinating as it would be.

Alonso has already expressed an interest in another obvious objective – NASCAR's big one, the Daytona 500. This would

be a profoundly difficult challenge and would require Alonso to traverse a serious learning curve. And that, combined with the fact that the majority of the regulars would be very determined for him not to win, could make this the most fanciful of all on this list for him to add to his palmares.

Then again, the next option – the Bathurst 1000 – is another steep challenge. Like several of the races on this list, it's not just the race length but the challenge of the track that makes this a must. Mount Panorama is a stunning track, one that only the best can truly master. But it is also a race where irregular drivers have had some success and stands as the most famous tin-top race in the world.

So that gives us the following:

'DECIMAL CROWN'	
Monaco Grand Prix ✓	Spa 24 Hours
Le Mans 24 Hours ✓	Nurburgring 24 Hours
Daytona 24 Hours ✓	Macau (GT3 World Cup, GP or Guia race)
Indianapolis 500	Daytona 500
Sebring 12 Hours	Bathurst 1000

That makes for quite a list and, while it's desperately improbable that Alonso could get anywhere near contesting all of these events, let alone win them, you can see the appeal. Then he would certainly have proved he could win in everything.

But this is just what could be termed contemporary circuit racing, and there's a whole world beyond that. It would be fascinating to see him take on a major historic race, perhaps the RAC T.T. at the Goodwood Revival in a Ferrari 250 GTO, or maybe compete in the Monaco GP Historique.

Beyond circuit racing, there has already been some talk of him taking on the Dakar Rally. Perhaps even more difficult would be conventional rallying – let's say the Monte Carlo and the ultra-fast Rally Finland. Then there's Pikes Peak, still a mighty challenge even in its sealed-surface form. And how about racing on the loose? Perhaps take on the Chili Bowl Nationals midget event, or the Knoxville Nationals for sprint cars? If nothing else, he'd have a great time trying to master these disciplines.

Alonso has put his reputation on the line, added a big storyline to races like Daytona, Indy and Le Mans over the past couple of years, and proved beyond any doubt how great a racing driver he is. Let's hope he keeps doing it.

On with the next step of the 'Decimal Crown'. 🏁

➔ P38 DAYTONA 24HR REPORT

THE DAYTONA 24 HOURS 2019

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YOUR SAY

Montoya has been one piece away from winning the triple crown since 2003 when he won the Monaco Grand Prix

MATT LLOYD

Don't forget motorsport's other living legend

As a Juan Pablo Montoya fan, I'm a little frustrated by the fuss Fernando Alonso is getting in his quest for the 'triple crown'.

Montoya has been one piece away from winning the triple crown since 2003 when he won the Monaco Grand Prix. Along with his Indy 500 victories in 2000 (right) and 2015, he is in a very strong position to achieve the triple crown, especially when in my opinion the Indy 500 is the hardest race to win because the competition is so high – ask Michael Andretti.

Now with Alonso scoring a superb victory at Daytona [see Gary Watkins' race report on page 38 – ed], everyone is getting very excited; but remember Montoya earned this victory at his first attempt in 2007 and then repeated it in 2008 and 2013.

Don't get me wrong, I think Fernando is a fantastic driver and would love to see him do well at Indy, but while everyone is riding the 'hype train', perhaps we should remember we have another living legend in Juan Pablo Montoya!

Matt Lloyd
South Wales

F1 drivers should be allowed to drive fast

Last week's column by Edd Straw, 'Faster but slower', was such an indictment of the current state of grand prix racing! That F1 cars now spend only four laps per GP weekend at anything near their ultimate pace confirms the drastic need to revise the regulations. It can be no challenge to the drivers, and is certainly no spectacle for the fans! How can the powers that be promote the 'development' of these cars that are now 23% heavier than 2009, longer and less visibly 'alive'?

Rob Barnett
Hurst Green, East Sussex

Schumacher fan answers back

I would like to respond to Derrick Holden's letter last week regarding Michael Schumacher. He mentions my letter from a previous issue, saying I'm perpetuating a myth by claiming Schumacher raised the bar in so many ways and set new standards. This isn't merely my opinion – his fitness levels



had never before been seen in F1, and the way he was able to shape a team around him at Ferrari in the glory years of 2000-04 clearly set a standard that the likes of Fernando Alonso, Sebastian Vettel and Lewis Hamilton have tried to imitate since.

With regards to Hamilton and his on-track etiquette, I cannot argue that since Nico Rosberg retired he has reached new levels of performance, but regardless of who people choose to blame, those two had too many on-track incidents as team-mates that could have been avoided. I also assume Mr Holden has chosen to forget Lewis's 2011 season, where it seemed as if he was magnetically attracted to Felipe Massa's Ferrari on far too many occasions.

Joe Padgett
By email

Who's the most 'overtakingest' driver?


While dozing through the grey days of the off-season, eagerly awaiting the first grand prix of the year, I was wondering if anyone knows who is the most 'overtakingest' driver of the world championship? I'd suggest John Watson could be up there, with the number of times he clawed his way up to finish on the podium. Any other ideas?

Jonathan Moorhouse
York


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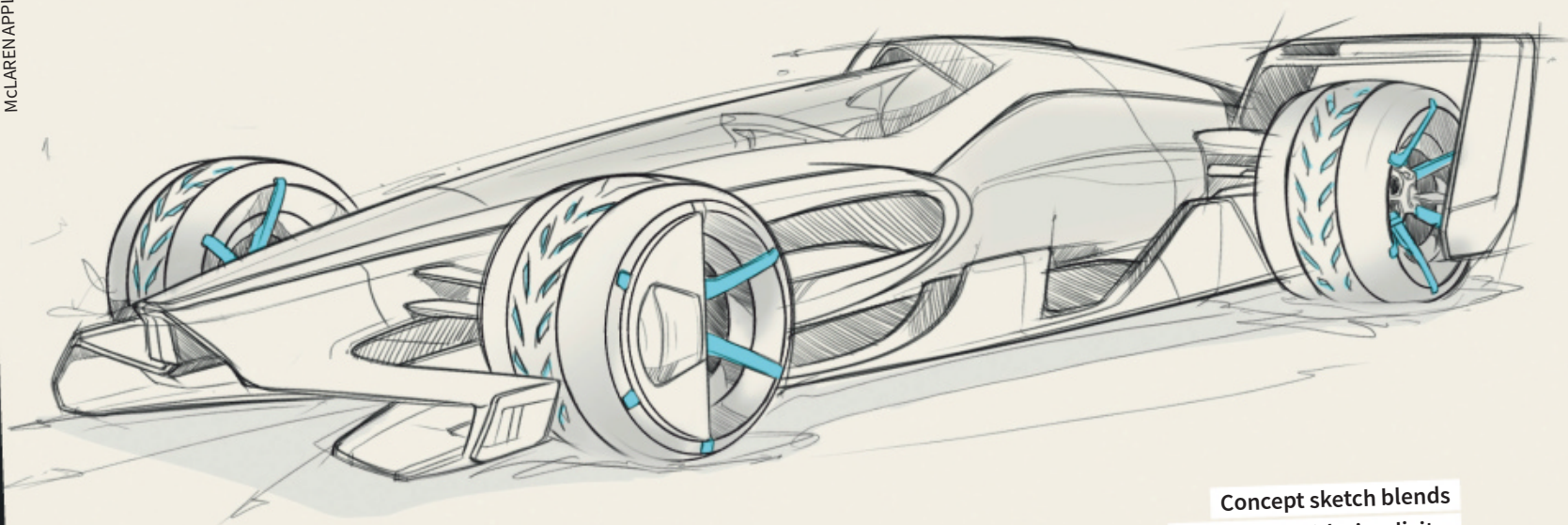
FORMULA 1 FUTURE • FORMULA E



THE MOST EXTREME VISION YET FOR F1'S FUTURE

*McLaren has unleashed both a concept car and
an innovative plan for how Formula 1 might
look by the middle of the century*

SCOTT MITCHELL AND JAKE BOXALL-LEGGE



Concept sketch blends aggression with simplicity, and ambitious technology



For the pinnacle of motorsport and high-speed racing, Formula 1 can sometimes move at a glacial pace. That often happens when it involves considered, fundamental change. Then, as time runs out, that considered, fundamental change gives way to rash, kneejerk decision-making. Little is improved, and the cycle starts again.

The impasse over F1's 2021 regulations, which are meant to be a major overhaul, is a good example of this. The one-year anniversary of Liberty's original major pitch to teams is fast approaching, and little has been confirmed. That threatens to undermine the whole thing.

So, as a general rule, the sooner F1 tackles what its future looks like, the better its chances of getting it right. Last week, McLaren took that principle to a new extreme.

The quiet months between the garages being shut for the last time in Abu Dhabi and the covers being whisked off new cars in February create a golden opportunity for F1 teams to guarantee some prime real

estate for a big story. Often this goes unclaimed, but last week McLaren Applied Technologies exploited the downtime before launch season kicks off in a couple of weeks by unleashing an in-depth, long-term idea of what F1 may develop into – in 2050.

This was not the obvious 'pen to paper, create a concept car' publicity stunt that many teams (including McLaren) have undertaken in the past. The 'Future Grand Prix' it presented is the most visionary outline of F1's future that's been offered so far.

The company's motorsport director Rodi Basso said its hope is for the 2050 concept "to stimulate debate about how motorsport responds to changes in technology and sports entertainment trends, to ensure we can meet the needs of fans". The concept goes beyond the 'MCLExtreme', the car at the centre of the pitch, weaving together a complex picture of a future with revolutionised racing, circuit and driver technology.

But this would still be F1, and the car would still be the star. So, let's begin the debate there. >>



Crucially, the car at the centre of the McLaren 2050 vision is all-electric

THE ELECTRIC ELEPHANT IN THE ROOM

What's quite possibly the biggest statement from McLaren is that the MCLE is all-electric, building on the intimation that, in the near future at least, the development paths of F1 and Formula E will begin to converge. While F1 has made fantastic strides with thermal efficiency, as manufacturers have long since passed the 50% mark, in the near future the internal combustion engine will become a social pariah.

There's already a timeframe for that: Great Britain and France want to phase out sales of internal combustion engine vehicles by 2040, while Sweden and Germany are aiming for 2030. Ultimately, F1 has to decide on its identity right now. Does it remain a pioneer of powertrain technology, regardless of the wider shift away from combustion engines, or does it drop road-relevance and become a flagrant fuel burner? McLaren evidently prefers the former, especially as it has its own automotive concern to reap what the F1 team sows.

Motorsport has always been one of the biggest driving forces in automotive technology, and if that's to continue then it's important to take into account that the only alternative-energy championship in



Circuit design could also evolve to offer more varieties of racing line



existence is the FIA ABB Formula E series. Electric powertrains have enjoyed the acceleration in technology promoted by on-track warfare, as have the multinational automotive companies involved.

It was only about a decade ago that hydrogen fuel cells were being championed as the energy source of the future. Their development continues, but it remains difficult to isolate, transport and store the hydrogen that is an essential part of the process.

Already, the technology in FE has moved on a huge amount; the capacity of the second-generation battery (now produced by McLaren Applied Technologies itself) has almost doubled in comparison with the first, rising from 28kWh to 54kWh. Of course, it's difficult to extrapolate since the technology is so young, but McLaren predicts a shift from lithium-ion to materials that yield a higher energy density, and possess stronger charging properties.

In particular, fluoride-ion batteries have been heralded as the future of energy storage technology, thanks to their brilliant energy density properties and high ionic conductivity – assisting with charging and discharging. There are also fewer environmental issues associated with obtaining fluoride than lithium, which generally has to be mined.

Advances in fluoride battery technology have accelerated in just the past few months. Researchers from the California Institute of Technology and the Honda Research Institute have developed a liquid electrolyte for fluoride-ion batteries that allows the battery to work at room temperature – until this breakthrough, fluoride usually required high temperatures to supply an electrical current.

McLaren contends that by 2050, cars will be surging around a circuit at 500km/h (310mph for the imperialists) – and that's where things get ambitious. Even now, a Formula 1 car is still yet to break the 400km/h barrier in an official session.

The power needed to drive a car increases with the cube of velocity, meaning that you need to find even more power as you approach the 500km/h limit. As of 2019, high-performance powertrains can manage a maximum of 300km/h with 250kW within Formula E. To bring a Gen2 FE car to 500km/h would theoretically require 1160kW, about 1554bhp. The likelihood is that, with environmental factors taken into account, they'll need more than that to consistently reach those heights.

Will electric motors make sufficient advances within the next 30 years to bring it up to that level on a consistent basis, and will a fluoride-ion battery offer the requisite energy density to maintain that speed? It's too much of an unknown at this stage, but it doesn't seem outside the realms of possibility.

But F1 would also need to find circuits that are suitable to house these high-performance behemoths. Rapid cars and longer laps would likely negate one of the main benefits FE has by being electric: running in city centres. The current cars are slower and the laps are shorter, which means minimal damage to the host cities or disruption by closing more and more roads.

Without major upgrades in circuit safety, it is unlikely that tracks would be able to achieve the necessary FIA grading to house a 300km/h single-seater – let alone one that does 500km/h. This would be problematic for F1, since taking the show to the people will only become more important in the urban, connected world of the 'smart city'.

McLaren suggests that more grip would allow for circuits with more aggressive radii, allowing sharper turns and therefore more corners to be packed into a smaller space. This would solve part of that problem. It also recommends introducing banking to up the speeds and avoid a proliferation of 90-degree bends. Tracks that are less geographically restricted could then be more expansive, and aggressive in design, to avoid a lap being too short.

(EXTREME) ACTIVE AERO AND SKIN-LIKE BODYWORK

Shape-shifting is usually something best left to the banality of *Transformers* movies, but McLaren has actively sought to incorporate it into the MCLE to boost the aerodynamics package. Operating on the same principle as F1's current DRS, and by reducing the frontal area of the car to cut drag, the sidepods of McLaren's latest concept are able to "expand and contract like the gills of a great white shark".

Here, McLaren's predictions suggest the greater influence of artificial intelligence (AI), which can use GPS and data from the car to pull in the car's flanks to reduce drag, before expanding them ahead of a corner at a given rate to assist with stability in the corner while taking into account the reattachment of airflow.

"Skin-like" is McLaren's official adjective of choice, which seems to be at odds with the rigidity offered by contemporary carbonfibre bodywork. But with modern advances in materials technology, especially in additive manufacturing, carbon composites can be developed to bend in a given manner when triggered by a certain stimulus, something that's on the point of entering the aerospace industry. It doesn't quite »

afford the freedom of movement that a shark's gills can achieve, but it's certainly a step in that direction.

That level of materials science is something that will seep into McLaren's concept of "self-healing" tyres, which can automatically repair any imperfections in the construction that develop during use. A tyre developed from a self-repairing elastomer – made from reversible chemical bonds – is already possible to produce and can offer the potential of being able to withstand wear for greater periods of time. While tyre technology in F1 has remained rather conservative, a self-healing tyre is something that could potentially be implemented today, improving the mechanical grip on offer.

In addition to the shape-shifting bodywork, McLaren has afforded attention to the aerodynamics to boost the grip available to each driver. Like most concept cars, and in line with discussions being held even today, significant attention has been paid to the underbody, "an intricately sculpted floor and diffuser" generating most of the downforce, avoiding the current reliance on front and rear wings. While the swept shape is certainly a stylistic choice, it speculatively bears its roots in contemporary F1 car form – albeit with a twin rear wing reminiscent of the current FE car, which also uses a large rear diffuser – and similar to F1's own centreline downwash wing concept from 2005.

To keep the battery topped up, the development of energy recovery systems can recuperate further wasted kinetic energy from braking, just as F1 and FE cars do today. But McLaren has proposed a method of inductive charging through electromagnetic loops integrated into the circuit itself, injecting a strategic element into recovering charge while out on the circuit in a manner similar to FE's attack mode. "Blackout zones" would work in an opposite manner, using signal-disrupting technology to wipe out communication with the team and AI assistance at certain times to leave the driver solo – not so much an attack mode as 'the driver is now the only line of defence' mode.

Alternatively, energy-based strategic elements can be introduced into the pitlane, essentially creating ersatz-refuelling where longer "pitstops" yield greater battery charge. A driver can try to gain track position by sacrificing some charge, or opt to load up and take liberties with energy consumption – a "party mode" for the new age of racing.

FE has looked into similar methods of charging during a race, but the series' use of public roads and the infancy of inductive charging has rendered this difficult to implement. Sweden opened the first inductive charging road last year, and governments across the world have pledged funds to adapt their own transport network to charge electric vehicles on the road. McLaren has suggested that, with the advances in battery and induction charging technology, around "10 to 50% of the battery in around 10 to 30 seconds" is an achievable target.

While the range of technology suggested in McLaren's MCLE concept is difficult to fathom in today's climate, they're all based on existing developments – and by 2050, could all certainly reach a point of commercial viability. So the knowledge is there and the technology is possible, but are only proven in small-scale applications. Success hinges on whether they can be developed in a high-performance environment.

CAN TECHNOLOGY CREATE A GLADIATOR?

F1 is elite sport, just like Premier League football, World Cup rugby, grand-slam tennis, and any other example you care to think of. In those disciplines it's very easy to see the skill and effort involved. You can see players drenched in sweat, or cut and bruised; you can identify the movements with their body that pre-empt or produce a feat of excellence and you can get close enough to actually appreciate this.

It's different in F1. That's almost exclusively for safety reasons, since the drivers are more cocooned and the spectators further away from the action than ever before. It's also technologically related, because even the worst of the current crop of high-downforce cars look absolutely planted at speed, and ultra-steady, ultra-high-definition cameras make the driver's job behind the wheel look relatively easy.



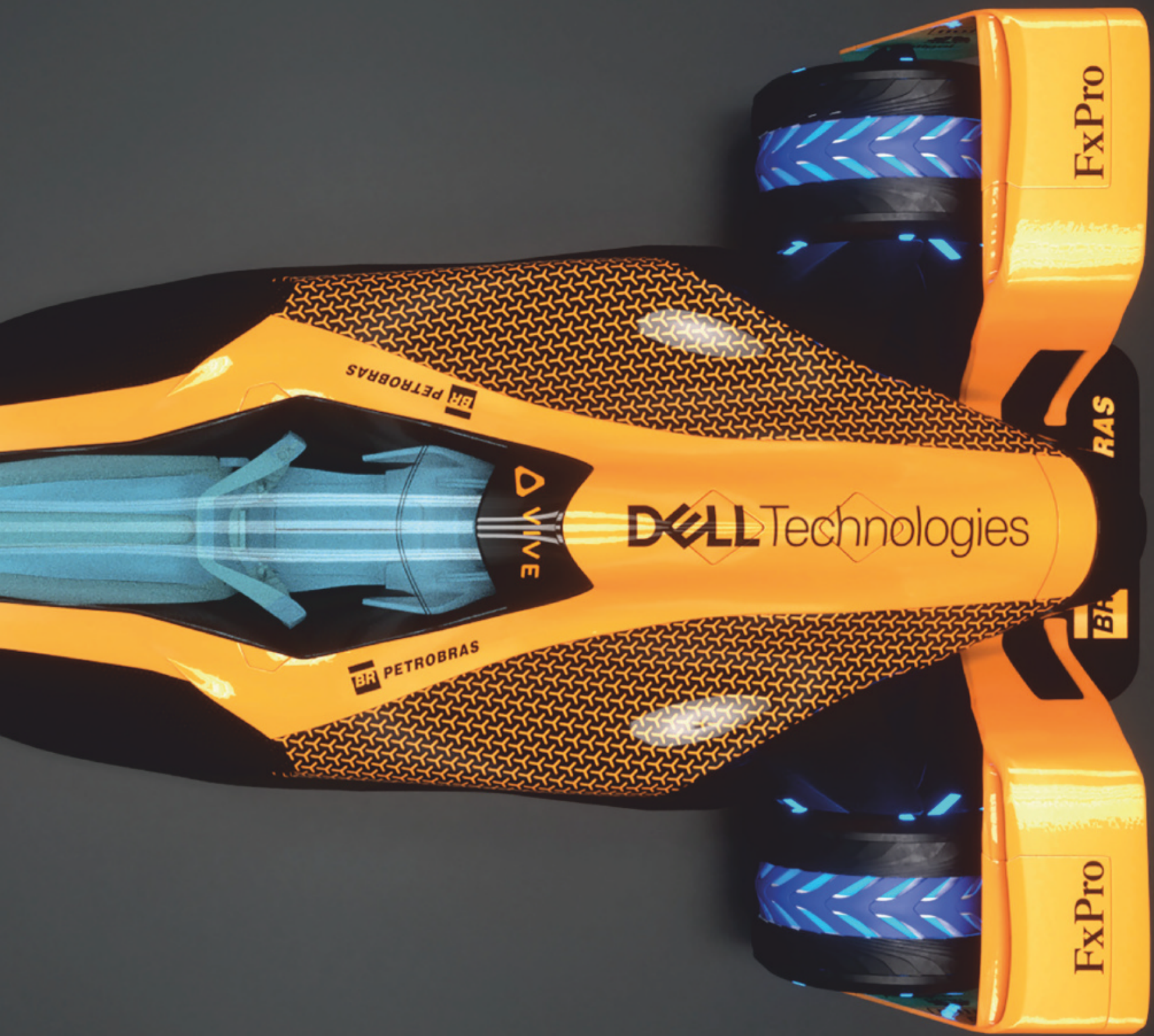
F1 fans, particularly those of a certain generation, long for a return to the good old days when you could see a driver for the gladiator they were. But as McLaren hypothesises, is this an image that really needs to be conjured with potentially lethal, twitchy cars?

One of the ideas for the MCLE is for parts of the car to be transparent around the cockpit and footwell. It's not a catch-all solution but it's a start, and the sort of idea that's simply not to be entertained at the moment. But in 30 years' time, with smarter, better, cheaper materials or technology, there's an avenue to explore here that would help counter one of F1's most fundamental obstacles. That is particularly important given that F1 seems to be marching towards a closed-cockpit future, as evinced by the majority of forward-looking concepts featuring some form of canopy solution to protect the driver.

Drivers will also need to adapt to the challenge of even more extreme performance. McLaren head of human performance Michael Collier predicts an era in which racing drivers will become a different breed of athlete to what they are now.

He suggests that moving to ever-faster speeds, and the g-forces that come with that, will push drivers away from jockey-like builds and put more emphasis on muscle-mass. That will involve a completely different training regime, with futuristic gym set-ups that can tailor preparation and recovery, but more importantly it can eradicate the misconception that F1 drivers are not athletes.

"You're going to end up seeing drivers with the same build as boxers," Collier says. The drivers may also need a high-tech suit to cope with forces that Collier believes could peak at 9g. That is fighter pilot territory and would require a suit based on technology already used in that area, one that would "inflate and compress a driver's lower limbs to prevent blood from pooling in their feet and legs." >>



MCLAREN APPLIED TECHNOLOGIES



Special suits may be
necessary to cope
with high g-forces

MCLAREN APPLIED TECHNOLOGIES

A BRIEF RECENT HISTORY OF F1 CONCEPT CARS

McLaren's 2050 vision isn't the first time an F1 team has got mileage out of a concept car. The lure of an open rulebook offers plenty of opportunity for racing's brightest minds

RED BULL X2010

OK, this isn't strictly a Formula 1 prototype, but it set the tone for contemporary concept cars. Linking up with *Gran Turismo* producer Kazunori Yamauchi, Adrian Newey was offered the chance to design "the fastest racing car on Earth" without the restriction of regulations. The wheels are covered, with a long canopy and tight bodywork to minimise air resistance. A gas turbine drives the car with almost 1500bhp, while Newey implemented a "fan" at the back of the car akin to the Brabham BT46B for added downforce. It first appeared on *Gran Turismo 5*, enabling Sebastian Vettel to lap the Suzuka circuit virtually in 1m11.540s – more than 20s faster than his 2009 pole time.

Designed: 2010



McLAREN MP4-X

McLaren has delved into the world of imagination before, emerging from the back of a dismal 2015 season with the MP4-X concept. It arrived a few months after Ferrari did a basic design release of a car to show how simple it would be to make sweeping design changes.

It's not certain whether the McLaren designers had a timeframe in mind in its development, but perhaps came up with the MP4-X as an idealistic vision of what F1's future should be. Unlike the MCLE, it's built around an internal combustion engine, but with "super-efficient fuels" to improve the powertrain's thermal efficiency.

A canopy and wheel covers improve the aerodynamics, and the car pairs hybrid technology with solar panels on top of the sidepods. There's also active aerodynamics, paired with a "complex digital billboard", targeting adverts specifically at each viewer. You may want to clean that browser history...

Designed: 2015



FORMULA 1 2021

After being acquired by Liberty Media, Formula 1 has taken a much more proactive approach to shaping its own future – and some of its research for the 2021 rulebook has already been implemented, albeit in a limited way, on the 2019 machines. F1 unveiled three different concepts suggested for the 2021 season, in which it is due to undergo a dramatic overhaul. All three feature just three elements in more simplified front wings, while the bodywork is sculpted and shapely. The halo is retained, and the third concept features a range of flow conditioners to manage the tyre wake behind the wheels. Although the 2021 rules are still a work in progress, the 18-inch wheels seen here are already confirmed for that season.

Designed: 2017



DID YOU KNOW?

Renault made a life-size version of its concept, which appears every now and then in public

RENAULT R.S. 2027 VISION



RENAULT

Developing its ideas with the 2027 season in mind, Renault proposed a dramatic concept car with refreshingly clean lines and a pared-back appearance – offering a design with less reliance on aerodynamics. The car contains active suspension, allowing engineers to pre-programme the reactions of the car to movement and track surface, and active aerodynamics.

In line with current design trends it also features a canopy to act as cockpit protection, and the driver is contained in an almost transparent safety cell in order to showcase them to the crowds in attendance. The powertrain is based on current developments, but is augmented with two 250kW recovery systems to bring the power up to almost 1300bhp.

Designed: 2017



RENAULT

Collier says that this would be vital to ensuring the heart has enough blood to circulate around the body and keep the driver conscious. McLaren's mock-ups of what that would involve in terms of racewear is bonkers by conventional standards, but it is rooted in cold, hard science.

Today, racewear developed to monitor heartbeat and breathing is entering the market, but it's not inconceivable that race helmets in 2050 could include eye-tracking and the means to interpret brain activity – relaying it to the car's AI and transmitting it for all to see. There would be more information available than ever, and an AI "co-driver" to help work out how best to use it, but simply putting their focus where it needs to be will require monumental skill and effort from the driver.

It's ambitious, but biometric technology is definitely becoming a bigger player in a commercial setting, so future F1 would be the ideal breeding ground for new developments. The return it would get for that investment would be complementing the greatest physical F1 challenge ever with an enormous test of intellect.

RECONNECTING FANS

One of the most interesting elements of the F1 2018 title battle was to see Lewis Hamilton cope with the pressure in ice-cool fashion, while Sebastian Vettel – a famously emotional racing driver – cracked and made several high-profile mistakes.

The human element can never be underestimated, especially in a world that probably doesn't think there's much to separate the individuals on the grid. In fact, Collier calls emotion "the biggest variable that affects driver performance".

But at present that only becomes obvious when the driver makes a mistake. McLaren has detailed a colour-changing chassis, designed to reflect the driver's mood and improve interaction with the fans watching. This could also work in reverse, with colour-changing panels inside the car giving the driver a visual stimulus by reflecting the mood of the people supporting them or the team in the garage. It's purely aesthetic, but it can tap into the burgeoning market of wearable technology and biometrics, and in the context of the driver it would be another element to factor into their performance.

It may sound like a cheap gimmick, but anything that helps connect fans to the driver is worth considering. Particularly in a future where one of the traditional reasons for liking motor racing – owning and driving your own car – may well be a thing of the past, thanks to the investment in autonomous vehicles and bigger and better public transport services. Putting the driver on a pedestal and giving the fans a reason to care about them will be more vital than ever. See-through floors or walls in dedicated spectator buildings, to provide better views, would be another way to use emerging technologies to enhance the fan experience.

The bottom line, though, is that F1 needs to give these fans something serious to watch. McLaren's vision may never come to pass, it may prove frighteningly accurate, or just a few elements of it could come to be, but it does arouse curiosity over which direction F1 could head.

When F1's stakeholders and participants are at loggerheads over its short-term direction, there's no harm in trying to look at the bigger roadmap, and potentially plenty to gain. Even if that does not lead to a definitive blueprint for 2050, it could guide some vital decision-making in the much nearer future. ❧



MCLAREN APPLIED TECHNOLOGIES



WHAT DOES IT TAKE TO WIN IN FORMULA E?

The ever-evolving all-electric series presents a unique set of challenges, plus everyone involved is still learning at an extraordinary rate

JAKE BOXALL-LEGGE

PHOTOGRAPHY



FERRARO

Of the 11 teams on the current ABB Formula E Championship grid, eight have been victorious in at least one race since the series' inception four and a bit years ago. Out of those teams yet to taste the champagne — or non-alcoholic variant thereof — on the top step of the podium, one was a corner away from doing so in the series' first-ever race, one is a brand-new team, and the other has a pole position to its name.

It's fair to say that FE is certainly more open compared to its other top-level counterparts: Formula 1's leading triumvirate continues its monopoly; KTM and Aprilia still have work to do in MotoGP; and variety within the World Endurance Championship is limited to whether both Toyotas retire — or are excluded. That's not to say no one can dominate in FE, but homologation at the start of the season tends to stop teams embarking on an irrepressibly dominant development curve, and conversely allows any manufacturers left behind the eightball with the latitude to improve set-ups and software packages to catch back up.

But what does it take to win in FE? In a series where the technology is still in its infancy, there's a degree of working out which internal components, and which direction with software, offer the most yield. It's not like F1, where myriad resources are pumped into intricate aerodynamic components — there are still plenty of development paths available for each team to pursue.

"We're all still learning at a fast rate," explains Jaguar Racing technical manager Phil Charles, "and potentially there's a team who could find one part that returns very highly and gets a bit of a march. Perhaps in F1 you have to bring a whole group in one area to optimise around aero, or optimise around somewhere else — the technology and important factors are well known. That's still evolving here — is it the tyres, is it the suspension? Or is it the standout factors like your motor, is it your regen, is it your brake-by-wire? It seems for us it's still evolving very quickly, so the decision of how much resource you put into those is still evolving too."

Of course, the pursuit of new technology is still very much driven by old, tried-and-tested motorsport truisms. Keeping the package light with a low centre of gravity still factors highly in the level of importance, otherwise engineers risk developing an inherent lack of balance without the ability to extract the maximum from the tyres. That's a set starting point for each team to work from, and since everybody has the same chassis in which to package their components, everyone has the same goalposts to aim for too. Creating the most efficient powertrain that fits within the limits of a defined box has proven to be a good method of defining a set of regulations, one from which other series could perhaps learn. »

“I think nobody has found the best layout,” explains DS technical chief Xavier Mestelan Pinon. “We’re still looking if we need one or two motors, one or two gears, which position, so this is the reason why it’s very exciting to work on this. A lot of engineers want to be involved in this series because of that. It seems that a lot of teams converge and go in the same direction, but there are still some differences between them. Maybe in three years everybody will have the same architecture, or quite similar, but we need more time in actuality.”

While there’s been a general convergence in powertrain layout over FE’s opening seasons – the majority of the field tending towards single-motor, single-gear arrangements – there are still plenty of ways for the technical teams to skin this particular cat. Charles believes that the current key differentiator is the compromise between efficiency – making sure that as little energy as possible is lost from battery to wheels – and the weight of each team’s package.

“If you’re very clever in all the other bits but you don’t have an efficient powertrain you’re in trouble,” he says. “But quite often you might come up with a more efficient solution but it might be a certain amount heavier – that trade-off is a key question for all of us. We can go and get a massive industrial motor that’s very efficient, but the downsides to the rest of the car are high. You want the most efficient powertrain you can get that’s packageable and lightweight – that’s the key.”

“YOU WANT THE MOST EFFICIENT POWERTRAIN YOU CAN GET THAT’S PACKAGEABLE AND LIGHTWEIGHT”



DS’s Mestelan Pinon says teams are still searching for the optimum layout

MAKING THE DIFFERENCE AT THE TRACK

Even with the most efficient powertrain in your pocket, there’s still plenty to lose in FE. A good design stacks the odds in your favour, but there’s a lot more performance on offer once you get to the track. Set-up work is a race engineer’s bread-and-butter and, with the demanding variation of bumpy street courses on the calendar, each circuit requires a different approach to optimise the car’s developments.

Ultimately, all 11 teams have to make the most of the same tyres. Michelin’s all-weather, all-purpose compound accompanies the FE circus to every round, and some venues are more difficult than others to extract performance from them. With a hard construction designed to last an entire weekend, grip is at a premium, meaning there’s a strong advantage to be gained in unlocking the tyre’s secrets.



Extracting the best from one-size-fits-all rubber is a key part of a race weekend



Staying out of the walls piles on the pressure to get car balance right

PORTLOCK

“The tyre has a pretty big working range,” explains Charles. “Within the working range, you’ve got to get the best out of it in a small sweet spot for quali and a long race. So they’ve got a tyre that’s one shirt that fits everybody, but you can kind of pull the sleeves in a little bit and make it work a little bit better in a short run in quali, for example. We’re still learning how to get the best out of the tyre – all of those things are key denominators.”

As well as getting the best out of the tyres, the set-up needs to lend the car the right handling balance for a given track. Sure, that’s a statement that can be applied to any form of motorsport, but FE’s street layouts incentivise getting the balance absolutely spot on. If not, and the car is unresponsive to a driver’s inputs, then it’s a one-way ticket into one of the myriad walls surrounding the venue.

Then there’s the very salient point of energy management, which provides that link between set-up choices – particularly those in the software – and powertrain efficiency. Mestelan Pinon explains that, despite its parent company’s other sporting involvement through fellow PSA brands Citroen and Peugeot, the unique challenge of FE means that DS has had to widen its pool of knowledge since it joined the series in 2015-16.

“We’ve learned that we need to learn a lot!” he says. “We needed to increase our knowledge and we needed as well to improve the level and the number of our engineers to make a good car. Honestly it’s very, very difficult to put the car on the track, especially because of the energy management and the strategy and things like that. It’s very challenging and a lot of work before each race, before each test and on the sims as well. We have a lot of brains!” >>

WHAT’S EVERYBODY RUNNING THIS SEASON?

As is often the case in motorsport, the FE teams are vehemently clutching their cards close to their respective chests, reluctant to let any of their secrets slip out. Of course, there are a few things that can’t be hidden, one of which is how many gears this year’s teams are using for their powertrain package. The number has steady fallen over the past four seasons, and each of the 11 teams is using just one gear to drive their wheels through the motor.

“Some of the spread you get with the power and torque curves against speed flattened out very quickly,” explains Jaguar’s Phil Charles. “So as we’ve

gone on it’s quite clear that the number of gears reduces. You’re limited on power so you have a flat section and a section where you can see your torque shape coming in.

“As [the technology] has grown, the efficiency across that power-limited area has flattened out and

therefore you don’t need to spend a short amount of time in one window – you can spend more of that with the efficiency curve flattened out so you don’t need to change gear. As the motor technology has evolved, the gearbox has trended with that.”

Knowing which motors

are behind each of the team’s efforts this season is a little harder to judge, but it’s commonly discussed in the FE paddock that all bar Nissan are running with a single-motor arrangement, while the e.dams-run squad has two. It’s unknown how this is configured, but the

Japanese manufacturer has clearly seen that the design has potential, undeterred by the less successful and weighty efforts produced by NIO – as NextEV – and DS in the past.

DS is one of two teams to develop its own brake-by-wire system, using a design based on technology produced during sister make Citroen’s World Rally Championship programme around 2003-04. Mahindra is believed to be the other team, while the remainder use variations on mechanical equipment produced by German company LSP, focusing their resources on optimising the software behind it.



All 11 Formula E teams now use just one gear to drive the rear wheels

FORMULA-E

SBLOXHAM



**100 years after its creation by André Citroën,
Citroën claims its 100th WRC rally victory at Monte Carlo.***

Congratulations and thank you to Sébastien Ogier
and Julien Ingrassia, and to the entire Citroën Racing team.



Techeetah won drivers' crown as a customer team, but opted to be DS's works outfit for this season

CAN YOU WIN AS A CUSTOMER TEAM?

Short answer: yes, you can. But being a customer team isn't easy, and if anything the odds are stacked against them. Customer teams, which buy their entire powertrains from another manufacturer, are restricted to only the collective pre-season test at Valencia. This season, Virgin Racing has swapped manufacturer status with the Techeetah-bound DS for an Audi powertrain, while HWA takes on Venturi's components for its first FE season.

Techeetah itself was a customer team last season, running the successful Renault powertrain and overcoming its lack of testing ahead of the season to help Jean-Eric Vergne to the title, 73 points clear of works Renault driver Sebastien Buemi.

Although a customer team has minimal influence on the engine hardware, it has licence to push the software as much as it can to extract the maximum performance from the motor and other components. As Virgin team principal Sylvain Filippi explains, software developments and set-up have been absolutely crucial players in his team's strong start to the season, in which it has so far bested the works Audi squad: "The arrangement we have with Audi is actually pretty good and it's pretty transparent — we make no secret that it's a win-win and it's a two-way situation, because we have a benefit that we're running a very good powertrain. And if as a team we do a good job we can then get great results out of it."

"There's a fair amount you can do on the power delivery, on the strategy, on how and where you deploy the energy. We're all given the same amount of energy, we have a certain layout, and you have to work out the most efficient way to deploy that energy around that layout. Once you've done that exercise, you have to play to the real world — the real world is never like the simulator and you need to make sure it's realistic and that you can deploy it. If you can also find ways of simplifying the job of the driver, even if it isn't directly performance, it still is, because the driver is using a smaller part of the brain to drive. So all of these things are incredibly important."

"THE REALITY IS, TO WIN THE RACE YOU HAVE TO GET A LIST OF NINE OR 10 THINGS RIGHT"

Virgin's Filippi stresses how software developments and set-up have given an edge



SO HOW DO YOU WIN IN FORMULA E?

It may sound like a cop-out, but in reality there's no real silver bullet to victory. As Charles explains, it's just the small matter of getting absolutely everything right, leaving no stone unturned. "The reality is, to win the race tomorrow you have to get a list of nine or 10 things right — all of those have to be at least nine out of 10," he says. "If you've got a really super-efficient powertrain, but you're useless at tyres or have a crazy suspension geometry that doesn't work, forget it, you still don't do very well. That's one of the best things we've got here in Formula E; nobody's got it all sorted and the tyre isn't easy every week."

"If you go there and you've got the set-up slightly wrong, you've haven't got a factory of hundreds of people helping you fix it overnight — we're having to make quick decisions. Sometimes, you can get the car back, and sometimes the day just disappears before you. [For example] in quali, if we realised we had a little brake problem but we were on range with the tyres, you've qualified 18th — we could have been pole if we'd got that little thing right."

"It's about organising yourself to have a good race team so they can react when things are a bit tricky. It's a really good thing that you put your resources on little bits of technology, that you optimise around those really important bits, and you have a good race team who understands those bits and can react when it's tricky. That's the main thing." ❄

RACE CENTRE

MONTE CARLO RALLY • DAYTONA 24 HOURS • FORMULA E SANTIAGO



Ogier pips Neuville in Monte thriller

Despite the pace of Hyundai and Toyota, and problems of his own, the reigning champion took a superb record-matching win on his return to Citroen

DAVID EVANS

PHOTOGRAPHY MCKLEIN



Sebastien Ogier put his head back and yelled. Yelled. What did he shout? He doesn't remember. It doesn't matter. The words weren't important. It was a release. A physical act. A celebration.

Now there is nobody in the 108-year history of this event he adores more successful than him; he sits on seven wins with countryman Sebastien Loeb. On a weekend that marked Loeb's first outing with a factory team other than Citroen, Ogier's success brings a 100th World Rally Championship win for the French firm. The irony wasn't lost on anybody that Loeb had dug the foundations for success in Versailles, scoring 79 of those 100 victories.

Loeb is history as far as Citroen's concerned. Ogier is the future – at least for the next two years. But it was the here and now of round one that presented Ogier with his biggest headache. Starting the Monte in a third different car in four years was a significant challenge.

As had been the case in 2017 when he started out with M-Sport's Ford, Ogier was short on mileage in his new car. Ahead of the rally, he was happy to sidestep at least some of a spotlight that picked out Ott Tanak and his Toyota as favourite, and Loeb's swashbuckling story that carried him from the Dakar Rally podium in Peru to a new Hyundai chapter of his career in less than a week. "Maybe there are not so many people betting on me," said Ogier quietly.

If the odds were long, he shortened them considerably on Thursday morning. First in line for shakedown, Ogier fired the C3 WRC into a two-mile test and laid down a marker. Out of the box, nobody could come within 2.6 seconds of him. Talking straight after, he pointed out that shakedown counts for nothing. He's absolutely right. But psychologically, it was a solid first punch, one that would be countered beautifully an hour or so later by a fellow first-timer: Kris Meeke in his Toyota Yaris WRC.

As the crews headed into the mountains for the first time, it was Thierry Neuville who found himself centre of attention. After a prolonged dry period in the southern Alps,



“Everybody went with the only sensible tyre option. Everybody except Neuville”

snow had fallen 24 hours earlier, transforming the nature of some of the stages hours after the crews had completed their recce. Stage one was, for example, packed with snow on Wednesday night. A day on? Who knew? The sun had been out and anything facing south would surely have melted. But with darkness came plummeting temperatures. Another question: the stuff that's melted, how much of it is frozen?

Studs, with a couple of soft slicks in the boot. That was the only sensible tyre option. Everybody went with it. Everybody except Neuville. He went with two supersoft slicks crossed diagonally with a pair of Michelin's Pilot Alpin 41 CL studs.

As sure as everybody was of the snow and

ice in SS1, Neuville was just as confident of a largely dry second test. His Hyundai was 26.8s down on Tanak's benchmark opener. Now for two... Neuville pulled 11s out of everybody and went to bed third, just behind Ogier and early leader Tanak.

Arriving back at the rally's base in Gap just before 10 on Thursday night, Ogier smiled thinly. "That choice [of Neuville]," he said, with a pause, "that took balls."

Neuville eased his way into the lead on Friday morning, making the most of a rather fortuitous cancelled stage (we'll return to how Toyota team boss Tommi Makinen vented his spleen at the FIA and Automobile Club de Monaco). When Tanak stopped to change a puncture on SS7, the rally became a two-horse race, with Ogier and Neuville more than a minute ahead of everybody.

One stage earlier, Neuville's heart had been in his mouth. Not having driven the Hyundai i20 on studs on dry asphalt, he turned into the first left-hander and... nothing. Momentarily, the studs offered zero grip. With astonishingly quick thinking and some amount of good fortune, Neuville bailed and shot down a perfectly placed escape road. He lost 20s, and all the momentum. His tyre choice had been geared towards that stage.

He declined congratulations at containing the time loss to Ogier to just 2s. "We could have been 17s or 18s ahead," he said. "Now he definitely has better tyres for the next one." >>



Tanak showed
Toyota's ominous
pace with six stage wins



Neuville pushed
hard but had to
settle for second



Ogier scored seventh
Monte win, with a
fourth marque

MONTE MISSTEP?

RARELY HAS THERE BEEN SO MUCH action in the swimming-pool section of Monaco's famous grand prix circuit. Car after car attacked the sequence chasing that perfect balance of throttle and steering input. And car after car went into the wall.

Sunday morning's radio-controlled-car race in the swimming pool – closed and turned into an ice rink, as it is every winter – was an absolute thriller. Not wishing to undermine those with such startling hand-eye coordination, but it was disappointing that the best motorsport action came from cars smaller than the average handbag on the principality's surrounding streets.

The Monte Carlo Rally was largely absent from Monte Carlo last week. The ceremonial start was moved to Gap to save Thursday's slog up and down the A8 and A51 from the mountains to the seaside and back, but it didn't work. The first that Monaco knew of its second biggest motorsport event of the year was when the cars rolled into town well after dark on Saturday night. And departed well before dawn on Sunday morning. Yes, there was a nice celebration and some champagne sprayed harbourside on Sunday afternoon, but that's not enough.

I love Gap and I love being based in the heart of the event, but last week it felt like the best cars and drivers in the world were competing on an extended French championship round.

A ceremonial-start picture outside the Casino may be a token gesture, but that's the very least we need next season. Better still, let's get back to a Monte base with a night away in the mountains and, in the words of Tommi Makinen, put the Monte back in Monte Carlo.



Neuville wasn't wrong; he'd seen the last of the lead. Ogier hit the front on stage seven and stayed there.

From Saturday morning, everything was stacked in Ogier's favour – including the roads. With the opening test done, the crews returned to the N85 for a liaison section running down the Route Napoleon – a road, as the name would suggest, of significant national importance. A bit further south and thoughts of France's foremost military genius are set aside in favour of the D14 and a trip through Forest-Saint-Julien, population 302.

"This is where I came from," said Ogier. "Going through my village on this road section is such a special feeling."

The leader of the Monte Carlo Rally had selected a special place to stop and change his tyres for the next stage. "I did it outside my ex-neighbour's front door," added Ogier. "That made him smile. This is a small place without much happening. For me to come to where I'm from makes me really proud, and it's always humbling to go back."

Posters of Ogier and co-driver Julien Ingrassia hung from the walls of houses as the locals waged a propaganda war on everybody else on the entry list. The atmosphere is a highlight for neutrals, if a touch intimidating for Ogier's rivals.

Across the four stages through 'his valley', Ogier gained 2.3s over Neuville. Heading south for Monaco and a final day including the now-traditional brace of runs over Cols de Turini and Braus, Ogier was 4.3s ahead. "It's intense," he said. "But if the weather stays dry, our car should be good on the stages in the [Alpes] Maritimes."

Neuville fronted up. He'd given it everything. "I couldn't go quicker," he said.

What Ogier wasn't saying was that he had a much deeper concern. In the closing kilometres of the most recent stage, he'd noticed his Citroen pushing on as he came off the throttle. He said nothing – for now.

Just after six on Sunday morning, Ogier slotted his C3 in alongside Neuville's Hyundai. The pair had 15 minutes to decide on their final tyre choice of the event. When they headed inland they would be faced with two runs of two stages on the same boots.



Meeke enjoyed his Toyota debut – and some added fibre to his lunch

Out of the car, Ogier clamped his phone to the side of his head. Neuville looked on, arms folded. This appeared to be more psychology, leaving Neuville wondering what his rival was talking about. What did he know? What was he finding out? The Citroen-bound glances kept coming.

Turns out Ogier was struggling to make his car work properly. "It was a real stress," said team principal Pierre Budar, from the team's Monaco base. "We could take no data from the car. We could do nothing. All we could do was advise over the phone."

When he came off the throttle, the pedal was returning to 20% rather than zero. "I adjusted the pedal as much as I could," Ogier said. "I lifted the pedal to rest at about 10%.

It wasn't perfect, but it gave me a chance to fight in the powerstage."

Fortunately he'd kept his lead ahead of the last test. Unfortunately for him, Neuville had closed to 0.4s.

Incredibly, in a new car that wasn't working properly (but admittedly one that's probably at its raciest on these roads in these conditions), Ogier brought it home. "The relief was incredible," he said. "That's where the emotion was coming from. When I went to the last stage, I didn't know what would happen. We know now it's a sensor that's gone crazy, but I didn't know if the thing would break completely.

"The 100th win for Citroen and me being only the second person to win this event with four different manufacturers [don't forget his Intercontinental Rally Championship Monte win for Peugeot in 2009] is all good. But these are symbols; the icing on the cake."

The cake? Maximum points. "I needed that win to start the season," he explained. And he said it in a way that acknowledges he knows there's work to be done in the weeks ahead. The Citroen's not as capable as his Ford Fiesta of the previous two years. Worse still, next up it's Sweden – a rally that regularly crucifies the first-on-the-road championship leader. Ogier raised eyes at the memory of his bad-tempered *bete noire* of 12 months ago.

"Don't remind me," he said (Ogier finished



M-Sport endured a tough rally without Ogier in a Fiesta

“Everybody was pushing, yet Meeke still went almost half a second per mile faster”



10th in Sweden in 2018). “Let me enjoy this one before I have to think about that.”

Ogier didn't want to be reminded of the Toyota challenge either. Third, fifth and sixth for Tanak, Jari-Matti Latvala and Meeke demonstrated consistency, but it was the Yaris's searing speed that really worried Ogier and Neuville. And then there was a sublime powerstage performance that left Meeke 3.9s faster than anybody. And, don't forget, the scrap was massive for the win and for third. Everybody was pushing, everybody was giving everything, and yet Meeke still went almost half a second per mile faster than the rest.

Which begs the question of how Toyota dropped this one. In a nutshell, it brought the wrong rims – the lightweight wheels cracked and crumbled, causing punctures for Tanak and Meeke.

Makinen explained: “For the last two years, these wheels have worked – but there's been more snow and when the snow is at the side of the road you can't cut the corner. The drivers had to cut the corners and this was a problem.”

Back to Makinen's frustration at the loss of the first run through the Valdrome test on Saturday morning. Thousands of fans had packed the final mile or so of the stage, forcing its cancellation.

The stage was packed with snow and ice, so most teams had gone with four studs – except Hyundai. Neuville had three studs »

THE DRIVER HELPING MEEKE



IT WOULD BE FAIR TO SAY THAT STEPHEN Whitford (below, right) is not a man who usually has to put up with this kind of pressure. ‘Weavie’ is one of national rallying's genuine characters and a top bloke. But as he walked out of service on Thursday night, he was a man under the cosh. The gravity of what he was doing weighed heavy.

Along with top national co-driver Derek Brannigan, Whitford was charged with driving through the stages an hour before the competing cars to find out what the conditions were like. The pair would then call Kris Meeke and Seb Marshall and let them know what they'd seen. But there's no broad brush here. Any hopes of a report along the lines of, ‘When you turn left at that phone box in the second village, there's a bit of ice away up that hill...’?

No. This is an inch-by-inch forensic inspection with a level of reported detail that would blow your mind.

Brannigan makes four copies of Marshall's pacenotes and takes two for himself – one for the morning run and one

for the afternoon. On the morning run he notes the ice that's formed or snow that's fallen and adds that detail in a red pen. Over the phone he then relays his changes to Marshall. Brannigan then writes his amendments for that same stage into a second set of notes in green pen.

Ahead of the afternoon's passage, he will make subsequent changes in red.

“Red's always the most up-to-date information,” explained Brannigan. “Where we've had ice in the morning, it might have melted in the afternoon, so I'll simply draw a red line through the word ‘ice’. It's all about keeping detail as clear and straightforward as possible.”

Dealing with the clear and present danger is one thing – the real art comes in the interpretation.

“When the stages are running into the evening we have to look at a damp patch and decide if it will have turned to ice by the time Kris goes through,” said Whitford. “You get these folk saying, ‘You get to drive all the stages? You're so lucky!’”

If only they knew...



IN THE HEADLINES

M-SPORT'S TALE OF WOE

What a difference a year (or two) makes. M-Sport team principal Rich Millener cut a slightly forlorn figure harbourside first thing Sunday morning. For the past two years, he and team boss Malcolm Wilson have been at the heart of this event, winning it with Sebastien Ogier. This time the highest-placed factory car was Teemu Suninen in 11th place. The Finn went off on the first stage, and was crashed into as Kalle Rovanpera caused close to £10,000 worth of damage bouncing off the back of the Fiesta WRC to stay on track. Suninen's team-mate Elfyn Evans was chasing sixth when he got slightly off line on Saturday afternoon and slammed into the trees...

MEEKE IS POWERSTAGE HERO

There was plenty for Kris Meeke to celebrate on his full-time return to the WRC with Toyota. Broken rims contained him to sixth place, but his run to a powerstage victory was the talk of Sunday.

MIKKELSEN OUT, BUT BACK

On the face of it, Andreas Mikkelsen's miserable run continues, but actually he was very much more at the races in Monte. He crashed out of third, but new Hyundai boss Andrea Adamo said: "First of all, I said thank you to him because he has shown he is back; he was third and I will never kick in the ass someone who crashes when they are fighting for the lead and they make a mistake."

UNHAPPY LAPPI

A broken wheel followed by a terminal engine fault put paid to 50% of Citroen's challenge when Esapekka Lappi dropped out on Saturday.

BRIT'S SEVENTH HEAVEN

The silver lining to M-Sport's cloud came in the shape of a dominant WRC 2 Pro victory for Gus Greensmith. The Briton not only landed a maiden class win, but he also placed his Ford Fiesta R5 (below) in an exceptional seventh overall.



"I drove nearly every day in January and I'm happy to stop. Now I'm going to sleep"



and Loeb two. Dropping the opener from the loop was a big bonus, allowing Ogier to exploit his slick-biased tyre package.

Makinen ranted: "I would like to see all three stages cancelled. Our complete strategy was based on the overall loop — we lost [Tanak's] lead and nobody takes responsibility for that. The FIA doesn't care what happens at the end of the season; what happens if we lose the championship because of this?"

FIA rally director Yves Matton labelled those comments "not so professional" and "aggressive". He was backed up by visiting FIA president Jean Todt. But as the three talked things through, Makinen declined the opportunity to back down.

Makinen's frustrations would, no doubt, be offset by the unrelenting speed the cars had shown once they got onto a more stable footing, and Meeke's pace on his Toyota debut came in for the most praise.

"Absolutely brilliant," was Tommi's description. But Tanak's run of six fastest times to rocket him back onto the podium was deeply impressive.

Also deeply impressive was Loeb. Asked to summarise his driver's performance, Hyundai's new team principal Andrea Adamo kept it brief. "I need only one word: amazing!"

Fastest on two of the 15 stages, Loeb belied a lack of experience of his Hyundai and employed a serious caffeine intake in

Ogier relished competing so close to home





Loeb returned from Peru and narrowly missed out on a podium

an attempt to offset the ravages of jetlag. Regardless of which continent his body clock was residing in, Loeb's performance was superb. Ultimately, and predictably, he was disappointed not to have clung to third, but he'd done his job and delivered points, helping his new employer into an early lead in the makes' race.

Beyond that, he'd delivered an exceptional storyline in what's already shaping up to be a blockbuster of a championship. In scenes reminiscent of the WRC's first appearance in his home town of Haguenau nine years ago, Loeb-mania looked to have returned – even in Ogier's backyard. The pre-event autograph session was beyond even the significant effort of Hyundai's private security firm.

In the end, Loeb's celebrated co-driver Daniel Elena had to take control. He jumped onto a table and shouted at the crowd to stop pushing and sort themselves out. They fell into line – briefly. But mass hysteria followed both Sebs everywhere last week. Fourth was a frustration for Loeb, but once he's found his feet and tested for more than a day and a half, he'll have an even bigger part to play in his selected 2019 WRC appearances.

"We're here at the end," said Loeb. "It's OK, but I was pushing and we weren't very quick. We have to understand. I test for Sweden next week. I drove nearly every day in January and I'm happy to stop now. Now I'm going to sleep."

It's Rally Sweden next month for round two – what a way to wake up. ❄️

RESULTS ROUND 1/14, MONTE CARLO RALLY, JANUARY 24-27

POS	DRIVER / CO-DRIVER	TEAM / CAR	TIME
1	Sebastien Ogier (FRA)/ Julien Ingrassia (FRA)	Citroen Total WRT / Citroen C3	3h21m15.9s
2	Thierry Neuville (BEL)/ Nicolas Gilsoul (BEL)	Hyundai Shell Mobis WRT / Hyundai i20 Coupe	+2.2s
3	Ott Tanak (EST)/ Martin Jarveoja (EST)	Toyota Gazoo Racing WRT / Toyota Yaris	+2m15.2s
4	Sebastien Loeb (FRA)/ Daniel Elena (MCO)	Hyundai Shell Mobis WRT / Hyundai i20 Coupe	+2m28.2s
5	Jari-Matti Latvala (FIN)/ Miikka Anttila (FIN)	Toyota Gazoo Racing WRT / Toyota Yaris	+2m29.9s
6	Kris Meeke (GBR)/ Seb Marshall (GBR)	Toyota Gazoo Racing WRT / Toyota Yaris	+5m36.2s
7	Gus Greensmith (GBR)/ Elliott Edmondson (GBR)	M-Sport Ford WRT / Ford Fiesta R5	+13m04.6s
8	Yoann Bonato (FRA)/ Benjamin Boulloud (FRA)	Citroen Total / Citroen C3 R5	+13m56.5s
9	Stephane Sarrazin (FRA)/ Jacques-Julien Renucci (FRA)	Stephane Sarrazin / Hyundai i20 R5	+14m06.8s
10	Adrien Fourmaux (FRA)/ Renaud Jamoul (BEL)	Adrien Fourmaux / Ford Fiesta R5	+16m03.4s
OTHERS			
11	Teemu Suninen (FIN)/ Marko Salminen (FIN)	M-Sport Ford WRT / Ford Fiesta	+17m56.8s
20	Pontus Tidemand (SWE)/ Ola Floene (NOR)	M-Sport Ford WRT / Ford Fiesta	+29m34.6s
31	Mauro Miele (ITA)/ Luca Beltrame (ITA)	Mauro Miele / Citroen DS3	+38m17.5s
R	Elfyn Evans (GBR)/ Scott Martin (GBR)	M-Sport Ford WRT / Ford Fiesta	SS10-accident
R	Andreas Mikkelsen (NOR)/ Anders Jager (NOR)	Hyundai Shell Mobis WRT / Hyundai i20 Coupe	SS10-accident
R	Esapekka Lappi (FIN)/ Janne Ferm (FIN)	Citroen Total WRT / Citroen C3 WRC	SS9-engine

DRIVERS' CHAMPIONSHIP

1 Ogier 29; 2 Neuville 21; 3 Tanak 17; 4 Meeke 13; 5 Loeb 12; 6 Latvala 10; 7 Greensmith 6; 8 Bonato 4; 9 Sarrazin 2; 10 Fourmaux 1.

MANUFACTURERS' CHAMPIONSHIP

1 Hyundai Shell Mobis WRT 30; 2 Citroen Total WRT 25; 3 Toyota Gazoo Racing WRT 25; 4 M-Sport Ford WRT 14.

STAGE TIMES

STAGE	FASTEST	LEADER	SECOND
SS1 La Breole - Selonnet (12.90 miles)	Tanak 13m02.0s	Tanak	Meeke +5.0s
SS2 Avancon - Notre-Dame-du-Laus (12.79 miles)	Neuville 13m18.5s	Tanak	Ogier +9.1s
SS3 Valdrome - Sigottier 1 (12.45 miles)	Stage cancelled		
SS4 Roussieux - Laborel 1 (14.94 miles)	Loeb 14m42.1s	Neuville	Tanak +4.9s
SS5 Curbans - Piegut 1 (11.48 miles)	Ogier 13m49.1s	Neuville	Ogier +3.4s
SS6 Valdrome - Sigottier 2 (12.45 miles)	Ogier/Latvala 13m39.5s	Neuville	Ogier +1.4s
SS7 Roussieux - Laborel 2 (14.94 miles)	Loeb 14m26.6s	Ogier	Neuville +14.0s
SS8 Curbans - Piegut 2 (11.48 miles)	Neuville 13m25.5s	Ogier	Neuville +2.0s
SS9 Agnieres-en-Devoluy - Corps 1 (18.53 miles)	Tanak 20m54.0s	Ogier	Neuville +5.6s
SS10 St-Leger-les-Melezes - La Batie-Neuve 1 (10.48 miles)	Tanak 10m12.1s	Ogier	Neuville +5.3s
SS11 Agnieres-en-Devoluy - Corps 2 (18.53 miles)	Tanak 19m54.5s	Ogier	Neuville +4.1s
SS12 St-Leger-les-Melezes - La Batie-Neuve 2 (10.48 miles)	Tanak 9m53.2s	Ogier	Neuville +4.3s
SS13 La Bollene-Vesubie - Peira-Cava 1 (11.44 miles)	Tanak 11m40.3s	Ogier	Neuville +3.3s
SS14 La Cabanette - Col de Braus 1 (8.44 miles)	Tanak 9m52.4s	Ogier	Neuville +3.2s
SS15 La Bollene-Vesubie - Peira-Cava 2 (11.44 miles)	Neuville 11m25.5s	Ogier	Neuville +0.4s
SS16 La Cabanette - Col de Braus 2 (Power Stage) (8.44 miles)	Meeke 9m37.3s	Ogier	Neuville +2.2s



Elena's crowd-control skills were put to the test

Alonso crew is Taylor made for soaking Daytona

Wayne Taylor Racing team-mates Kamui Kobayashi, Fernando Alonso, Renger van der Zande and Jordan Taylor reaped the benefits of a red flag

GARY WATKINS

PHOTOGRAPHY  motorsport
IMAGES



Fernando Alonso ticked another box with a deserved but, as it turned out, slightly fortuitous victory in the Daytona 24 Hours last Sunday. The Spaniard and Wayne Taylor Racing team-mates Jordan Taylor, Renger van der Zande and Kamui Kobayashi had led much of a rain-affected race, and yet they had only just sneaked back in front when a second red flag brought what turned out to be an early halt to proceedings with two hours to go.

The WTR Cadillac DPi-V.R with Alonso back at the wheel was running second to Felipe Nasr's identical Whelen Engineering

Action Express Racing car in dreadful conditions with over two and a half hours left, and worse still had to make an unscheduled pitstop to replace an incorrectly inflated right-front tyre. The safety car was called for the 16th time almost immediately and, when the race went green for what turned out to be the final time, the Brazilian appeared to have the edge over his illustrious rival.

Nasr, who shared the #31 car with Pipo Derani and Eric Curran, had been four seconds up the road when he hit standing water going into Turn 1. His Caddy went well off track and Alonso was able to nip past. Two laps later, the safety car was back

out and a lap after that the red flag was shown for the second time.

The cars sat in the pitlane for nearly two hours as the rain continued. This time around there would be no restart, and the result was declared with 10 minutes left on the clock. Alonso had added a Daytona victory to the Le Mans 24 Hours triumph he notched up with Toyota last June, and WTR had claimed a second victory in three years at the IMSA SportsCar Championship blue riband.

The rain that began to fall shortly after 4am was always going to make this race a lottery. An early end to the contest was likely after the race was red-flagged for »





more than an hour and 45 minutes shortly before the 17-hour mark.

But had Alonso and his team-mates not been at the top of the leaderboard when the inevitable red came, justice would not have been done. Their challenge grew ever stronger through the race and they ended up leading 259 of 593 laps. They weren't a match for the frontrunners in the heat of the day on Saturday afternoon, but came very much into the equation as the temperatures dropped.

And then Alonso showed that the talents he has proved time and time again in F1, no matter how competitive or uncompetitive his mount might have been, are readily transferable to the world of sportscar racing. He was masterful in the rain, pulling out an advantage of around half a minute before the protracted safety car that led into the first red flag on Sunday morning.

WTR also played the race correctly. It set up its DPi-V.R with the conditions in mind.

"We weren't that competitive in the heat of the day, but we didn't care too much," said Jordan Taylor, son of team boss Wayne. "We set up the car to have adjustability for the dry and the wet. You saw other teams adding downforce in the rain, but we left our car completely trimmed out and used other tools like the rollbars and the brake bias to tune it for the conditions."

The #31 Action Express entry was always there or thereabouts, and when Nasr climbed aboard for the final time it suddenly looked like it could take the fight to WTR.

The rain was getting worse when he dived off the banking into Turn 1 four minutes before what turned out to be the end of the race. Nasr reckoned it was his bad luck to arrive first at a corner where the puddles were growing rapidly.

"There was nothing I could do," he said. "I was the first car coming through and I just



aquaplaned all the way and lost the lead."

Nasr was desperate for the race to restart, and reckoned he could have got the job done: "I wanted to go back racing. I think we had a winning car in our hands."

The Penske Acura team had the pace in the dry, but ultimately had to be content with the final place on the podium. There was a period on Saturday night through into Sunday morning when the team looked to be establishing a grip on proceedings with the #7 ARX-05 shared by Ricky Taylor, Helio Castroneves and Alexander Rossi. But the rain changed that.

"In the dry we had a very strong package and after the first rotation of drivers the car really came alive," said Taylor. "But ultimately we didn't have the pace of the Caddys in the wet. I've driven that car, and I know it has good mechanical grip, and it seemed today that they could get good heat into their tyres quicker than we could."

The sister car driven by Juan Pablo Montoya, Dane Cameron and Simon Pagenaud was in the mix until it needed

a new alternator belt in the 20th hour, and slipped to eighth.

Mazda repeated the promise of its performance at the pre-event Roar test in qualifying – Oliver Jarvis beat the all-time Daytona International Speedway road course record to claim pole – and in the early stages of the race. But it all went wrong for the Joest-run team in the seventh hour.

First Olivier Pla slowed in the #55 Mazda RT24-P with what turned out to be a fuel leak, and then Timo Bernhard pulled off the track on the back straight in #77 with flames licking from the exhaust. The #55 car was quickly repaired with the loss of only four laps, but #77 was retired on its return to the garages.

Pla and team-mates Harry Tincknell and Jonathan Bomarito were close to getting back on the lead lap when the engine started cutting out on Bomarito. He was hit up the rear by Oliver Gavin's GTLM Chevrolet and, when the damaged car was examined back in the garage, oil was found swilling about in the engine bay, and the car was retired.



GALSTAD

“Alonso was masterful in the rain, pulling out an advantage of around half a minute”

Mazda still reckoned there were positives to take home from Daytona. “We showed the pace was there, even though we were looking after the equipment,” said Tincknell, “and we still got some points, so it wasn’t a complete disaster.”

That term could be applied to the race endured by the #5 Action Express Cadillac in which Christian Fittipaldi was making his farewell appearance behind the wheel of a racing car. Last year’s winning entry, co-driven by Joao Barbosa and Filipe Albuquerque, lost 15 laps early after the brake lights failed and the team had to dig deep into the wiring loom to rectify the problem.

The DragonSpeed ORECA-Gibson 07 took LMP2 honours in the hands of Pastor Maldonado, Sebastian Saavedra, Roberto Gonzalez and Ryan Cullen. It fell behind the sister car after Cullen had an off, but moved back into the lead when the machine driven by Nicolas Lapierre, Ben Hanley, Henrik Hedman and James Allen hit suspension problems 45 minutes before the red flag.

Daytona is not part of Alonso’s stated quest for the unofficial triple crown of motorsport, though he suggested he could be a “quadruple crown” winner should he nail the Indy 500 this May. He has, however, now won two thirds of sportscar racing’s own triple crown. There’s just the Sebring 12 Hours to go, which he must surely add to his bucket list now. 🏆

LATE MISTAKES GIFT LAMBO CREW GTD VICTORY

LATE SPINS FOR ITS RIVALS HANDED THE Grasser Lamborghini squad a second consecutive Daytona 24 Hours victory in the GT Daytona class.

The Austrian team’s new evo version of the Huracan looked as though it was going to miss out on victory this time around. Then Daniel Morad and Luca Stolz went off course in their respective Land Motorsport Audi R8 LMS GT3 and Riley Motorsports Mercedes-AMG GT3 as the conditions worsened in what turned out to be the death throes of the race.

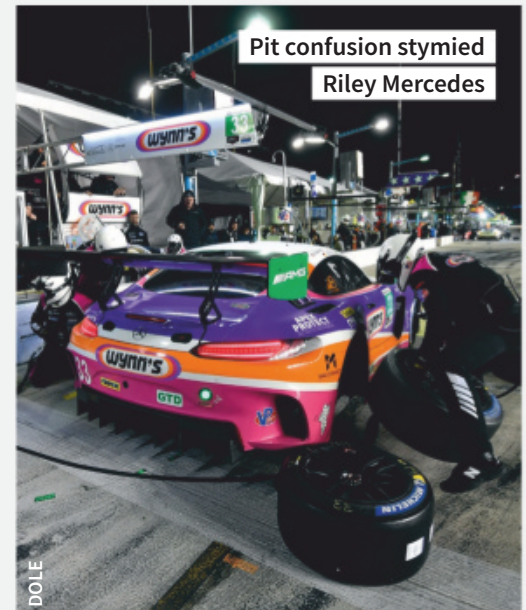
It had been an up and down ride for Grasser drivers Mirko Bortolotti, Rolf Ineichen and Rik Breukers – three quarters of last year’s winning line-up – and former factory racer Christian Engelhart. They lost time early in the race with a stop-and-go penalty of more than three minutes for a procedural error behind the safety car, and then managed to accrue three more penalties before the race was over.

But crucially they were on the lead lap when it counted at the end of the race and were in a position to benefit from the mistakes of others.

“I managed to overtake the leader to get back on the lead lap, but we were still a long way off,” explained Engelhart. “I asked what position I was in and was told P8 and wasn’t told again, but just kept pushing and was surprised to end up first.

“The race didn’t start well and was a rollercoaster for us. We always had the pace, but in the end it came down to the conditions.”

They were foul conditions. Visibility was poor but it was standing water that caught out Morad and Stolz. First Morad went off at Turn 1 in the new evo R8 he shared with Dries Vanthoor, Christopher Mies and Ricardo Feller, and then Stolz spun a minute later at Turn 6 in the Merc



DOLE

Pit confusion stymied
Riley Mercedes

co-driven by Jeroen Bleekemolen, Ben Keating and Felipe Fraga.

The Riley Merc led double the number of laps of anyone else in class, but the team that had won this race outright in 1996 and 2005 had to settle for an unrepresentative seventh in class. Its cause wasn’t helped at the first red flag when the car was brought into the pits from behind the safety car for fuel at a time when IMSA officials were saying the race was about to go green. The red flags dropped the car to the back of the leading pack, but the car had the pace to come back through to challenge for the win.

The new AIM Sullivan Vasser team, which only received its pair of new Lexus RC F GT3s in the wake of last year’s IMSA finale at Road Atlanta, claimed an impressive third on its debut. The team, started last year by a new group including 1996 CART champion Jimmy Vasser, took the final podium spot with the car shared by Townsend Bell, Frankie Montecalvo, Jeff Segal and Aaron Telitz, despite dropping two laps off the lead in the early running with a long stop-go penalty.



Grasser Lamborghini
had to fight back to
regain lead lap

LEVITT

BMW AHEAD WHEN IT MATTERS IN GTLM



BMW didn't have the fastest car but was in the right place when the final red flag was shown

DOLE

BMW DIDN'T LOOK LIKE ONE OF THE FAVOURITES for GT Le Mans honours for much of the Daytona 24 Hours. The best of the German manufacturer's M8 GTEs was never out of contention, but Porsche, then Ferrari and finally Ford all looked to have a better shot at the win over the course of the race. But by the time the race was ended prematurely, Augusto Farfus, Connor De Phillippi, Philipp Eng and Colton Herta were at the front.

That had a lot to do with the talents of Farfus, a late replacement for Tom Blomqvist, who had failed to obtain the necessary visa. Farfus starred in the wet and then pulled off a phenomenal move on James Calado in the Risi Ferrari 488 GTE in the closing minutes.

The Rahal BMW came from a long way back to sneak past into the Bus Stop chicane on the back straight. That put him second, which became first when Richard Westbrook had no choice but to pit

the #67 Ganassi Ford GT as the yellows came. He took a so-called emergency stop, which involved the addition of just five seconds' worth of fuel.

"I knew I needed to be in the lead because another red flag had to be around the corner," said Farfus. "I was two car lengths behind going into the braking zone for the Bus Stop. I didn't use the brakes because I didn't want to lock up and just put it in second, overrevved the engine and hoped for the best."

The Ganassi team's strategy had got the entry Westbrook shared with Ryan Briscoe and Scott Dixon into the lead, an impressive effort given that the car had been four laps down at one point. Briscoe had tagged the wall exiting the pits on cold tyres early on and lost two laps to repairs, while two more laps went west courtesy of a penalty for a procedural error behind the safety car. The Ford wasn't the dominant force it had been this time

last year, but it got ever more competitive as the conditions worsened. The #66 Ford shared by Dirk Muller, Joey Hand and Sebastien Bourdais looked like Ganassi's best hope of a repeat win until its involvement in a late-race incident.

The #67 Ford was listed as third when the race was stopped, but an emergency stop comes with a drivethrough penalty. That was transmuted into a time penalty when the final results were declared, dropping the car to fourth.

The Risi Ferrari driven by Calado, Alessandro Pier Guidi, Davide Rigon and Miguel Molina moved into the picture when the rain arrived. Calado impressed as he propelled the car into the lead, but the heavier rain blunted the team's challenge.

Porsche ended up with third and fifth positions with its pair of CORE-run factory 911 RSRs. The German car had an advantage in the dry and either of the two cars might have won, even though the #912 car shared by Earl Bamber, Laurens Vanthoor and Mathieu Jaminet lost a couple of laps early on having the front splitter replaced.

But Porsche's challenge went off the boil as the rain got worse. "We had the quickest car in the dry," said Vanthoor, who ended up third, "but we really struggled in the rain because the car was so trimmed out."

Corvette Racing had a difficult race on the way to sixth and eighth. The two Chevrolet Corvette C7.Rs collided early on, Marcel Fassler ran out of fuel while leading and Tommy Milner crashed heavily in the rain.

The second BMW that Alex Zanardi shared with Jesse Krohn, John Edwards and Chaz Mostert brought up the rear in class after two long delays, the first caused by a change of steering column.



Ganassi Fords became more competitive as the rain intensified

DOLE

RESULTS DAYTONA 24 HOURS, IMSA SPORTSCAR ROUND 1/12, JANUARY 26-27, 593 LAPS – 2111.08 MILES

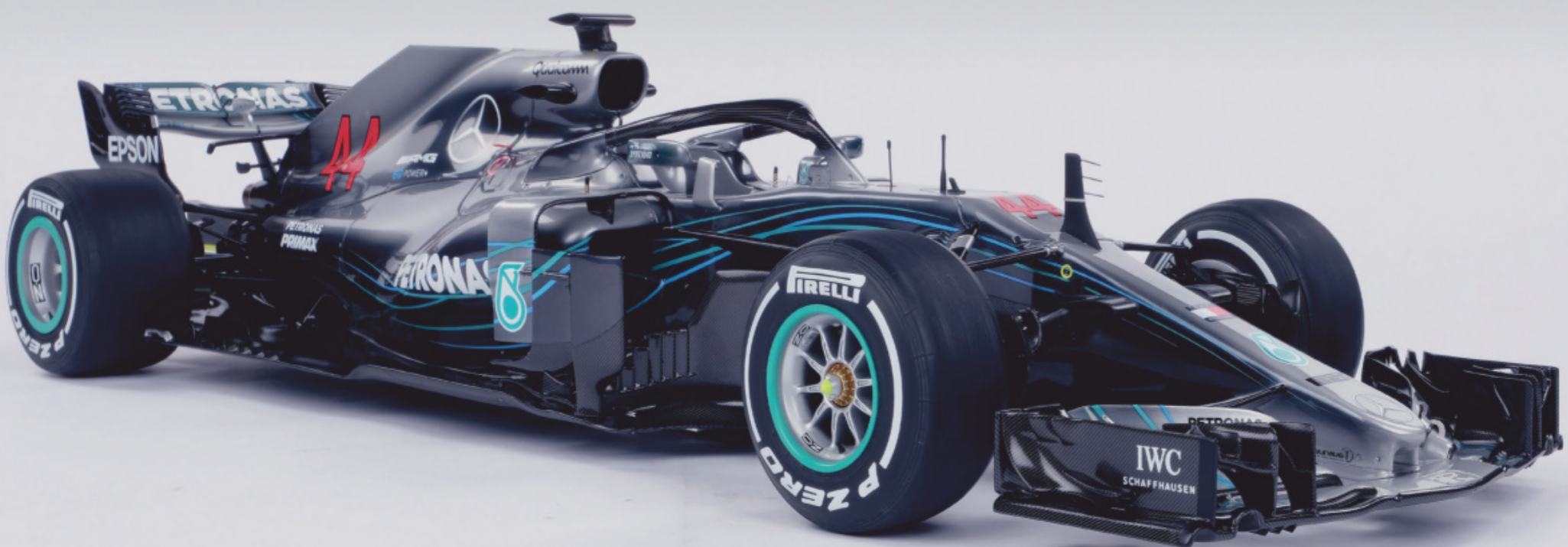
POS	DRIVERS	TEAM	CAR	CLASS	TIME	GRID
1	Jordan Taylor /Renger van der Zande /Fernando Alonso /Kamui Kobayashi	Wayne Taylor Racing	Cadillac DPi-V.R	DPi	21h59m13.350s	6
2	Felipe Nasr /Eric Curran /Pipo Derani	Action Express Racing	Cadillac DPi-V.R	DPi	+13.458s	5
3	Ricky Taylor /Helio Castroneves /Alexander Rossi	Acura Team Penske	Acura ARX-05	DPi	+13.964s	2
4	Jon Bennett /Colin Braun /Romain Dumas /Loic Duval	CORE Autosport	Nissan DPi	DPi	-4 laps	10
5	Tristan Vautier /Misha Goikhberg /Devlin DeFrancesco /Rubens Barrichello	JDC-Miller Motorsports	Cadillac DPi-V.R	DPi	-7 laps	8
6	Roberto Gonzalez /Pastor Maldonado /Sebastian Saavedra /Ryan Cullen	DragonSpeed	ORECA-Gibson 07	LMP2	-11 laps	14
7	Kyle Masson /Robert Masson /Cameron Cassels /Kris Wright	Performance Tech Motorsports	ORECA-Gibson 07	LMP2	-15 laps	15
8	Juan Pablo Montoya /Dane Cameron /Simon Pagenaud	Acura Team Penske	Acura ARX-05	DPi	-17 laps	3
9	Filipe Albuquerque /Joao Barbosa /Christian Fittipaldi	Action Express Racing	Cadillac DPi-V.R	DPi	-20 laps	11
10	Connor De Phillippi /Augusto Farfus /Philipp Eng /Colton Herta	BMW Team RLL	BMW M8 GTE	GTLM	-22 laps	23
11	Davide Rigon /Miguel Molina /Alessandro Pier Guidi /James Calado	Risi Competizione	Ferrari 488 GTE	GTLM	-22 laps	19
12	Earl Bamber /Laurens Vanthoor /Mathieu Jaminet	Porsche GT Team (CORE)	Porsche 911 RSR	GTLM	-23 laps	20
13	Ryan Briscoe /Richard Westbrook /Scott Dixon	Ford Chip Ganassi Racing	Ford GT	GTLM	-23 laps	18
14	Nick Tandy /Patrick Pilet /Frederic Makowiecki	Porsche GT Team (CORE)	Porsche 911 RSR	GTLM	-24 laps	16
15	James Allen /Henrik Hedman /Ben Hanley /Nicolas Lapierre	DragonSpeed	ORECA-Gibson 07	LMP2	567 laps-suspension	12
16	Jan Magnussen /Antonio Garcia /Mike Rockenfeller	Corvette Racing (Pratt & Miller)	Chevrolet Corvette C7.R	GTLM	-30 laps	17
17	Rolf Ineichen /Mirko Bortolotti /Christian Engelhart /Rik Breukers	GRT Grasser Racing Team	Lamborghini Huracan GT3	GTD	-32 laps	29
18	Daniel Morad /Christopher Mies /Ricardo Feller /Dries Vanthoor	Montaplast by Land-Motorsport	Audi R8 LMS GT3	GTD	-32 laps	38
19	Frankie Montecalvo /Townsend Bell /Aaron Telitz /Jeff Segal	AIM Vasser Sullivan	Lexus RCF GT3	GTD	-32 laps	37
20	Ian James /Frederic Vervisch /Kelvin van der Linde /Roman De Angelis	WRT Speedstar Audi Sport	Audi R8 LMS GT3	GTD	-32 laps	43
21	Trent Hindman /Mario Farnbacher /Justin Marks /AJ Allmendinger	Michael Shank Racing	Acura NSX GT3	GTD	-32 laps	27
22	Richard Heistand /Jack Hawksworth /Austin Cindric /Nick Cassidy	AIM Vasser Sullivan	Lexus RCF GT3	GTD	-33 laps	35
23	Ben Keating /Jeroen Bleekemolen /Luca Stolz /Felipe Fraga	Riley Motorsports	Mercedes-AMG GT3	GTD	-33 laps	26
24	Patrick Lindsey /Patrick Long /Matt Campbell /Nick Boulle	Park Place Motorsports	Porsche 911 GT3-R	GTD	-33 laps	33
25	Marcos Gomes /Chico Longo /Victor Franzoni /Andrea Bertolini	Via Italia Racing	Ferrari 488 GT3	GTD	-33 laps	25
26	Robby Foley /Bill Auberlen /Dillon Machavern /Jens Klingmann	Turner Motorsport	BMW M6 GT3	GTD	-33 laps	45
27	Spencer Pumpelly /John Potter /Andy Lally /Marco Mapelli	Magnus Racing	Lamborghini Huracan GT3	GTD	-34 laps	31
28	Joey Hand /Dirk Muller /Sebastien Bourdais	Ford Chip Ganassi Racing	Ford GT	GTLM	-34 laps	21
29	Oliver Gavin /Tommy Milner /Marcel Fassler	Corvette Racing (Pratt & Miller)	Chevrolet Corvette C7.R	GTLM	-38 laps	24
30	Agustin Canapino /Will Owen /Rene Binder /Kyle Kaiser	Juncos Racing	Cadillac DPi-V.R	DPi	-38 laps	7
31	Andrew Davis /Alex Riberas /Will Hardeman /Markus Winkelhock	MooreSpeed	Audi R8 LMS GT3	GTD	-38 laps	42
32	John Edwards /Jesse Krohn /Chaz Mostert /Alex Zanardi	BMW Team RLL	BMW M8 GTE	GTLM	-40 laps	22
33	Ana Beatriz /Katherine Legge /Simona de Silvestro /Christina Nielsen	Heinricher Racing with Meyer Shank	Acura NSX GT3	GTD	-43 laps	34
34	Cooper MacNeil /Toni Vilander /Dominik Farnbacher /Jeff Westphal	Scuderia Corsa	Ferrari 488 GT3	GTD	547 laps-acc dam	39
35	Ezequiel Perez Companc /Parker Chase /Ryan Dalziel /Christopher Haase	Starworks Motorsport	Audi R8 LMS GT3	GTD	-46 laps	41
36	Marco Seefried /Tim Pappas /Matteo Cairolì /Dirk Werner	Black Swan Racing	Porsche 911 GT3-R	GTD	-48 laps	36
37	Gabriel Aubry /Matt McMurry /Mark Kvamme /Enzo Guibbert	PR1/Mathiasen Motorsports	ORECA-Gibson 07	LMP2	-81 laps	13
38	Ryan Hardwick /Bryan Sellers /Corey Lewis /Andrea Caldarelli	Paul Miller Racing	Lamborghini Huracan GT3	GTD	491 laps-acc dam	47
39	Lars Kern /Scott Hargrove /Zacharie Robichon /Dennis Olsen	Pfaff Motorsports	Porsche 911 GT3-R	GTD	470 laps-acc dam	32
40	Giacomo Altoe /Emanuele Busnelli /Fabio Babini /Taylor Proto	Ebimotors	Lamborghini Huracan GT3	GTD	470 laps-accident	28
41	Don Yount /Steve Dunn /Linus Lundqvist /Milos Pavlovic	Precision Performance Motorsports	Lamborghini Huracan GT3	GTD	-151 laps	44
42	Jonathan Bomarito /Harry Tincknell /Olivier Pla	Mazda Team Joest	Mazda RT24-P	DPi	440 laps-oil leak	4
43	Juan Perez /Maximilian Buhk /Fabian Schiller /Dominik Baumann	P1 Motorsports	Mercedes-AMG GT3	GTD	431 laps-vibration	46
44	Mathias Lauda /Paul Dalla Lana /Pedro Lamy /Daniel Serra	Spirit of Race	Ferrari 488 GT3	GTD	349 laps-acc dam	30
45	Stephen Simpson /Simon Trummer /Chris Miller /Juan Piedrahita	JDC-Miller Motorsports	Cadillac DPi-V.R	DPi	225 laps-acc dam	9
46	Oliver Jarvis /Tristan Nunez /Timo Bernhard /Rene Rast	Mazda Team Joest	Mazda RT24-P	DPi	220 laps-engine	1
47	Alfred Renauer /Jurgen Haring /Klaus Bachler /Sven Muller /Steffen Gorig	NGT Motorsport	Porsche 911 GT3-R	GTD	47 laps-engine	40

In each car, first-named driver started race and set qualifying time. **Winners' average speed** 96.015mph. **Fastest lap** Nasr 1m34.504s (135.607mph). **LMP2** Hanley 1m36.256s (133.138mph). **GTLM** Herta 1m42.908s (124.532mph). **GTD** Gomes 1m44.541s (122.587mph).



LEWIS HAMILTON MERCEDES-AMG F1 W09 EQ POWER+

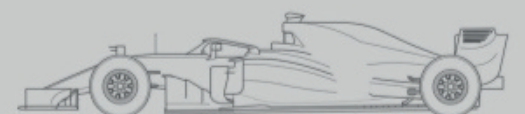
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1:1 330mm - 12.9 inches wide



1:8 620mm - 24.4 inches in length



Mercedes AMG F1 W09 EQ Power+ 1:8 scale model

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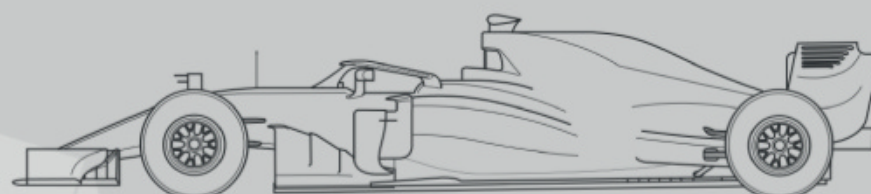
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Bird spices it up in the Chile heat

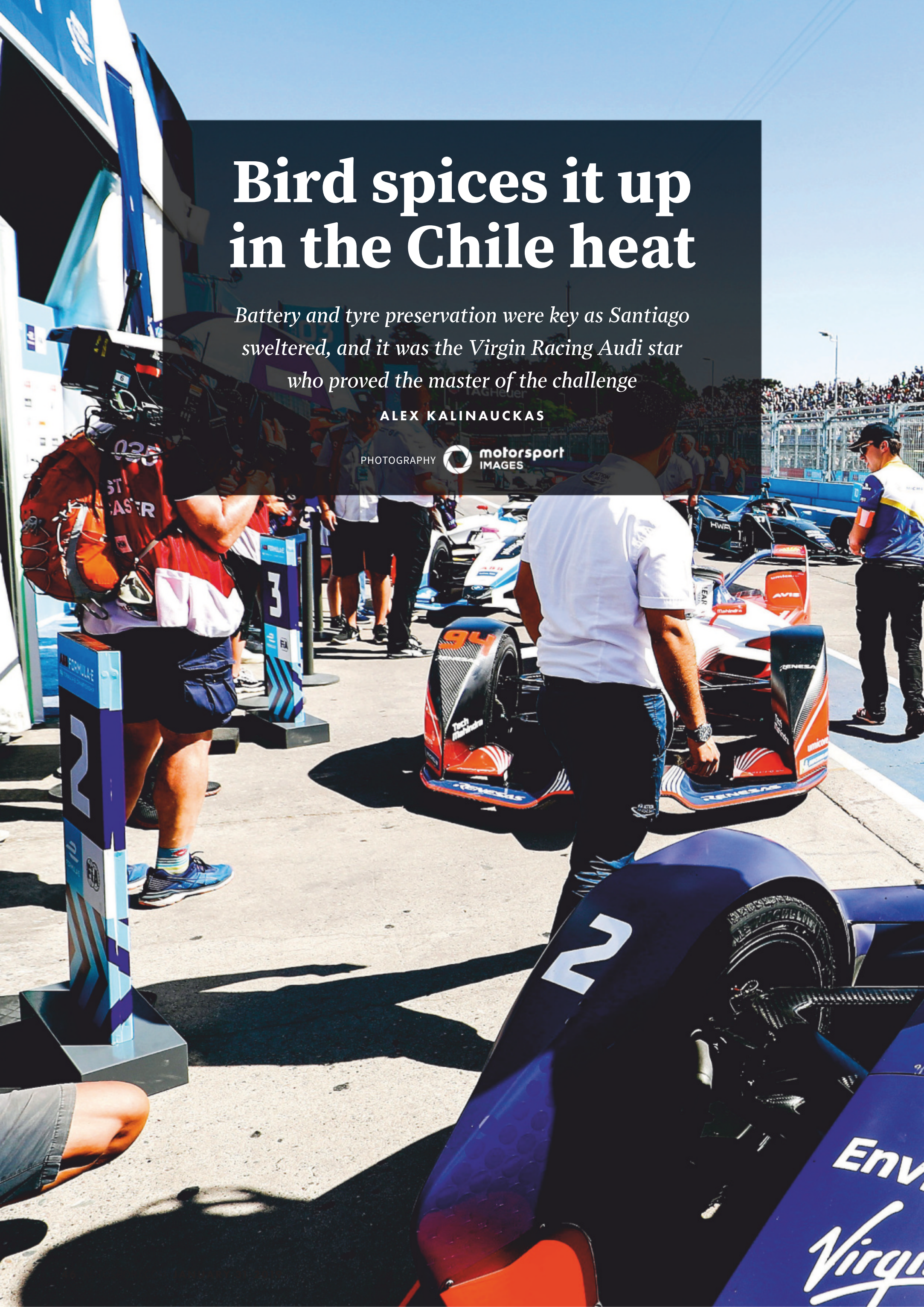
Battery and tyre preservation were key as Santiago sweltered, and it was the Virgin Racing Audi star who proved the master of the challenge

ALEX KALINAUCKAS

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Series organisers generally like record-breaking events, but the new standard set by the ABB FIA Formula E Championship's second visit to the Chilean capital of Santiago meant the race turned into a car-breaker. Unseasonably high temperatures got close to the city's official January record – they peaked at 37.9C according to FE's official timing noticeboard, although tyre supplier Michelin cited 40C. That meant the relatively cool 35C from Putrajaya in 2015 was obliterated. OK, in contrast to muggy Malaysia, it was a blazing, dry heat in Santiago, but what it did mean was worries about how the new Gen2 machine would cope. During the race, the asphalt of the 1.45-mile Park O'Higgins track melted and broke up, the cars physically carving rough lines at the most severe corners. It was in such conditions that Sam Bird, driving the 'customer' Virgin Racing Audi, soaked up the heat from the pursuing Mahindra of Pascal Wehrlein for victory, after Sebastien Buemi had dropped his e.dams Nissan out of the lead and into the wall.

The race took place amid concerns about how the batteries and tyres in particular would fare in the extreme conditions. The general understanding was that battery temperatures would no longer be a problem with the new Gen2 cars. The batteries are produced by McLaren Applied Technologies and supplied to the FIA, which hands them to the teams. In the old Gen1 machine, once battery temperatures reached 55C, there would be a linear drop for the regen system until it reached 60C, at which point energy harvesting would drop from 100% to zero over the course of three to four laps.

This meant the drivers had to change their brake balance regularly to avoid front locking, all the while managing total battery energy levels. Thermal degradation has massively improved with the new battery, and tolerances are much greater, despite one battery now having to last an entire race. »

The 'magic' (critical) level is now 72C, but the immense heat in Santiago meant there was a possibility for all teams that this could be reached during the race.

Temperature control would be critical from the start, as two primary factors cause the battery to heat up: using power; and putting energy back in via regen. Air-cooling, lifting-and-coasting and avoiding pace spikes would be critically important. The 'damage' in terms of rising temperatures would occur on an exponential curve, gradually rising before getting dramatically worse as the heat level climbed. The 'damage', once it occurs, cannot be undone – there's no going back when things get hot.

It was thought that if the 72C threshold were to be reached and battery power shutdown – dropping 10-20 seconds per lap over the course of a few tours – occurred, then this would happen in the final minutes of the race. It was vital to tactically play the 45-minutes-plus-one-lap format, and know precisely when to push and use the attack mode – which again was two activations of four minutes.

Tyre performance and wear were also talking points for the first time this season. In addition to the concerns about temperature, the lighter Gen2 rubber would have to cope with the unique surface of the track. Asphalt, freshly laid last autumn, made up approximately 70% of the circuit, from the opening fast right-handers at Turns 1-2, all the way to the 90-degree left at Turn 12. From there, the drivers completed the lap via the two hairpins and the main straight, which were on a concrete surface. Add in an anti-clockwise layout and a long curve making up the main acceleration zone, and it was thought that the tyres would be placed under considerable strain.

The race started at 4pm local time, in the peak of the day's heat. Buemi had bounced



Buemi led Wehrlein
away from pole at start

back from a heavy crash in free practice to claim pole, but only after his long-time FE nemesis Lucas di Grassi had been stripped of the honour by falling foul of a new and complex FE rule (see panel, opposite). Alongside Buemi was Wehrlein, making just his second FE start for Mahindra, following a debut in Marrakech that had barely lasted a corner. They were followed by Audi's Daniel Abt and the Virgin Audi of Bird.

Buemi held the lead from the start and led Wehrlein through the early stages, as

Bird battled his way past Abt to run third by the end of the first lap. Buemi, possibly conscious of the need to push on when temperatures were under control, built a gap to Wehrlein and took his attack mode on lap six, with Bird doing likewise three tours later. This would be crucial for the outcome of the race.

Using the higher power available, Bird rocketed back to Wehrlein and got past going into Turn 1. He shot after Buemi and the trio – with Wehrlein using his first attack mode immediately after being passed by Bird – edged clear of the pack. They negotiated two full-course yellow periods – the first to allow the stricken Dragon Racing car of Maximilian Gunther, a star of qualifying with seventh on the grid in just his third FE event, to be recovered from the pit straight, and the second to allow for the removal of debris caused by Stoffel Vandoorne hitting the wall at Turn 3.

The second FCY left the top three running virtually nose to tail, and apparently set for a grandstand finish, but that all changed... With 16 minutes remaining, Buemi crashed at the same Turn 7 right-hander where he had shunted heavily in practice. The 2015-16 FE champion locked up going through the first part of the corner, got onto the broken asphalt that at this point was causing havoc for the pack, and slid into the wall. Buemi later said a software glitch played a part in both of his crashes.

That left Bird in the lead and having to defend hard against Wehrlein. The German



Bird takes flight
from the podium



FERRARO

took his final attack mode with just over six minutes left on the race countdown, closing right in on Bird to swarm all over the Virgin Audi. It looked to be only a matter of time before he made a move for the lead, but the conditions came back to bite him – Mahindra warned Wehrlein that his battery temperature was critical, and he was forced to back off.

This left Bird clear to take his eighth FE career win and become the only driver to have scored a victory in each of the championship's five seasons. He took the flag 6.489s clear of Wehrlein, with BMW's Alexander Sims taking third on the road, but being dropped to seventh for a clash with Edoardo Mortara (see page 50). That meant Abt completed the podium ahead of Mortara, and the battling Robin Frijns and Mitch Evans.

Virgin team boss Sylvain Filippi later explained that, given the concerns of the battery temperature getting out of control on an exponential curve, the team had adopted a "linear" approach to the race. This meant Bird had to produce a level performance all the way through, attack early and clinically when temperatures were low, then manage his pace evenly. He did it masterfully, although said he was "close" to hitting the 72C mark towards the end.

"It was different, it was strange," Bird said of the boiling race. "I could manage the energy OK but it was just the battery temperature that was critical and difficult. But the team managed it very well – they >>

DI GRASSI'S PENALTY FURY

Audi star di Grassi put in stunning qualifying effort...



PORTLOCK

FORMULA E HAS, UNDERSTANDABLY, always tried to avoid comparisons with Formula 1. But a penchant for needlessly complex and poorly communicated rules is something both series share.

It must have been immensely frustrating for many fans who watched Lucas di Grassi produce "my best lap ever from my Formula E career" to claim first on the grid in superpole by a whopping 0.526 seconds, only to return for the race and see his Audi starting last.

The reason for di Grassi's exclusion from qualifying, what he called a "very harsh penalty for something which does not make any difference at all", stemmed from an amendment made to Article 27.9 of FE's sporting regulations.

The amendment was filed by FE chassis supplier Spark ahead of the race in Santiago regarding brake usage on in-laps during qualifying. The update requires all drivers to brake in exactly the same way on their in-laps as they do on

their flying laps and has supposedly been introduced on safety grounds to avoid damage to the brakes. 'Supposedly' is a key word here. Both the FIA and FE failed to adequately explain the reasons why it had been introduced ahead of the race, with di Grassi left to pick up the narrative later on. And he was furious.

"There are a lot of stupid rules [in motorsport], but this one is a very stupid one," he said. "I don't know if it's the most [stupid] one, but I think this rule should be revised immediately for the next race."

The 2016-17 FE champion said the rule had been brought in because "they don't want you to overcook the brakes on the in-lap, which a lot of people were doing to try to heat up the tyre". But he denied this was what *he* had been doing.

If the rule has been applied on safety grounds then it must be respected by all. But the confusion and caginess surrounding the reasons for its introduction were utterly unnecessary.



...and then told Autosport's bloke how grumpy he was

S BLOXHAM

IN THE HEADLINES



SIMS LOSES PODIUM

Alexander Sims was again a podium contender in just his third FE race start. He started eighth on the grid, but fought his BMW to third by the flag, seeing off Daniel Abt in the process. But a clash with Edoardo Mortara at the tight Turns 8/9/10 chicane meant he was given post-race drivethrough penalty converted to a time penalty and dropped to seventh. Sims (above) was adamant that he had not hit the Venturi, and BMW unsuccessfully appealed the penalty.

TOPSY FOR TURVEY

A host of post-race penalties had a major benefit for NIO's Oliver Turvey. Jose Maria Lopez, Lucas di Grassi, Jerome d'Ambrosio and Andre Lotterer all had time added – Lopez for power overuse, di Grassi for contact with Lopez, and the last two for speeding and overtaking under FCY. The changes elevated Turvey to eighth in the results for his first points of the campaign.

D'AMBROSIO GLOOM

D'Ambrosio's penalty compounded a low-key day for the Marrakech winner and cost him the points lead. He started 20th, a 'victim' of being in group one in qualifying, and did rise to eighth – albeit mainly as those ahead dropped out. The penalty left him a lowly 10th on a day when his team-mate starred.

ROWLAND STEPS UP

Oliver Rowland produced a sizzling drive in the sun. The Nissan e.dams rookie started 13th and fought hard with Maximilian Gunther and Felipe Massa while running in the points, Massa retiring as a result of damage he picked up in clashes with both Gunther and Rowland. But a mistake on the loose surface as he passed Lotterer at Turn 4 left Rowland in the barriers and out.



kept me calm, told me what to do and I think we managed it perfectly."

Wehrlein should be immensely proud of his second place. Given his frustrating start to the season – missing the opener as a result of the circumstances of his departure from the Mercedes fold, and then the first-corner events of Marrakech – this was a drive to savour. That he was a factor for the win in such an extreme race, taking it to a rival who has been in the series since

the very beginning, was remarkable. He also sits well within striking distance of the top spot in the drivers' championship, despite not having a single point on the board before arriving in Chile.

Buemi also left Santiago somewhat buoyed by his performance. He acknowledged that it was a "f*cking bad" day, but given the steps in race pace that Nissan has made since the opening round of the season – where he quickly fell





Rowland, here leading Frijns, was engaged in massive battles before late shunt

away from the lead fight – the signs had pointed to the old, FE-dominating Buemi’s return before the crash.

Even so, considering the sub-par performances produced by early-season pacesetters DS Techeetah and BMW, this has to go down as a badly missed opportunity for Nissan. Sims ended up as BMW’s sole finisher after Antonio Felix da Costa retired as a result of the damage he sustained in a clash that involved both Techeetah drivers. The trio came together at the final corner on lap eight, with da Costa spearing into Jean-Eric Vergne and spinning the reigning champion around, and Andre Lotterer hitting the back of the BMW. Vergne had another spin later that he said was caused by the damage he had sustained in the first incident, and he opted to park his car soon afterwards. Lotterer suspected a hot inverter hampered his progress throughout the race and he faded badly at the end, eventually classified 13th. All three drivers had started well down the grid as a result of running in the first group in qualifying, which is likely to become a vocal issue throughout this season.

Bird and Virgin head to the next round in Mexico City with the lead of both championships. The customer Audi squad took all that FE’s most extreme race could throw at it and came away shining in the Santiago sun. 🏆



Wehrlein took Frankie Goes To Hollywood topiary to the FE podium

BAGNALL

RESULTS ROUND 3/12, SANTIAGO (CHL), JANUARY 26 (36 LAPS – 84.528 MILES)

POS	DRIVER	TEAM / CAR	TIME
1	Sam Bird (GBR)	Virgin Racing / Audi e-tron FE05	47m02.511s
2	Pascal Wehrlein (DEU)	Mahindra Racing / Mahindra M5Electro	+6.489s
3	Daniel Abt (DEU)	Audi Sport Abt / Audi e-tron FE05	+14.529s
4	Edoardo Mortara (ITA)	Venturi / Venturi VFE-05	+17.056s
5	Robin Frijns (NLD)	Virgin Racing / Audi e-tron FE05	+20.276s
6	Mitch Evans (NZL)	Jaguar / Jaguar I-TYPE 3	+23.755s
7	Alexander Sims (GBR)	BMW / BMW iFE.18	+27.590s
8	Oliver Turvey (GBR)	NIO / NIO 004	+45.059s
9	Jose Maria Lopez (ARG)	Dragon Racing / Penske EV-3	+45.376s
10	Jerome d'Ambrosio (BEL)	Mahindra Racing / Mahindra M5Electro	+46.984s
11	Nelson Piquet Jr (BRA)	Jaguar / Jaguar I-TYPE 3	+48.635s
12	Lucas di Grassi (BRA)	Audi Sport Abt / Audi e-tron FE05	+1m03.552s
13	Andre Lotterer (DEU)	DS Techeetah / DS E-Tense FE19	+1m19.706s
14	Gary Paffett (GBR)	HWA / Venturi VFE-05	-1 lap
R	Oliver Rowland (GBR)	Nissan e.Dams / Nissan IM01	31 laps-accident damage
R	Antonio Felix da Costa (PRT)	BMW / BMW iFE.18	23 laps-accident damage
R	Jean-Eric Vergne (FRA)	DS Techeetah / DS E-Tense FE19	22 laps-accident damage
R	Sebastien Buemi (CHE)	Nissan e.Dams / Nissan IM01	21 laps-accident damage
R	Stoffel Vandoorne (BEL)	HWA / Venturi VFE-05	17 laps-accident damage
R	Maximilian Gunther (DEU)	Dragon Racing / Penske EV-3	12 laps-power loss
R	Felipe Massa (BRA)	Venturi / Venturi VFE-05	12 laps-accident damage
R	Tom Dillmann (FRA)	NIO / NIO 004	10 laps-accident damage

Winner’s average speed 66.991mph. Fastest lap Abt 1m11.263s, 73.703mph.

SUPER POLE 1 Buemi 1m08.816s; 2 Wehrlein 1m08.925s; 3 Abt 1m08.958s; 4 Bird 1m09.253s; 5 Vandoorne times disallowed; EX di Grassi.

QUALIFYING Wehrlein 1m08.463s; Buemi 1m08.664s; Bird 1m08.868s; Vandoorne 1m08.962s; Abt 1m09.030s; 6 Mortara 1m09.042s; 7 Gunther 1m09.143s; 8 Sims 1m09.147s; 9 Massa 1m09.168s; 10 Lopez 1m09.201s; 11 Evans 1m09.235s; 12 Vergne 1m09.307s; 13 Rowland 1m09.365s; 14 Lotterer 1m09.485s; 15 Frijns 1m09.505s; 16 Paffett 1m09.505s; 17 da Costa 1m09.551s; 18 Turvey 1m09.645s; 19 Piquet 1m09.705s; 20 d’Ambrosio 1m10.083s; 21 Dillmann 1m10.258s; EX di Grassi.

CHAMPIONSHIP 1 Bird 43; 2 d’Ambrosio 41; 3 da Costa 28; 4 Frijns 28; 5 Vergne 28; 6 Evans 22; 7 Abt 21; 8 Lotterer 19; 9 Wehrlein 18; 10 Sims 18.

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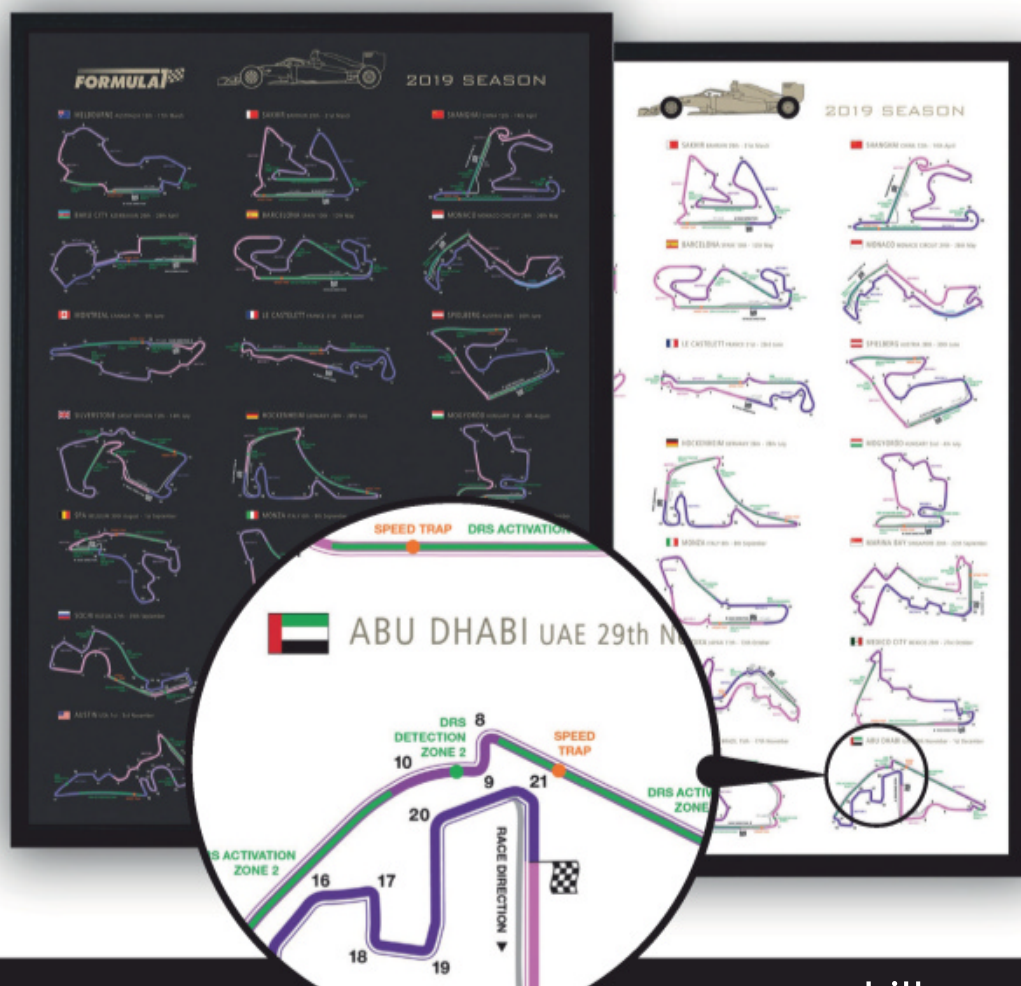
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HARVEY RETURNS TO RACING IN HIS FIRST FFORD CAR

CLASSIC FF1600

Tim Harvey, the 1992 British Touring Car champion, will return to the wheel of a single-seater this season after buying his original racing car – a Van Diemen RF81 Formula Ford 1600.

“I loved Formula Ford,” said the 57-year-old, who is now planning take part in as many races as he can in 2019, including the Formula Ford Festival at Brands Hatch and the Walter Hayes Trophy at Silverstone. “Along with karting, it’s the purest form of racing that you can get and it was

“I WANT TO RACE IN THE FORMULA FORD FESTIVAL AND WALTER HAYES TROPHY”



a launchpad for me.

“I started off in the Champion of Brands series in 1983 with a car that was two years old because it was all I could afford. However, I managed to finish seventh in the Formula Ford Festival in it in 1983 and that really set my career going.”

Harvey, who now commentates on the BTCC for ITV4, said: “I saw a Classic Formula Ford race at Donington Park last year, and thought it was amazing. I realised that the RF81 could still be competitive, so I hatched a plan.

“I knew [team boss and racer] Jonathan Lewis had bought my old car, and I got in touch with him asking him that if he ever wanted to sell it, I wanted first refusal. Eventually he decided to sell it to me, and he is going to run it for me. I will probably do six or so races.”

- Harvey’s son Jamie, 30, has passed his ARDS test at Brands Hatch and plans to take part in some racing this season. “He has done some karting and trackdays,” said Harvey Sr. “He is looking to have some fun in something like the Citroen C1 Racing Club series – maybe I could join him for one of the longer races...”

MATT JAMES

Peter Auto plots rival to Masters Enduro series

GTs AND PROTOTYPES

The French Peter Auto organisation has squared up against Masters Historic Racing by announcing a rival series for GT cars and prototypes from the 1990s and 2000s, running as Global Endurance Legends.

Peter Auto is aiming to attract modern-era prototypes and GT1 cars, in competition with the Masters Endurance Legends race



series. In recent seasons, it has hosted demo sessions for the cars, but is now stepping up to hold races at Barcelona, Spa and Monza.

“This evolution should not make us forget the fact that the club is dedicated above all to amateur drivers who are out to enjoy themselves at the wheel of exceptional cars,” said Patrick Peter.

PAUL LAWRENCE



OPINION



Last week a landmark vote took place that all but ensures motorsport is safe from oblivion.

The 2014 Vnuk insurance case set a

precedent that motor insurance in the EU wasn't being interpreted properly, and any vehicle on private land needed insurance. That would mean every crash like the one pictured above would be considered a road traffic incident and could be investigated by the police. Insurance companies wouldn't underwrite that; motorsport would perish.

The vote took place in the internal market committee, and will almost certainly now be voted through parliament successfully on February 13 as it's unlikely to decide against its own committee.

Then it will be discussed by the Council of the EU, European Commission and the European Parliament in a process known as a trilogue. If they all agree, the process of motorsport being exempt from the effects of Vnuk will be complete.

“THERE'S A POSSIBLE STING IN THE TAIL FOR UK MOTORSPORT”

But there's one possible sting in the tail, especially related to UK motorsport. If it's not voted through by the May EU elections, the bill may need to go through again. And the British MEP Dan Dalton (below), key to forcing this change, will likely not be there as post-Brexit Britain will likely lose its representation. For this reason, Motorsport UK CEO Hugh Chambers said that it would be “premature” to celebrate.

With the vote on February 14, let's hope two months after that is enough.

JACK BENYON
GROUP NATIONAL EDITOR



New entry-level Porsche class

BRSCC PORSCHEs

An entry-level category has been added to the BRSCC's Porsche Championship for 2019.

The Sport 2.7 class is for 2.7-litre Boxsters and is designed to sit between the existing classes for 3.2-litre models, now known as Supersport and Production.

“We realised there are an awful lot of 2.7s out there, and they are pretty cheap

as a donor car,” explained championship coordinator John Broadley.

“We've tried to keep the spec as close to standard as possible, but the big differentiator is the suspension. In effect we've specified the suspension from the Supersport car on a Production car chassis.

“They won't be as quick in a straight line as a 3.2 Production car, but around the bends they'll be very competitive.”

MARK PAULSON



SILVERSTONE CLASSIC

Fifty years of the Ford Capri will be marked at the Silverstone Classic with a special award from one of the greatest ever Capri racers, Gordon Spice.

The 78-year-old will present the one-off Gordon Spice Trophy to the first Capri home in the Historic Touring Car Challenge race at the July event.

Spice was the most successful Capri racer

in the British Saloon Car Championship for five seasons between 1976 and '80, lifting the class title each time. He also regularly drove Capris in European events.

“The Capri was by far the easiest car I ever raced,” he said. “There was absolutely nothing complicated about it – the rear-drive chassis was simple to tune, so it handled really, really well. It was just a brilliant motor car.”

PAUL LAWRENCE



Ginetta Junior ace Foster moves to single-seaters

BRITISH F4

Ginetta Junior runner-up Louis Foster will switch to British Formula 4 for 2019 with the frontrunning Double R Racing squad.

The 15-year old was one of the standout drivers in Ginetta Junior last year, winning nine races in his rookie campaign. He actually scored more points than champion Adam Smalley, but was hit with a hefty 27-point deduction for

various offences during the season.

Foster, son of former British Touring Car Championship driver Nick, admitted that he had not planned to move into single-seaters, but was unable to progress into senior racing because of his age – he doesn't turn 16 until July.

"I couldn't move on to British GT, for example, and doing another year in Ginetta Junior wouldn't really develop any other skills as I had almost mastered it [already],"

said Foster. "We weren't really looking at F4 because of the budget and my physique – I'm quite tall. It wasn't a route we were planning to take, but I'll be using this year as a way to develop more skills."

Foster had also tested with JHR Developments and Richardson Racing, but opted to follow in the footsteps of fellow MB Partners-managed driver Kiern Jewiss, who claimed the F4 title with Double R last season.

Foster added: "I'm not one to go out and say I'm going to win because I don't want to put pressure on myself. If we can come away with top four or five at the end of the season that would be great."

"I just want to learn as I'm pretty sure we're going back down the tin-top route next year. I'm just going to go and have fun – which is what I did last year in Ginetta Junior."

Double R has also announced its first BRDC British F3 driver, Hampus Ericsson. The younger brother of ex-F1 driver Marcus contested the final two F3 weekends of last year with Fortec Motorsports after a troublesome second season in British F4.

"I did two test days with [Double R] in December and it felt great," said Ericsson. "The guys pushed me and gave me a great car to drive, so I'm looking forward to the start of the season."

**STEPHEN LICKORISH
& STEFAN MACKLEY**

Eastwell to race in FFord at Bathurst

FF1600

National Formula Ford frontrunner Michael Eastwell will compete in this weekend's Bathurst 12 Hour support package.

The Mazda Road to Indy finalist will race a Spectrum 010 in the three-race Formula Ford programme, as the category celebrates its 50th anniversary in Australia.

Eastwell will drive for Ellery Motorsport, from

which he bought and imported his National FF1600 Spectrum, and has been testing at Phillip Island.

"This has been in the works since last August," Eastwell said. "Ellery kept track of my progress and were keen to get me into their car."

"The crazy thing about Bathurst is even if you're the quickest, the slipstream is so huge that you can be 20 car lengths back, pick

up the tow and pass by the end of the straight."

"I'm not one of those cocky people who says I'm definitely going to win, but that's always the goal."

After sampling F2000 in the US last season, Eastwell has ruled out returning full-time to FF1600 in 2019.

Fellow FF1600 regular Oliver White won three times when he headed to Bathurst last year.

MATT KEW



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HHC in McLaren switch

BRITISH GT

HHC Motorsport will switch its allegiance from Ginetta to McLaren after signing a multi-year partnership to run the marque's 570S GT4s as an official McLaren Customer Racing team in British GT.

The Yorkshire-based team, which won British GT4 at the first time of asking in 2017 with Will Tregurtha and Stuart Middleton in a Ginetta G55 GT4, will enter two 570S GT4s in the championship this season. There is also potential for a parallel programme in European GT4.

Rockingham race winner Callum Pointon will remain with HHC and will be partnered by Dean Macdonald, who raced alongside GT4 champion Jack Mitchell at Century Motorsport for the final three rounds of 2018 and

has previous experience of McLaren from racing with Garage 59 in 2017. The second pairing is being finalised.

HHC team boss Charlie Kemp says that he expects the partnership to bear fruit quickly.

"We never enter anything without thinking that we've got a chance of winning it," he said. "I've got every faith that we will continue to do what we normally do, which is hit the ground running and hopefully we're in the fight for the championship come the last round."

Autosport understands that the team will not be completely severing its ties with Ginetta, which is not represented on the 2019 grid, although McLaren personnel will support the team in British GT this year.

JAMES NEWBOLD

Boost for Michelin Clios

MICHELIN CLIO CUP SERIES

The Michelin Clio Cup Series expects to receive a boost when the Renault UK Clio Cup is axed at the end of this season, having already added a class for current Clio Cup cars.

The Michelin series announced the introduction of the Sport Series class, which would allow fourth-generation cars into the category for the first time, shortly before the demise of the UK Clio Cup was announced.

Initially these cars will run on slower trackday tyres, but it is planned that they will be adopted into the main

series, using race tyres, in 2020.

Michelin Clios promoter Richard Colburn, whose Westbourne squad also runs cars in the UK Clio Cup, said: "We've got the new Sport class, which will allow Clio Cup cars in, albeit with trackday tyres.

"We didn't want to be seen to rival the main series. In 2020 we are going to have it running in the Race Series with the performance equalised.

"It gives club racers the chance to buy a fantastic and very affordable car and run it in an interim year with us this year. We are quite excited and aim to get a grid of 25 cars."

STEPHEN LICKORISH

IN THE HEADLINES

NEW SUNOCO SERIES

The Volkswagen Racing Cup and the new-for-2019 Touring Car Trophy will both be eligible for the Sunoco 240 Challenge after Sunoco became the fuel supplier to both series. Mini Challenge driver Kyle Reid won the 240 Challenge last year and took part in the four-hour BMW Endurance Challenge support race to the Daytona 24 Hours, finishing 30th in a BMW M4 GT4.

MONOPOSTO TO MINIS

Monoposto 1000 frontrunner Tom Rawlings will graduate to the Mini Challenge with Jamsport this year, driving the car used by champion Ant Whorton-Eales last season. Rawlings, 17, took two wins in his debut season in circuit racing last year driving a Suzuki-engined Speads. But after assessing his single-seater options, he has decided to make the switch to tin-tops.

CLIO CUP'S CASH PRIZE

The last Renault UK Clio Cup champion will receive a new cash prize of £20,000. The winner of the Graduate Cup – for drivers aged under 23 in their first full Clio season – will be rewarded with a prize of £5000. Before Christmas it was revealed that 2019 will be the final year of the category.

HAUGER TO EUROPEAN F4

British Formula 4 race winner Dennis Hauger will switch to the German and Italian F4 series with Van Amersfoort Racing this year. The Norwegian took fourth place in the British standings driving for Arden in 2018. Fellow Red Bull-affiliated driver and 2017 team-mate Jack Doohan is expected to switch to an F3-level European series.

NIGHT OF CHAMPIONS

Winners of British motorsport's most prestigious titles attended Motorsport UK's annual Night of Champions awards evening at the Royal Automobile Club last Saturday. Among the winners was James Newbold, editor of Autosport Performance and Engineering, who was presented with the Young Journalist of the Year award.



JANUARY

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CLUB RACING'S GRASP IS EXCEEDING ITS REACH

Rockingham's closure presented an opportunity for clubs to streamline their calendars. Instead, there's a host of new and uninspiring additions

STEPHEN LICKORISH

This year's national racing calendar was always going to look different from the last one. The closure of Rockingham – it became the first UK circuit to disappear from the club scene since Ingliston back in 1995 – was always going to have an impact. But the consequences of the Northamptonshire oval's departure haven't quite aligned with what was expected.

In the aftermath of Rockingham's announcement, plenty of clubs reported that the process of securing dates for 2019 was even more difficult than usual. Hardly a surprise, given that 13 race meetings were held at Rockingham last year and alternative venues for these had to be found. Some clubs, such as the BRSCC, even floated the possibility of reducing the number of meetings they run in order to counterbalance the calendar logjam. Others suggested that some of the smaller venues could receive a welcome boost.

Now that the various permutations have been resolved and we have a provisional calendar – it's worth noting that all of the statistics used in this column are subject to change – one thing has become very clear. While Rockingham's closure provided an opportunity to declutter, that hasn't happened.

"FOUR OF THE SMALL VENUES HAVE EITHER LOST OUT OR RECEIVED NO BENEFIT"

Last year there were 193 national race meetings in the UK and Ireland (this doesn't include international events such as the visits from the World Endurance Championship or Blancpain GT Series). At this point, there are likely to be 195 this year – and it's still not clear if Lydden Hill will continue to organise a couple of meetings, having had its renovation plans knocked back.

This small increase can largely be accounted for by two factors, though. First, the fledgling Classic and Modern Motorsport Club has doubled its number of events from two to four as it attempts to expand. The other reason is the new Ferrari Challenge UK, which promises four Ferrari-only events.

So the clubs haven't palpably cut back post-Rockingham. With that in mind, you would perhaps expect smaller venues to have absorbed some of the demand. Again, you would be wrong.

Now, it must be noted that some circuits – like Thruxton – have very stringent restrictions on the number of noisy days that are allowed. Nevertheless, well established venues Silverstone, Brands Hatch and Donington Park have secured a significant chunk of the old Rockingham events: each of those circuits is hosting three more meetings than last year. That means the percentage of days of national racing being held at the three highest-profile UK circuits has now hit 43%, up from 39%.

Then, as things stand, Castle Combe, Knockhill and Mallory Park will all host fewer days of racing in 2019 than in 2018. With Combe and Knockhill this can be accounted for by the BRSCC not visiting either of these tracks following TCR UK's decision to explore different venues. Pembrey continues to host eight days of racing. In all, then, four of the small venues have either lost out or received no benefit from Rockingham's closure.

There is just one very notable winner from this year's calendar changes. The circuit to have the largest increase in race days for 2019 is... Anglesey. Yes, the Welsh circuit will benefit from eight additional days of race meetings this year (the next highest being Silverstone, with six more than in 2018).

Anglesey is clearly going through something of a renaissance. It has always been famed for its picturesque views, and it's a track that is popular with drivers – even if its slightly out-of-the-way location has proved a drawback in the past.

As evinced by the calendar, Anglesey has attracted some pretty significant race meetings for this season. The HSCC will visit North Wales for the first time and that is sure to be a very special event, since Formula Atlantic commemorations are planned. Also, one of the popular Citroen C1 24-hour races has moved from Rockingham to Anglesey. Add in the CSCC making a first visit since 2016 and that accounts for the growth. Popular events such as the Race of Remembrance will continue to feature.

But what does this all mean? Well, one point it certainly raises is the whole debate about whether there is too much national racing. Rockingham's closure presented clubs with a perfect opportunity to streamline their racing content and cut back to running fewer, more profitable meetings. That has not happened. Instead we have a plethora of new – and largely uninspiring – categories added to the fixture list (see Autosport, January 3 for the full rundown). All these do is clog up the calendar and dilute interest.

And only a small number of series have been axed to make way for these additions. If, by mid-season, we find some championships bemoaning poor entries, that would suggest rather more drastic changes need to be made in time for 2020's calendar. 🏁



THE BOY WHO COULD BE KING

Matt Greenwood became Britcar's youngest ever champion last season, but his sights are set on greater achievements than just domestic success

STEFAN MACKLEY

PHOTOGRAPHY BIG IMAGE



Even in 2019, endurance racing at national level is still considered a discipline for older drivers. The average age of the LMP3 Cup grid last season, for example, was 36. But there is at least one 16-year-old trailblazer who has dismissed those beliefs in style.

Matt Greenwood became the youngest winner of the Britcar Endurance Championship last season, in his first year of senior car racing. Before that, Greenwood had spent just two years racing cars: the Fiesta Junior Championship in 2017 and Junior Saloon Car Championship in '16. He only started karting seriously a year before that in the European Pro-Kart Endurance Championship.

"I didn't see it [age or lack of experience] as a barrier – I saw it as a challenge," recalls Greenwood, who had the added challenge of studying for his GCSE exams during the year. You're up against some great drivers and you have great battles against these drivers, but it's always been more about trying to catch up with all their racecraft."

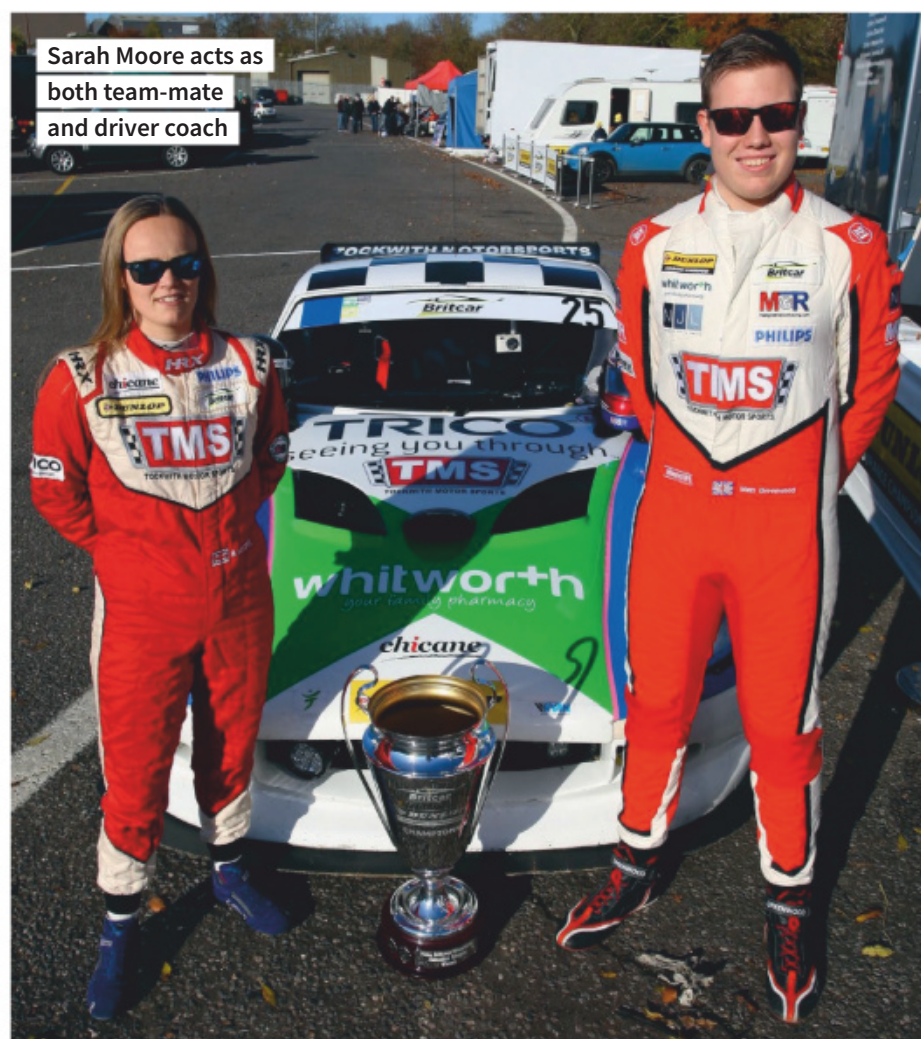
Even with the help of 2009 Ginetta Junior champion Sarah Moore – his team-mate and driver coach – Greenwood's achievement is remarkable. It was the Moore family team Tockwith Motorsport that ran the Ginetta G50, a car much more powerful than anything he had driven before. He also had to embark on much longer stints than he was used to, owing to the combination of a 50-minute and a two-hour race each weekend. "The team told me before the season it can be physically demanding so I was training hard in the gym," says Greenwood. "Throughout the summer we had quite a few hot weekends. Oulton Park, that was a really warm weekend but we ended up getting third place overall."

There were other barriers to overcome, such as finding a set-up for the car that would suit both drivers instead of optimising it for the preferences of just one. Learning to manage the tyres across a stint was imperative, as was time spent in the pits with driver changes. To save time, Greenwood would usually take over from the smaller Moore, who would race with a removeable seat insert.

The partnership with Moore, who had contested three Britcar races in 2017, proved crucial to Greenwood, as did support from Tockwith, which has considerable experience in the series.

"I think Matt's biggest learning curve was getting used to rear-wheel drive," says Moore. "Other than karting, he'd only raced front-wheel drive. One of the challenges was Silverstone when it started throwing it down with rain, and with the new track surface it was an absolute nightmare. He was really in at the deep end."

Having a relative novice in the car didn't trouble the team unduly. Moore and Greenwood only retired from one race all season – at Oulton Park, and that was caused by a problem with the left-rear wheel several laps from the chequered flag. The duo scored class wins at the first four rounds – at Rockingham, Silverstone on the Grand Prix layout, Oulton and Donington Park – and started to believe that the overall crown was achievable.



"GREENWOOD'S SUCCESS SIGNALS ANOTHER VIABLE CAREER OPTION FOR AMBITIOUS YOUNG DRIVERS"

"I would say probably after the second round we took a step back and said, 'We can win the championship,'" says Greenwood. "And I just tried to keep my head and mindset in the same place throughout the season. It didn't really dawn on me that I could be the youngest endurance champion."

Double class wins at the next two rounds at Snetterton and Silverstone International meant they only had to finish the first race at the final round at Brands Hatch's Into the Night Race to all but guarantee the title. But there was a potential stumbling block – Greenwood had never driven in the dark.

"Friday's test session was extremely foggy and dark, so going into Saturday's race was probably easier for him," recalls Moore. Greenwood says: "The guys came up with a great quote: 'even though the grass is black, doesn't mean it's Tarmac'"

A second-place finish in class was enough to give them the title, and Greenwood's success signals another viable career option for ambitious young drivers. More of them are looking towards endurance racing instead of going down the single-seater path in an often futile attempt to reach Formula 1.

Stuart Middleton and Will Tregurtha are also prime examples of this growing trend. Both enjoyed success in Ginetta Junior before making the jump straight into British GT for 2017, when they won the GT4 title together.

And other series are beginning to take note: the JSCC is understood to be considering endurance races this season, and that can only serve to further encourage drivers down that route. For Greenwood the sky is seemingly the limit, having become a member of Motorsport UK's AASE programme, which focuses on developing a driver outside the cockpit.

He's already planning an assault on Europe this season, and ultimately the Le Mans 24 Hours. "Ever since I did karting it was endurance karting, so it's something I've always been interested in," says Greenwood. "My dream is to win at Le Mans one day." ❦

FINISHING STRAIGHT

IN THE MEDIA • ARCHIVE • QUIZ

ALL LIVE BUT NOT ALL RIGHT



Motorsport was back in a big way last weekend. Early signs suggest the 2019 World Rally Championship has kicked off exactly where it ended last season – with three drivers from three different marques fighting for the crown. Fernando Alonso delivered a mesmeric drive to secure Wayne Taylor Racing victory in the Daytona 24 Hours deluge, plus Formula E resumed in Chile.

After a racing detox over the winter, it was fantastic to have the off-season banished in such emphatic style. And through WRC+’s All Live – the championship’s in-house broadcast of every single stage – it should have been nigh on impossible to miss the action. It’s now a full year since All Live launched, so how has it fared?

Well, on a number of levels, and particularly in the case of Monte Carlo, the answer is that the service is still an occasionally frustrating work in progress. Make no mistake, after a shaky start to life, by the end of last season the stream was close to being dependable, and a peerless way of following the climatic title battle that built through Wales, Spain and Australia.

But last weekend, it felt as though that progress had regressed. Judging by social media, and not just the frustration in the Autosport office, far too many people were

“IT’S PARTICULARLY PERTINENT TO FILL IN ANY BLANKS FOR FIRST-TIME WATCHERS”



greeted with ‘An unknown error has occurred’ message on their screens rather than cars sliding around the mountain hairpins.

The opening stage worked well enough, but for the rest of Thursday and then throughout Friday morning there was little joy to be had after what transpired to be a server issue – something that the WRC remains confident won’t rear its head again. But audience expectations are high these days (especially since the service costs £7.80 per month), so we would suggest that technical problems of this order require better signposting, to dissuade frustrated customers from taking to social media to complain (as they did).

There were other frustrations besides the visual drop-outs, best encapsulated by the coverage of the powerstage and Thierry Neuville’s finish with a flourish. Gunning for the five additional points for setting the benchmark time and perhaps securing victory, he (along with many other drivers) waited until after crossing the timing loop to worry about stopping the car in the tight space. The result was a flamboyant spin.



DEREK WARWICK ONE OF THE BEST NEVER TO WIN IN F1

Derek Warwick started 146 grands prix but never won one, and was recently ranked seventh in Autosport's list of the greatest F1 drivers never to win a race. He joins Edd Straw and Kevin Turner to talk about his decision not to join Williams, his sportscar success and life after F1 – as well as giving some great insight from the stewards' room.

Go to <https://www.autosport.com/podcast>



However, this wasn't satisfactorily explained by the commentary team, which might have left viewers new to rallying in a state of confusion – Neuville's Hyundai facing backwards might have been a more important development than it actually was. There's a case to be made that too much knowledge was assumed, and it wouldn't have taken long to explain Neuville's reasons for spinning. For the first round of the season, it's particularly pertinent to fill in any blanks for the first-time watchers.

All of this, of course, was taking place against a backdrop of a final-stage showdown between Sebastien Ogier and Neuville. They headed into the final leg with just

0.4 seconds between them. Since this was history in the making, it was difficult not to feel short-changed as each only enjoyed around 40s of TV time within the stage. The director instead cut to pre-recorded interviews, which killed the anticipation. More live onboard footage would have been the superior call.

Some of the blame here can be directed elsewhere. The powerstage is not a bespoke All Live product, rather a 90-minute broadcast that goes to all feeds. A timetable change for Monte Carlo meant the usual four or five-minute intervals between cars taking to the stage was reduced to three, leaving little time left over for real-time footage.

Ultimately, Monte Carlo offered the perfect set up of a mega battle for the win. There's huge potential for that to be exploited, but the first duty of the production team should be to communicate what's happening in the moment, not so much saying what they see but explaining it. The live footage might be showing spectacular action, but it requires context – it's not enough to expect the images to speak for themselves.

All Live is an ambitious product. If it can return to the consistent quality it was achieving towards the end of last season, with additional context for the viewer, it thoroughly deserves to be a success.

MATT KEW

WHAT'S ON

INTERNATIONAL MOTORSPORT

Bathurst 12 Hour

Intercontinental GT Challenge

Round 1/5

Mount Panorama, New South Wales, Australia

February 3

Live Motorsport.TV, Saturday 1830

Toyota Racing Series

Round 4/5

Taupo, New Zealand

February 2-3



FROM THE ARCHIVE

Ronnie Peterson (Lotus-Ford 76) tries to find somewhere to sit for the drivers meeting at the 1974 South African Grand Prix. The Swede had a difficult qualifying

at Kyalami, starting from 16th place on the grid, and on the opening lap of the race a stuck throttle punted him into the back of team-mate Jacky Ickx. Peterson rejoined the action, but broken steering forced him

out a lap later. A pall had been cast over the weekend by the death in pre-event testing of Peter Revson (Shadow-Ford DN3A), prompting the withdrawal from the grand prix of the Shadow team.



TEST YOUR KNOWLEDGE

QUIZ

WHO, WHAT, WHERE, WHEN?



WHO IS THIS?

Blessed by Saint James, this one-of-a-kind racer's career ended up being defined by one fateful moment.

Having made the pilgrimage to hallowed racing ground, he slotted in straight away and flew the flag for his nation with a move into the big time. He wheeled his way into the points a year later, but it was a mismatched clash with a heavyweight champ that brought infamy.

He managed to ram his way into a final season, but economic crisis back home forced him to lower his ambitions.

Tailored fine fabric helped him take an endurance shot, but a move north earned greatest success as he steered a prancing horse to glory. This led to a single-seater return as he joined the oval side of a split and took a legend to victory in Sin City.

He joined some Masters, took to the stages and went trucking as his long career meandered to a close.

ON THIS DAY

1 Today is JJ Lehto's birthday. What car was he driving when he scored his only Formula 1 podium?

2 Jo Bonnier was born on this day in 1930. Where did he score his only F1 world championship win?

3 Mauro Baldi turns 65 today. Who were his team-mates for his 1994 Le Mans win?

4 Jean Alesi set the pace in pre-season testing at Barcelona on this day in 2001. What was he driving?

5 Who made his F1 test debut with a one-off appearance for Super Aguri on this day at Valencia 2007?

NAME THE HELMET



LAST WEEK'S ANSWERS

Who, what, where, when? Michael Schumacher, Ligier-Renault JS39B, Estoril, December 12 1994. **Who is this?** Heinz-Harald Frentzen. **On this day 1)** Luiz Razia. **2)** 5th. **3)** Tiago Monteiro and Narain Karthikeyan. **4)** He was the first Rookie of the Year winner. **5)** Henri Toivonen. **Name the helmet** Karl Wendlinger.

IN OUR NEXT ISSUE

CHANDHOK ANSWERS F1
2019'S BIG QUESTIONS



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