

# AUTO

INTERNATIONAL JOURNAL OF THE FIA

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#### THE FIA

The Fédération Internationale de l'Automobile is the governing body of world motor sport and the federation of the world's leading motoring organisations. Founded in 1904, it brings together 236 national motoring and sporting organisations from more than 135 countries, representing millions of motorists worldwide. In motor sport, it administers the rules and regulations for all international four-wheel sport, including the FIA Formula One World Championship and FIA World Rally Championship.

#### THE FIA FOUNDATION

The FIA Foundation is an independent UK-registered charity that supports an international programme of activities promoting road safety, the environment and sustainable mobility. It was established in 2001 with a donation of \$300 million from the FIA and is governed by a Board of Trustees. Among its activities, the Foundation participates in various UN road safety and environment-related partnerships and is a member of the UN Global Road Safety Collaboration.

#### THE GLOBAL INSTITUTE

The Global Institute for Motor Sport Safety is an international organisation based in Switzerland that undertakes research to improve motor sport safety worldwide. As the safety research partner of the FIA, it conducts practical research at all levels of motor sport, from professional categories to grassroots racing. It aims to provide motor sport with the means to operate as safely as possible, and to use safety research for the benefit of public roads and society in general.

*Dear reader,*

The cover of the first AUTO of 2018 is given over to a débutante, in the shape of the new car that will be used in the FIA FORMULA E CHAMPIONSHIP from its fifth season. It was launched at the 88th Geneva Motor Show and represents a leap into the future, not just because of its futuristic lines but also because of how this championship heralds a new, more sustainable form of mobility.

Driver safety is always a top priority at the FIA and we have two in-depth technical articles on this topic, one dealing with a classic item, the helmet, and another with the very latest safety device, the Halo.

Our series of profiles of the most important players in the automotive world continues with DR DIETER ZETSCHE, the man who, for over a decade, has led the Daimler Group in its activities aimed at both the road and the race track in Formula One.

I am also pleased to host in AUTO an interview with a young driver to whom, last December, I presented the FIA President's Award: BILLY MONGER. Not even a year on from the accident that made such a profound mark on him, he has managed to get back behind the wheel of a single-seater. It's an example of genuine courage and he is a source of inspiration, not only to other athletes, but to everyone.

At the last FIA General Assembly, five new Commission presidents were nominated: in this issue we outline their vision and objectives for the next four years, and we have also asked the Secretary General for Motor Sport, PETER BAYER, to give an overview of the situation in the many FIA championships.

Our look back in time features ALAN JONES, the first driver to bring the Formula One World Championship title to the famous Williams team, and also the Ford GT40, a car that characterises an unforgettable era of the great endurance races. Finally, Ecuador is the country chosen in this edition as part of the section dedicated to the FIA family.

These are among the main features you will find in this issue: I hope you like it and, as usual, I invite you to send in ideas and suggestions to make it even better.

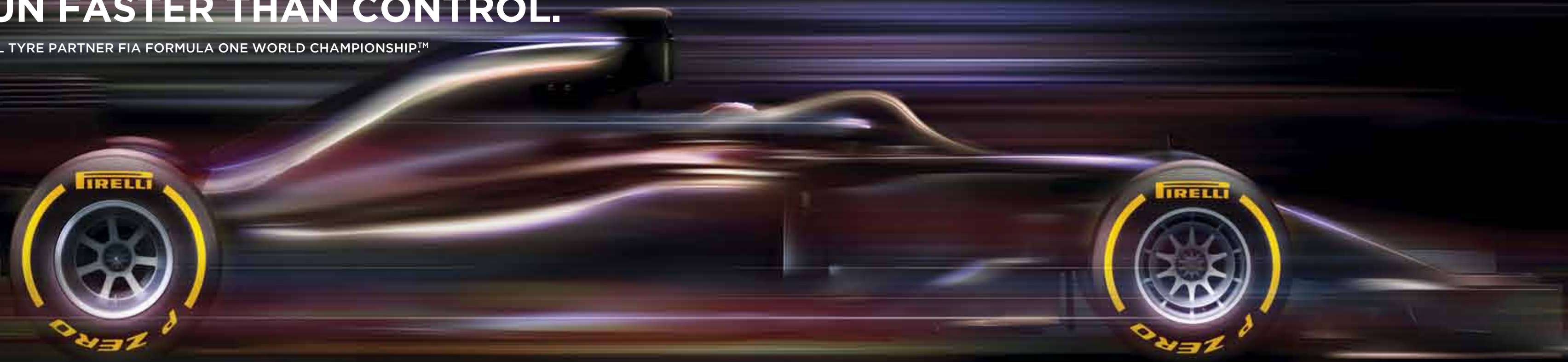
*Enjoy the read!*



JEAN TODT,  
FIA President

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## Dan Gurney

The American racer, constructor and innovator was a source of inspiration to many, including FIA President Jean Todt

## WRC, RALLY SWEDEN HYUNDAI'S HAPPY PLACE

Andreas Mikkelsen uses the snowbanks on Rally Sweden to his advantage as he powers his Hyundai i20 Coupe WRC to a first podium finish for the South Korean manufacturer. He and team-mate Thierry Neuville helped turn around the fortunes of the Hyundai Shell Mobis World Rally Team in Sweden after a disappointing start to the season on Rallye Monte-Carlo. New

series leader Neuville and co-driver Nicolas Gilsoul led almost from the start to score their first win of 2018, while Mikkelsen and co-driver Anders Jæger were third on only their fifth appearance as a Hyundai Motorsport crew. Team-mate Hayden Paddon was fifth to complete a strong weekend for the team, which led the manufacturers' points heading to Rally Mexico.

**NO PLACE LIKE HOME FOR MIKKELSEN**  
Much of the action on the Friday of Rally Sweden took place in Norway – and it's fair to say that Andreas Mikkelsen was looking forward to performing in front of an enthusiastic home crowd. "There are lots of friends coming to watch and lots of Norwegian flags," said the third-place finisher. "It gives you a bit extra motivation."



The first new Jaguar D-type race car built in more than 60 years made its world debut at the Salon Retromobile show in Paris in February. Jaguar Classic has re-started production of the iconic car, which won Le Mans three times between 1955-57, in Coventry. The engineering prototype that went on show was the first racing D-type produced in 62 years and just 25 new

examples of the car will be hand-built at Jaguar Land Rover Classic Works in Warwickshire, England. Every aspect of the new six-cylinder XK engined models will be created to original specification. "The Jaguar D-type is one of the most iconic and beautiful competition cars of all time and it's just as spectacular today," said Tim Hannig, Jaguar Land Rover Classic Director.

**D-TYPE AMBITION FINALLY FULFILLED**  
With its new run of D-types, Jaguar Classic is ready to finish the job first planned by the car maker in 1955. Back then, Jaguar intended to build 100 D-type models but only 75 were completed. Now it is fulfilling the company's original ambition by creating 25 all-new, period-correct sports cars, starting this year.



01

# NEWS

In this issue: car industry buoyed by sales in 2017; bumper 36-car grid unveiled for WEC's 'Super Season'; F2 teams get first taste of new Halo-shod car; Hyundai sets autonomous driving milestone; eye-tracking research breakthrough

The world's best-selling SUV in 2017 was Nissan's X-Trail/Rogue model with global sales of 814,495, up six per cent on 2016.



## NEWS Car industry enjoys boost from 2017 sales

The automotive industry received a boost in 2017 with 86.05 million units sold according to data analysts – an increase of 2.4 per cent on the previous year.

Global demand for SUVs continued to rise, accounting for a record market share of 34 per cent, with sales particularly strong in China, North America and Europe. Results for the 52 markets analysed showed that 27.85 million SUVs were sold in 2017, a 12.7 per cent increase on 2016.

Subcompact vehicles were the most popular in the Asia-Pacific region and Latin America, while city cars continued to secure the largest market share in Japan.

"The automotive market performed well in 2017, with established economies maintaining growth while developing markets like Russia and Brazil returned to growth following declines the previous year," said Felipe Munoz, JATO's Global Analyst. "The results show that despite the diesel crisis and localised issues such as Brexit causing European uncertainty, the automotive market as a whole is continuing to grow."

Analysts found that Europe, parts of Asia Pacific and Latin America enjoyed the biggest growth in sales in 2017, while other significant markets including the US, UK, Mexico and South Korea saw a decline, and there was slowing growth in China.

Brazil contributed significantly to the industry's growth with a 9.4 per cent increase in sales, while India was not far behind on 8.8 per cent, meaning it could soon pass Germany to become the fourth largest automotive market in the world.

The Ford-F Series was once again the world's best-selling car as it further exerted its dominance over the Toyota Corolla, which came in second. The Ford F-Series took the top spot as a result of continued strong US demand, which accounted for 80 per cent of its total volume. Meanwhile the Nissan X-Trail/Rogue was the world's best-selling SUV and the fourth best-selling vehicle overall with an increase in sales of 6.5 per cent.

Estimated data showed that gasoline cars and LCVs continue to dominate the market in 2017, with a 72.5 per cent share. AFVs showed strong growth, with a 27.7 per cent increase, while diesel sales fell by 3.7 per cent.

FIA President Jean Todt (middle row, centre) and delegates at the Global Engagement and Empowerment Forum in South Korea.



## NEWS FIA president calls for global development on road safety

FIA President Jean Todt outlined his aims for greater road safety when he addressed the Global Engagement and Empowerment Forum (GEEF) in South Korea in his role as the UN Secretary-General's Special Envoy for Road Safety.

Co-hosted by the Institute of Global Engagement and Empowerment and the Ban Ki-moon Centre for Global Citizens, the GEEF in Seoul was run on the theme of 'Putting People and Planet at the Centre'.

During his participation in a session on 'Sport and Partnerships for Sustainable Development and Peace', President Todt emphasised the importance of stakeholders working together to achieve the 2030 Agenda for Sustainable Development, including the 17 Sustainable Development Goals.

He spoke about the FIA High Level Panel for Road Safety, a key initiative that he and the FIA have implemented. By gathering some 40 stakeholders from the private sector, international institutions, local government and institutional leaders, the panel supports a broad range of activities to promote an innovative approach to curbing the loss of life on our roads.

One initiative that has been supported by the panel is the creation of a Road Safety Trust Fund housed within the UN. President Todt said the UN Secretary-General António Guterres's recent approval of the fund showed how important the initiative's stakeholder approach has been. He emphasised that this small but important victory takes us one step nearer to closing road safety's funding shortage and reducing global road-related fatalities and injuries.

## NEWS Infiniti the latest brand to commit to electric future

Infiniti has become the latest automotive brand to commit to a largely electric future, with the announcement that the firm will offer electric powertrains from 2021 and that by 2025 it expects more than half its sales to come from electrified vehicles.

Last year, Swedish manufacturer Volvo revealed that from 2019 onwards every car it launches will have an electric motor, and Renault/Nissan Alliance brand Infiniti is similarly committing to an electric future.

Speaking at January's Automotive News World Congress Nissan Chief Executive Officer Hiroto Saikawa said that Infiniti will offer a mix of pure electric vehicles (EV) and e-POWER vehicles – demonstrating the full range of low-emission vehicle technology available to the brand as part of the Nissan company.

Infiniti's e-POWER technology features a small gasoline engine that charges a high-output battery, eliminating the need for an external charging source and providing the convenience of refuelling with gasoline while offering the same driving experience as a pure EV.

As a result of this emphasis on low-emission technology, Saikawa added that by 2025 he expects more than half of Infiniti's global sales to be comprised of electric vehicles.



Infiniti's Q Inspiration Concept could benefit from a switch to electric from 2021 onwards.



Hyundai's level 4 autonomous test was conducted on public highways at speeds of up to 110km/h.

## NEWS Hyundai sets autonomous driving milestone

A fleet of Hyundai Motor Company's next-generation fuel cell electric vehicles have completed a self-driven 118-mile journey from Seoul to Pyeongchang – the first time that Level 4 autonomous driving has been achieved with fuel cell electric vehicles.

Until now, autonomous driving has been demonstrated only on selected sections of South Korean domestic roads and at limited speed. This is the first time that autonomous vehicles have operated on public highways at 110km/h, the maximum speed allowed by law on the nation's highways.

Three Hyundais completed the journey in February all based on NEXO (above), the firm's next-generation fuel cell electric vehicle that was scheduled to be released in March. All the vehicles were equipped with level 4 self-driving technology as defined by the SAE international standards and equipped with 5G network technology.

Hyundai has conducted a number of highway test drives amounting to hundreds of thousands of miles travelled, which has enabled the accumulation of data to enhance the performance of its self-driving vehicles. Jinwoo Lee, Head of the Intelligent Safety Technology Centre at Hyundai Motor Group, said: "Hyundai's philosophy for developing autonomous driving technology is to provide the highest level of safety combined with a high standard of convenience that our customers expect."





**NEWS** Largest-ever WEC grid unveiled for 'Super Season'

Details of 36 full-season entries for the 2018-19 FIA World Endurance Championship 'Super Season' have been revealed – the largest-ever grid for the series since its launch in 2012.

Proving that the WEC is in good health, the grid will be made up of teams representing 12 different nations. In LMP1 there will be 10 entries, including two from Toyota and five private teams entering a total of eight cars.

There will be 10 entries in LMGTE Pro, with two from each of the manufacturer entries – Aston Martin, BMW, Ferrari, Ford and Porsche. In LMP2 there will be seven cars, and nine in LMGTE Am.

Organisers have said the 'Super Season' will be exceptional not just for the quality and diversity of its entrants, but also because it will be the only occasion on which it is run. Uniquely, it will include two visits to the Le Mans 24 Hours this year and again for the season finale in 2019.

FIA President Jean Todt said: "I am very pleased to see the strong entry list that has been unveiled for the FIA World Endurance Championship 'Super Season'. The WEC, through the partnership between the FIA and the ACO, continues to deliver a strong and stable platform for world-class competition."

Pierre Fillon, President of the Automobile Club de l'Ouest, added: "Endurance racing is in excellent health, as we can see from this capacity entry list for the WEC, and by the continued high level of interest in Le Mans. It is very rewarding to see so many competitors moving from the ELMS

The WEC's bumper grid was unveiled in Paris, above. Right: BMW is among the top makes aiming for title glory.



to the WEC, or from LMP2 to LMP1, which demonstrates how well our pyramid of endurance racing works. We are confident this transition year will lead us towards an even brighter and stronger future."

The 2018/19 WEC brings together some of the best and most historic motor sport venues across the world on which no fewer than six of the world's leading automotive manufacturers will be fighting it out for title glory.

The season opens with the Total 6 Hours of Spa-Francorchamps (Belgium, May 5), moves on to the Le Mans 24 Hours (France, June 16-17) and the 6 Hours of Silverstone (Great Britain, August 19) in Europe before heading overseas for the 6 Hours of Fuji (Japan, October 14) and the 6 Hours of Shanghai (China, November 18).

After a brief winter pause, the 2019 part of the season begins with a return to Florida for the 1500 Miles of Sebring (USA, March 16-17) before coming back to Europe for another edition of the Total 6 Hours of Spa-Francorchamps (May 4) and the Le Mans 24 Hours (June 15-16).

**NEWS** Latin women endure public transport woes

The majority of women using public transport in Latin American cities have witnessed or experienced sexual harassment, according to a new report funded by the FIA Foundation and CAF, the Development Bank of Latin America.

Launched at the Transforming Transportation Board in Washington DC, The Ella Se Mueve Segura (She Moves Safely) study examined the patterns of public transport used by women in Quito in Ecuador, Buenos Aires in Argentina and Santiago, Chile.

The report concludes that women use public transport more than men yet feel more vulnerable. It calls for those responsible for urban transport to recognise such issues and improve women's experiences to achieve sustainable development.

In Buenos Aires, seven out of 10 women will not travel on public transport alone and 89 per cent have experienced sexual harassment. Half of women in Santiago change their routes to avoid specific areas of the city. The majority of women and men using public transport reported experiencing or witnessing sexual harassment.

Sheila Watson, FIA Foundation Deputy Director and Director of Environment and Research, said: "This research shows that traditional systems of public transportation are failing to keep women safe. As a result, they are more likely to avoid public transport, which undermines our ambition for sustainable mobility and development. This must be addressed, and this report begins to show how that could be done."

Bella Dinh-Zarr, Vice-Chairman of the National Transport Safety Board, discussed the importance of women working in transportation to better shape and recognise their needs.

Bella Dinh-Zarr of the National Transport Safety Board praised the FIA Foundation-backed report on public transport.



**NEWS** Eye-tracking research reveals lack of driver focus

Car drivers take their eyes off the road for over two miles in a one-hour journey while travelling in urban traffic, according to new eye-tracking research conducted by automaker Peugeot.

The French car manufacturer studied multiple drivers undertaking 25 identical six-mile journeys, using special glasses worn by them to analyse exactly where their eyes looked.

The reports showed that, on average, drivers have their eyes off the road for seven per cent of the time. During a one-hour drive at 30mph, that equates to drivers travelling a distance of more than 3.3km without looking at the road, or the length of almost 32 football pitches.

Peugeot commissioned the study to highlight its i-Cockpit system, which has a smaller steering wheel and raised instrument panel to promote less eye movement during driving. The firm says that in its 3008 SUV, the amount of time drivers had their eyes on the road improved from 93 to 95 per cent thanks to the system.

The positioning of the speedometer in the eyeline of the driver also meant that drivers of the all-new 3008 SUV checked their speed three times more often than in comparable SUVs.



Peugeot's focus test used special glasses featuring six cameras to track the eye movements of drivers every 0.05 seconds.

The testing was undertaken using Tobii Pro Glasses 2, which have six small cameras that specifically map where the retina is looking every 0.05 seconds. The driving route was carried out on a variety of roads, which incorporated a range of speed limits and road types.

"We all know the dangers of taking your eyes off the road, whether to adjust the radio or the temperature in the car," said Peugeot UK Managing Director David Peel.

"When you add the continued distraction of

mobile phones, talking to passengers, something catching your eye outside the car and even eating or drinking a coffee, it's easy to see how the average driver could be in control of a car yet not be looking at the road for over 3,350 metres in a one-hour journey," he added.

"[For drivers], having all the critical information within their field of vision enables more information to be read easily and quickly. But these findings highlight that we – the drivers – still need to play our part in road safety."

**NEWS** FIA Foundation calls for child rights to be a priority

The FIA Foundation called for child and adolescent rights to be a development priority when it attended the World Urban Forum in Kuala Lumpur, where global leaders debated steps to implement the UN's New Urban Agenda for city development over the next two decades.

Opening last month's conference, Zoleka Mandela, Global Ambassador for the Child Health Initiative, described the forum as an "opportunity for action" to secure a safe and healthy journey to school for every child.

At the forum, world leaders including Soumini Jain, Mayor of Kochi, India signed up to the #EveryLife campaign to place children at the heart of the urban decision-making process. Meanwhile the Child Health Initiative showcased

its collaborative approach to advocating child rights by bringing together organisations specialising in child health, air quality and road safety at a dedicated side event.

FIA Foundation Deputy Director Avi Silverman said: "If we are to make our cities truly liveable, to tackle climate change and ensure health for all, we must ensure that the rights and needs of children are at the forefront of urban policy making worldwide. This is what we are calling for with the #EveryLife campaign. The principles and solutions to protect our children, to empower them, and to provide a safe and healthy journey to school are well known and readily available. What's needed is the political commitment and the funding – it's time to deliver."



Speakers at the World Urban Forum in Kuala Lumpur, where child rights were high on the agenda.

## NEWS Teams get first taste of new Halo-shod F2 car

The FIA Formula 2 field sampled the new Halo-equipped 2018 car for the first time during a snowy shakedown at Magny-Cours in February.

Having taken delivery of their new 3.4-litre turbocharged V6-powered machines at the end of January teams have since been hard at work to get ready for the upcoming season.

Speaking at the test in France, Campos Racing's Luca Ghiotto said: "This car is a clear step from the previous one; the grip is amazing! Generally, it's an improvement in all areas."

The new F2 car – the first the F1 feeder series has introduced since 2011 when it was known as GP2 – has been designed to resemble the new generation of F1 machinery.

As with the previous generation, the chassis has been produced by Dallara. In keeping with F1 styling the car is more aggressive looking than in previous years, and larger. The car is 159mm longer than its predecessor, as well as being 32kg heavier (including with driver). Its width, 1900mm, is unchanged from the previous generation. The 2018-spec F2 car will feature a 3.4-litre turbocharged engine supplied by Mecachrome. It is expected to produce 620bhp at 8,750rpm, a departure from the GP2/11's 4-litre naturally aspirated V8.

The car's DRS, virtual safety car and electronic systems have all been upgraded alongside an updated Magneti Marelli-supplied ECU, which has the scope to be developed for future seasons to control costs.

FIA F1 Race Director and Director of the FIA Single Seater Department Charlie Whiting said the new car is, "an important moment for the FIA as we complete the single-seater pyramid."

"For F2 we needed a car that will not only educate, but will allow the drivers that are most ready for Formula One to shine brightest."

"The car has been developed to include improved aesthetics, as well as bringing the safety level up to the highest standards."

Speaking about the inclusion of the Halo front impact protection device on the car, FIA Safety Director and F1 Deputy Race Director Laurent Mekies added: "After the decision to go ahead with Halo in F1 in 2018, it was clear we wanted to cascade it down to the other single-seater formulas."

"It is the first step towards a very rapid cascade into the other single-seater formulae. It will arrive Formula E midway through this year, for season five, and then it will be implemented in Formula 3 in 2019."

Formula 2's teams have had their first runs in the 2018 car fitted with the new Halo head protection device.



Mayor of London Sadiq Khan speaks to school children in New Delhi, India during a visit to an FIA Foundation air quality project.



## NEWS Mayor of London visits Foundation air quality project

The FIA Foundation recently welcomed the Mayor of London, Sadiq Khan, to its student air quality exchange project in New Delhi, India.

The foundation funded an air quality exchange project between schools in London, Delhi and Nairobi to help students learn about their environment and share their experiences.

Visiting the school during his tour of India, the Mayor met with students who demonstrated air quality testing and performed a play on air.

Levels of nitrogen dioxide, a harmful vehicle exhaust pollutant, were tested by students, measuring the air quality around their schools and local highways. Students learnt about the impact of air pollution and shared their experiences between the schools, exploring the similarities and differences between their cities to help develop critical thinking about the ways to enable local changes to address the global challenge on air quality.

Sheila Watson, Deputy Director of the FIA Foundation, said: "We know how bad it is for our children to breathe dirty air, and the terrible impact it can have on their long-term health and life chances. It is vital that those most affected by dirty air – children – make their voices heard."

"Not only are the children learning about air quality, but they are also communicating with each other, joining their voices in demanding clean air and safe journeys to school. We at the FIA Foundation add our voice to that call for action and we pledge ourselves to continue to support every child's right to breath clean air, wherever they live or go to school."

Formula One steward Garry Connelly and (below) FIA Formula One Deputy Race Director and head of the FIA's Safety Department, Laurent Mekies.



Above: Three-time Le Mans winner and former FIA steward Allan McNish and (left) FIA Deputy President for Sport Graham Stoker.

## NEWS Le Mans hosts international safety training event

A two-day training seminar involving 20 extrication teams from circuits across Europe took place at Le Mans in January.

The course, which was hosted by the Fédération Française du Sport Automobile (FFSA) and led by extrication expert Dr Jean-Jacques Issermann, provided tuition to medical and extrication teams.

There were practical sessions enabling medical crews to practice extrication techniques on the latest race cars. These included four chassis fitted with the new Halo head protection device – two F4 cars, one F2 and one Formula E. A number of sports cars and rally cars were also available to work on.

"We had specifically invited F1 teams to the training," said Issermann. "This gave the teams the possibility to extensively practice extrication from a Halo-fitted vehicle. They found no particular difficulty doing that, both theoretically and practically. Although the driver to be extricated from the car must indeed be lifted higher than before due to the Halo, the procedure and actions are practically the same."

Teams were trained from countries across Europe including France, Spain, the UK, Portugal, Belgium, Italy and Germany. They will now pass on the knowledge gained to teams in their own regions.

Prior to the seminar the FIA hosted a training session for leading Chief Medical Officers (CMOs) to become trainers in their own regions. Seven experts were invited to Le Mans with representatives from Turkey, Hungary, Mexico, Canada, Singapore, Bahrain and Brazil taking part.

The session was conducted by FIA Medical Delegates and Medical Affairs staff, with additional presentations by participants. They will become FIA trainers of future CMOs and Deputy CMOs.

Extrication teams from across Europe were given a demonstration on working with cars fitted with the new Halo device.



## NEWS FIA motor sport stewards meet in Geneva

The second edition of the FIA International Stewards Programme was held last month in Geneva, gathering stewards from all disciplines of motor sport for a two-day schedule of training.

The inaugural meeting of FIA stewards 12 months ago was heralded a success by the federation and this second edition represented a step forward with greatly increased attendance by stewards from across the full spectrum of motor sport disciplines.

A message from FIA President Jean Todt opened proceedings and reaffirmed the significance of stewarding within the FIA. "Motor sport stewarding is a complex challenge and we must continue to target excellence," said Todt. "We hope that this seminar will help us to set the benchmark of international stewarding."

FIA Deputy President for Sport, Graham Stoker, echoed the significance of the initiative at the event, saying: "The people gathered here represent the top stewards around the world, the senior officials. I think this edition has really progressed the initial idea of what this programme could be after a great start last year."

The second edition of the FIA International Stewards Programme saw attendance triple from the inaugural event in 2017. More than 270 participants from 65 ASNs took part in the three-day course, designed as an educational tool to support the growing network of stewards and officials around the world.

For the first time, ASNs were encouraged to bring two of their top national stewards to join the programme, and the 10 most outstanding will be selected to become International Stewards. The event was also hailed as the first step towards the 'Global Pathway for FIA Stewards' – a concept that aims to share the collective experience from the highest world championship levels all the way to the grassroots.

The steward event was preceded by the FIA's Race Directors' Seminar, an event that brought together more than 110 experts – including 70 race directors – from across the FIA's championships and international series.

Charlie Whiting, FIA Director of Single-Seater Department and FIA Director of Formula One, and Laurent Mekies, FIA Safety Director, were present to discuss the latest changes to the International Sporting Code, while the second part of the seminar focused on practical case studies during which race directors from a wide range of motor sport disciplines took the opportunity to exchange experiences.

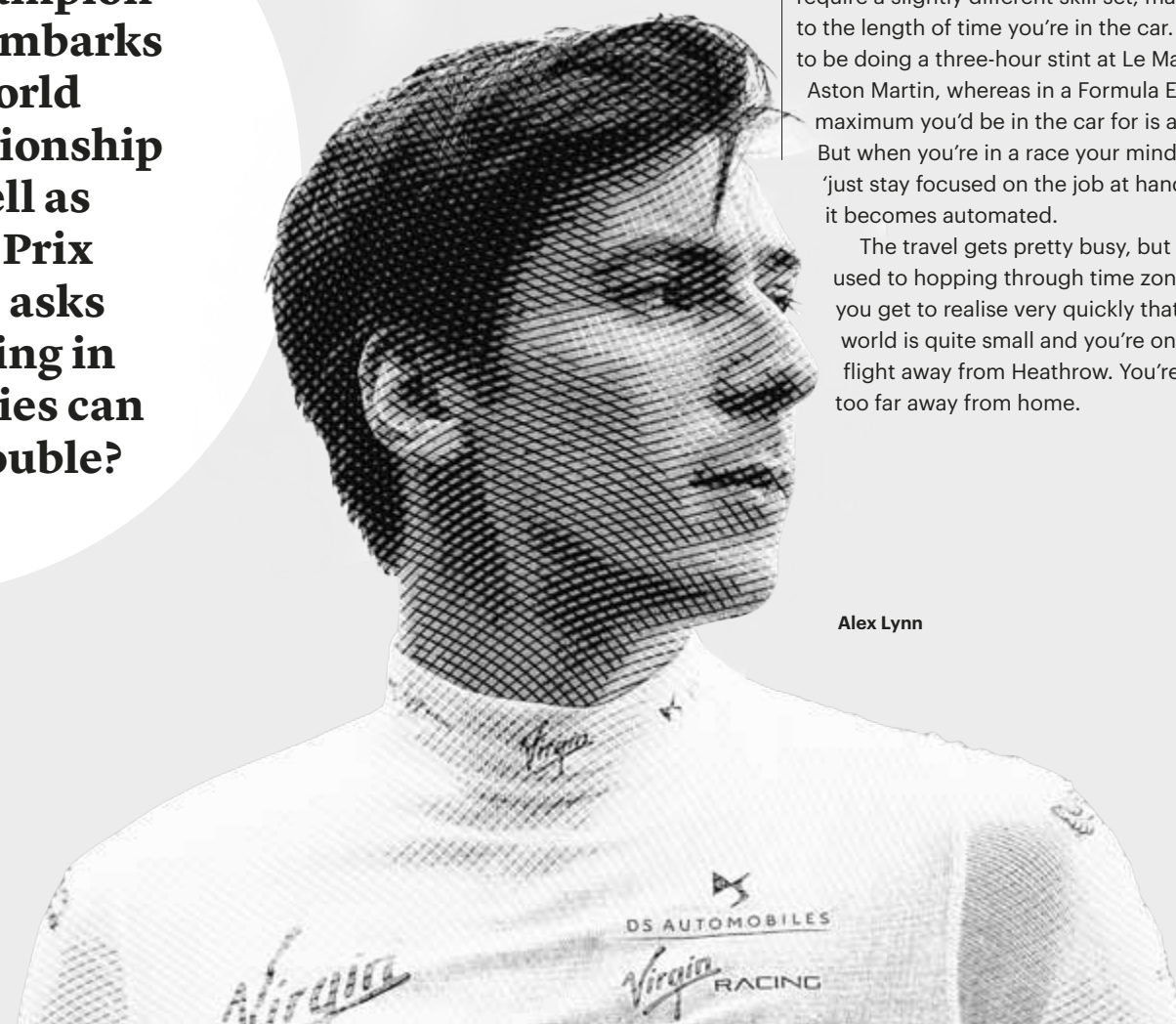
"I think the most important thing about this seminar is to open everybody's eyes to different ways of doing things" said Whiting. "That is where the benefit lies."

QUESTION:

# CAN A DRIVER RACE IN MULTIPLE SERIES AND WIN?

02

As two-time F1 champion Fernando Alonso embarks on a full FIA World Endurance Championship campaign as well as a 21-race Grand Prix schedule, AUTO asks whether competing in more than one series can lead to double trouble?



Alex Lynn

## ALEX LYNN FORMULA E AND GTE PRO DRIVER

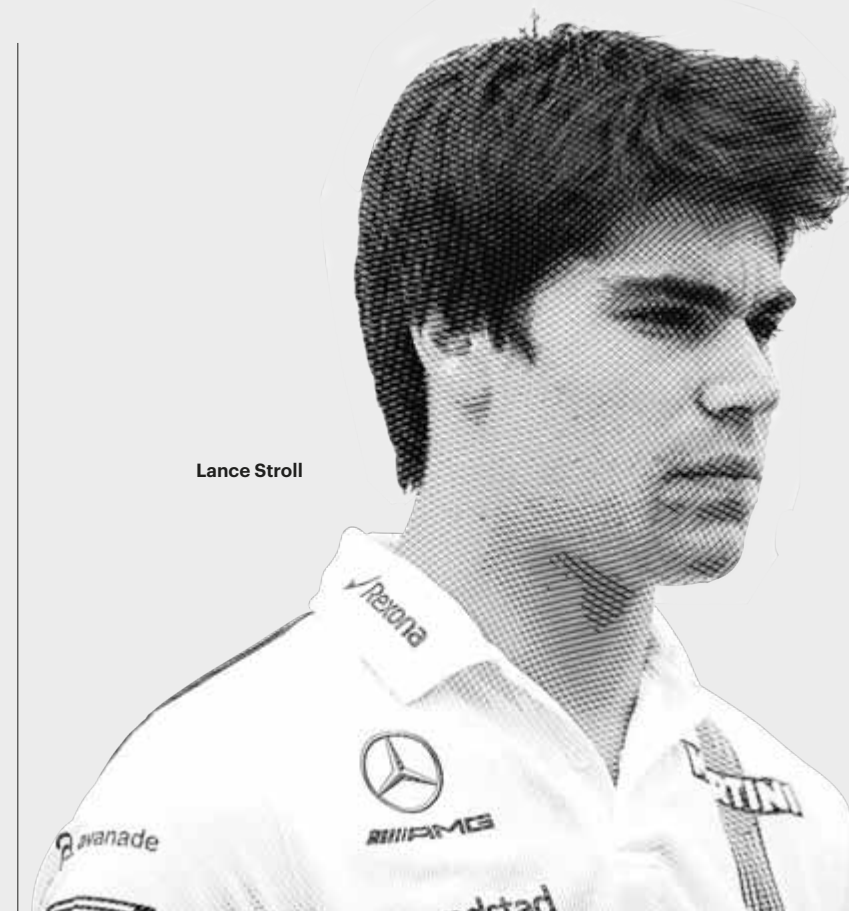
Of course they can, otherwise I probably wouldn't be in a job! Because Formula E and GTE Pro are so vastly different – because the skills needed to compete at the highest level in both are quite different, apart from the normal factor of driving a race car – it sort of cancels out the transition.

Obviously one's a sprint-race format, the other is endurance racing; one's an electric car, the other is a normal combustion engine car. I'd almost compare it to being like tennis and badminton: they're sort of the same but also quite different.

As for adjusting between crews, it's just more names to remember. Their expectation of me is the same – they expect me to give my absolute everything whenever I'm with them. You have to divide your love a little bit, and when you're with each respective team they're the most important at that moment.

My weight is more important in Formula E than it is in endurance racing. In training for Formula E, being as light as possible is definitely the main priority. In endurance racing you need to have great physical fitness to be able to compete in races like the Le Mans 24 Hours and the Nürburgring 24 Hours. Those circumstances require a slightly different skill set, mainly due to the length of time you're in the car. I'd expect to be doing a three-hour stint at Le Mans in the Aston Martin, whereas in a Formula E race the maximum you'd be in the car for is an hour. But when you're in a race your mind says 'just stay focused on the job at hand' and it becomes automated.

The travel gets pretty busy, but you get used to hopping through time zones and you get to realise very quickly that the world is quite small and you're only one flight away from Heathrow. You're never too far away from home.



Lance Stroll

As for the physical toll, I guess the best training for being a race car driver is to drive race cars. It's like any other sport – you want to try to do your sport as your training, and you want to do it every day.

Ultimately, it's about what kind of commitment you want to make. Some drivers want to be at home with their wife and kids between the races, and then there are drivers like me who are young and hungry, who want to drive every day. So if there's a possibility, we're ready to do it.

## LANCE STROLL FORMULA 1 AND SPORTSCAR DRIVER

I just wanted to give Daytona a go this year – nothing to do with Formula One preparation, it was really just to change it up and try something different.

I did it once before, in 2016, and I remembered how much fun I had then, so I just wanted to give something else a go in the winter break this year. It's a whole different mindset. It's great to have the hope of winning a race in the back of your mind. There's more to life than just driving in Formula One. In motor sport there are a lot of cool races out there and a lot of cool things to do.

They are very different disciplines. The 2017 F1 car I drove is very different to the Oreca LMP2 car that I drove in Daytona, but at the end of the day it's a car and you have to adapt. You always learn something here, something there; that's why I'm a fan of driving. I just love to drive, and I think that there's something that can be learned whatever you're driving.

Is there anything I can apply in F1 that I learned at Daytona? Not really, but experience in a car is all good experience; any seat time helps. There are some big differences in that type of racing – 24-hour races as opposed to grands prix. The strategy is very different, the whole concept is very different, but it's another race and it allowed me to get in the car and do what I love to do, which is compete.

Whatever you compete in, there are always pros and cons. In F1 I think sometimes it's a shame that it has to be so political and it has to be the way it is, but then at the same time, because it's so hyper-intense, it makes any satisfaction that much greater. It goes both ways, but that's what keeps me motivated, knowing how awesome it is to achieve a good result in Formula One with all the best drivers and the best teams in the world.

It's unlike anything I've ever experienced in other categories, so I'm aiming to repeat that this year, hopefully more often and more consistently. But I can say that I know what it feels like to achieve good results and I want to do more of that.

## FELIX ROSENQVIST FORMULA E AND SUPER GT DRIVER

The definite answer is yes; we see many people racing in multiple series these days. It's probably a bit of a trend coming back – back in the day, drivers used to combine a lot of different things, which I think is good. I also think especially for the fans it's good to see their drivers on more possible occasions than in just one championship. It is possible and we will see people winning championships and competing in other ones as well.

What are the difficulties? Well, when you commit to a championship there are a lot of things between the race calendar dates that you need to do. You need to spend time in the workshop and with the team, you need to do simulator preparations, you need to do seat fitting. You have private test days, official test days, a lot of things coming along the way which, when you first glimpse them on a calendar, seem quite easy, but then you realise you have a logistical nightmare to put the two programmes together.

Then, when it comes to the travel, there's a lot of jet lag and there is no cure for that, it's just something you need to deal with. There are a lot of sleepless nights. For example, I'm driving in Japan in Super GT, and every time you go there you normally struggle the first or second night, staying awake until four o'clock and then finally falling asleep. You need to wake up after one, two, three hours and on the first day you're dead and you can't focus, so you need to make sure that you're there well ahead of time.

Transitioning from one car to another is actually something that really helps you as a driver. To drive two or three different race cars frequently is like riding a bicycle; most of us only know how to ride the bicycle forwards but you can also learn to ride a bicycle backwards.

Working with different crews is something that you need to take care of. Doing two championships isn't a problem but I remember in 2016 I raced in DTM, Indy Lights and GT, and even some other races such as Daytona. It was very hard to keep track of all the new faces – especially in DTM where it was a big manufacturer programme. That can become quite tiring, because the working pace isn't as smooth as normal; when you need something it always takes time because you don't know who to talk to and so on, and to get to know everyone takes longer when you have to do the same thing every weekend. You have to make sure that you really know your crew well.

With regard to mental stress, I think it's actually helped by racing in another series. I'm now racing in Formula E and at the moment I'm fighting for the championship. But when I jump into another car, I just completely forget about Formula E and there's nothing better in the world than forgetting about the championship when you're fighting for it.



Felix Rosenqvist

03

# Harry's Game

TEXT / JUSTIN HYNES

A winner on his Le Mans debut, Briton *Harry Tincknell* looked to be set for a meteoric rise to sports car stardom, but a troubled voyage in LMP1 knocked that trajectory. Then Ford came knocking...

**You finished fifth in the FIA European Formula 3 Championship in 2013 and had a pretty good season. A lot of drivers would have continued in single-seaters, but you didn't and chose sports cars instead. Why?**

I'm managed by Allan McNish, who's an endurance racing legend – he's won Le Mans three times and is a [World Endurance Championship] winner, so I always had endurance racing in my peripheral vision. Allan was still racing when he was mentoring me coming through Formula Renault and basically I got the opportunity to test with the Jota team at the end of 2013. That went really well, I got on well with team owner and driver Simon Dolan, and I thought it would be a good bet for Le Mans for the following year – a strong team, with one of the strongest drivers in the class in Simon. It was the start of a strong relationship and I wouldn't be here now without Jota and Simon. I'm really glad I chose that route rather than continuing with single-seaters. I went from being an up-and-coming driver to being a manufacturer driver in the space of one year.

**Was that season with Jota Sport in 2014 pivotal to cementing your place in sports cars?**

It was, because we went straight to Le Mans that year and won [in LMP2]. That was massive for me and my career. It got the attention of Nissan, who I raced with the following year. Obviously that didn't go as well as we hoped, but your stock changes from being this up-and-coming driver who is maybe a bit of a risk to being a manufacturer driver working with 120 people and representing a big brand. Making that transition is a huge step, so

without the Jota success I wouldn't have got the attention of Nissan – and Ford and Mazda, as it worked out.

**It was obviously a big step being recruited by Nissan, but it was a very difficult time – what were the issues with that whole project?**

The deal was absolutely huge for me. It made a professional driver of me and I loved every moment of it, working with 120 people instead of seven or eight; it was amazing. But the problem with the car... the hybrid didn't work, we were pushing the boundaries of trying to do something different with it being front-engined, the programme was a bit delayed... We went to Le Mans a bit under-prepared, with the car carrying the ballast of a hybrid but not actually getting any benefit from it, and without really doing any endurance testing. So it turned out to be very tough, but we still finished the race.

**You didn't become disillusioned?**

No, because your horizons always change depending on the situation that you're in. Sometimes anything other than a win, you feel like slitting your wrists, and other times being on the podium is fantastic. With Nissan, it was just about finishing the race, that was a huge achievement. I made the most of it, trying to be the quickest in qualifying and quickest in the race, and we managed it. I finished that Le Mans happy – I grew in the team from being this youngster who wasn't really trusted with the car at the start to doing all the testing up until the programme was cancelled.

**So how did your deal with Ford come about?**

The Nissan announcement was just before Christmas, which was not great, and basically Allan went to see what else was around, and there was a deal with Ford to do the endurance driver role for Le Mans and the first two races in Spa. I went to meet [Ford WEC programme Team Principal] George Howard-Chappell and then I went to the US to meet Ford at Daytona in 2016, and we had a meeting in the motor home halfway through the race! I sat down on a little stool in the middle of the motor home, in front of all their bigwigs, and I pleaded my case! We did a deal from there. Our car in 2016 at Le Mans got wheeled off the grid with a gearbox issue, but my performances in the race before that, and during that race when we got going again, were enough to persuade them to keep me on full-time for the season. After Le Mans I signed a year-and-a-half extension to that initial three-race deal and I've just signed again for the WEC 'Super Season'.

**Did you see the potential of GTs at that time?**

I must say I was nervous at the time because I had never driven a GT before. I knew I was quick in a prototype but I said to Allan, 'I'm not sure if I'm going to be as quick in a GT'. But I think GTs now have got a lot more downforce than they used to have and the transition wasn't as big as I expected. I knew there was big potential in the GT class because it's been strong for many years with a lot of manufacturers involved, but I didn't quite realise it was going to be as strong as it will be this year, with BMW coming in and, I think, 17 cars at Le Mans in GTE Pro.

**Tincknell has become an integral part of the Ford Chip Ganassi Racing Team UK in the WEC – and has his sights set on the title in the 2018-19 'Super Season'.**



**With Ford, Ferrari and BMW coming into GT, what do you think of the category now?**

And Porsche, Corvette and Aston Martin as well. I think it's going to be really tough; it will be the most competitive class in WEC this season. It's going to be difficult, but Ford have come in, won Le Mans [in 2016] and we've won four races in WEC in total, so we're trying to improve all the time.

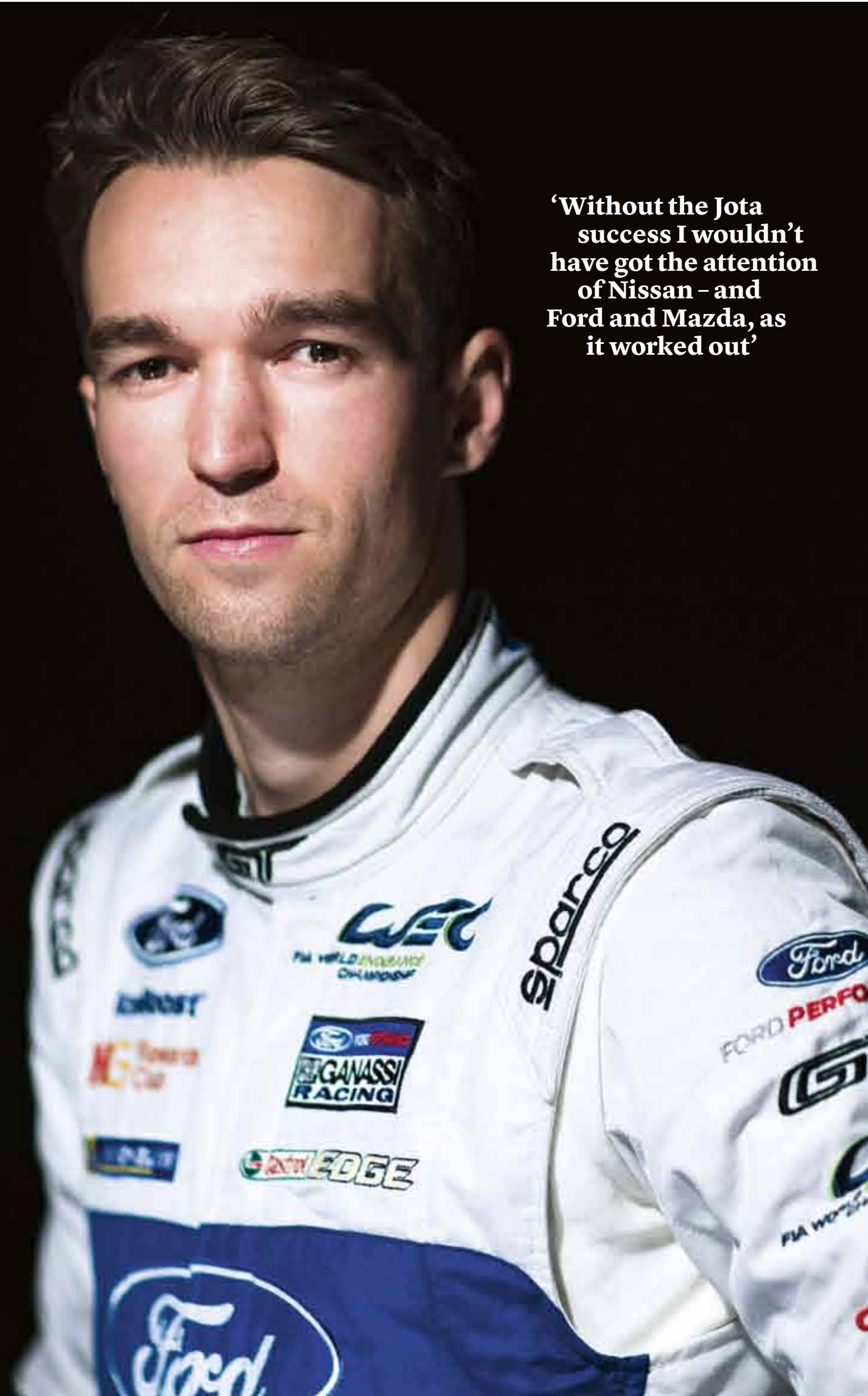
**Going back to single-seaters, you've tested in Formula E. How was that, and is single-seaters something you've still got your eye on?**

It was great! It's great for the championship to have a day for rookies without an eLicense in order to get new people and new talent into the series. The test went well. We worked through the programme at NIO, focusing on long runs all day, so we weren't necessarily setting the timesheets alight but we were happy with the progress we made. Certainly Formula E is a championship I'm keeping my eye on. All the manufacturers now are looking at electric cars and I guess it is the future. A lot more has been invested in it, so I think it's definitely not a bad thing to have the experience of that, because who knows where the automotive world's going to be in five, six years time. Maybe we'll all be racing electric?

**If you cast your mind back now to those Formula Renault days, if you told yourself then that this is the career you'd have, would you have been happy?**

Yes, massively. Even in 2013, to say a year after that you'd have won Le Mans, that the year after that you'd be a manufacturer driver, and now to have two deals in the two best endurance championships in the world, I think that's amazing. So I've just got to grab these opportunities with both hands and show what I can do. I think in the WEC, we came really close to the championship last year, we just had a couple of bad races that cost us. However, we've got a strong car overall for the championship. And I think some of our bad tracks – historically the Ford likes high-speed, flowing tracks like Le Mans – they aren't on the calendar any more, so I believe the 2018-19 season will be our best chance yet at winning the championship. With Mazda in the US, it's a heavily-revised car, new team, new drivers, so I think we've got a very good base and good potential. I'm sure we'll be fighting for wins and podiums – we just have to keep our expectations slightly in check for the first race or so, but who knows!

**'Without the Jota success I wouldn't have got the attention of Nissan – and Ford and Mazda, as it worked out'**



04

# Strong Standards

From 2019, a new ultra-protective helmet will be introduced into Formula One. This is thanks to over a decade of FIA research to create the ultimate standard for helmet manufacturers to meet to take safety to another level. AUTO spoke to those behind the research and tests that have driven the new design

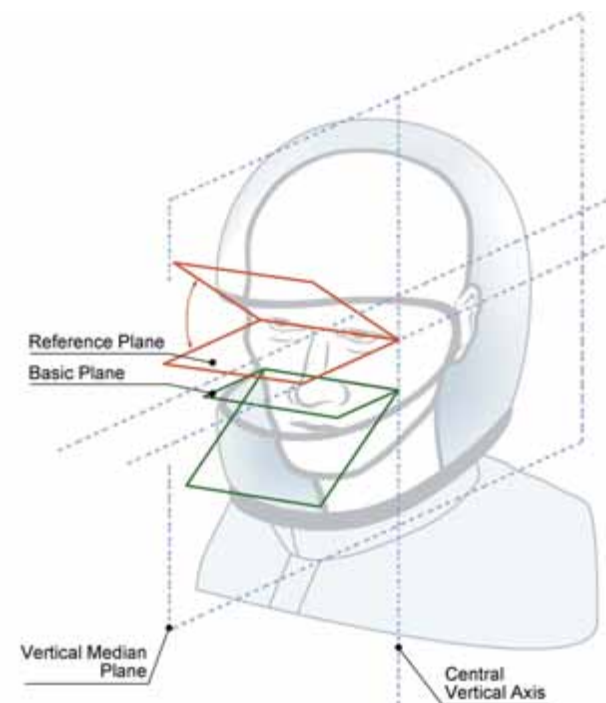
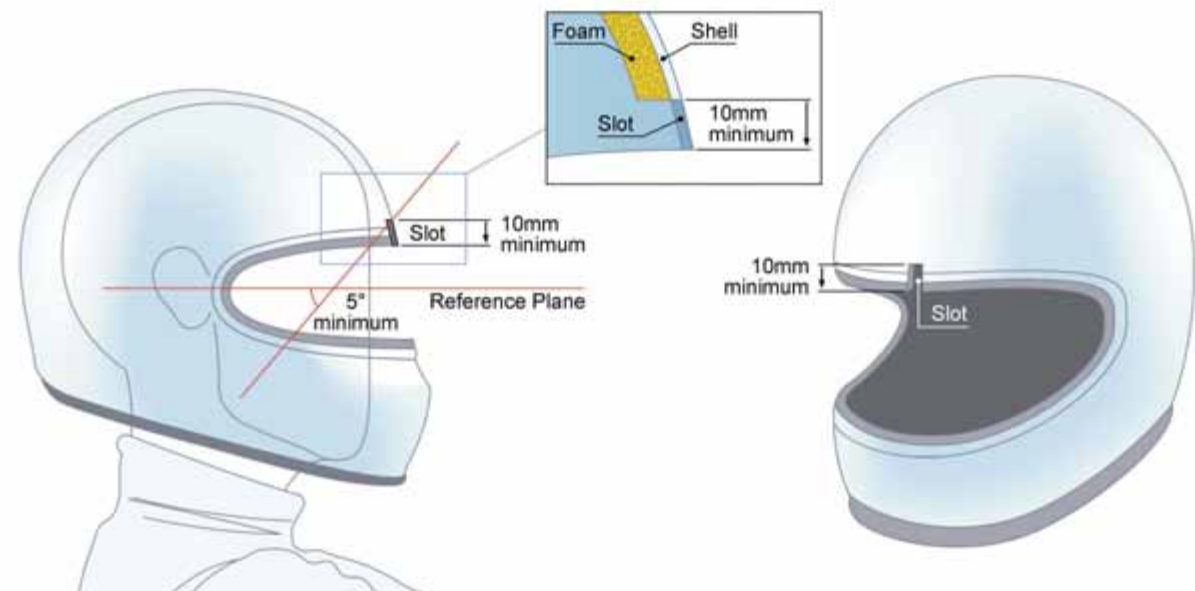
TEXT  
/  
MARC CUTLER

The top of the visor opening has been lowered and now incorporates advanced ballistic protection that achieves unprecedented levels of safety during impact from debris.

The helmet shell is constructed using advanced composite materials to ensure it is not only tough but also resistant to crushing and penetration.



Extended areas of protection on the sides offer compatibility with the latest single-seater headrests and closed car seat-side head protection systems, ensuring that energy management is exactly where the headrests are positioned.



The toughest helmets in the world are about to get tougher. This follows the release of a new top-level helmet standard that will bring about increased protection for racing drivers in all major championships.

The latest standard, called FIA 8860-2018, outlines the safety and testing levels that the helmet manufacturers must achieve to provide equipment for the FIA's top series. It will be mandatory for Formula One from 2019 and in other championships soon after.

While current top-level helmets are already the safest in the world, this new standard takes it to the next level.

"The current standard is already very demanding in terms of energy absorption and resistance to penetration," says Stephane Cohen, Chairman of Bell Racing Helmets, one of the world's leading helmet manufacturers. "The new standard goes one step further that maybe a few years ago we'd have thought was impossible to reach."

As such, all new helmets that achieve this standard will now offer advanced ballistic protection, increased energy absorption and an extended area of protection for drivers.

**LONG-TERM THINKING**

This new standard has been more than 10 years in the making.

"We've been evolving since 2006 when we started working on it," says Andy Mellor, Senior Research Engineer for the Global Institute for Motor Sport Safety, the FIA's safety research partner. "There was no emergency because the current 8860 helmets provide huge levels of protection and the industry was getting established with them. But now is the right time

and the manufacturers are ready for it."

As is often the case with research and development in motor sport, the project has been driven by specific accidents, such as at the 2009 Hungarian Grand Prix where a loose spring hit Felipe Massa's helmet at 220kph.

This is one of the reasons for the most noticeable change – the visor opening being lowered to incorporate increased ballistic protection in the frontal area. Currently, F1 helmets have a zylon panel attached to the top of the visor, but from 2019 this additional protection will be integrated into the shell of the helmet, ensuring that the protection is built in.

"The new ballistic test makes sure that they

**With the new helmet, the visor opening is lowered by 10mm, but tests have proved that the driver's vision is not adversely affected.**

**'The new standard goes one step further that maybe a few years ago we'd have thought was impossible to reach'**

provide the highest level of protection," says Mellor. "By integrating the protection into the shell, the performance can be fully optimised."

This will lower the visor opening by 10mm but tests have already proved that this has no detrimental effect to the driver's vision.

Another key change was progression to variable masses for the test headforms, to account for the established relationship between size and weight; larger heads are significantly heavier than smaller heads. Furthermore, the new 8860 has been published as a standalone FIA

standard whereas the original version of 8860 teamed with the Snell Foundation SA Programme.

As Mellor explains: "When we first launched 8860 back in 2004, we needed an efficient certification process to support the enhanced helmet performance and technology. We adopted a number of the existing test methods and worked closely with Snell to ensure the most rapid introduction."

The new version of 8860 allowed the test methods to be revisited and the variable headform mass system was chosen to better represent the physiology of drivers.

"This presents something of a design challenge," says Mellor, "because the larger helmets now have to absorb somewhat more energy. And the small helmets, less energy. For the small helmets, this creates a challenge with the crush and penetration tests which impart fixed energy into the helmet for all helmet sizes."

But these tests will ensure that helmets are optimised all drivers regardless of their size and weight.

Under the new standard, shell hardness will be assessed to ensuring the helmets are tough and also resistant to penetration. A specific penetration test, called Barcol, will be used for all 8860 helmets, and will likely lead to a toughened carbon epoxy outer shell becoming the norm for every level of motor sport.

A further change will ensure extended areas of protection on the sides of the helmet. This is important to improve compatibility with the latest single-seater headrests and closed car seat-side head protection systems.

"It ensures that we've got energy management within the helmet at the point of contact with the side headrests," says Mellor.

Another test will ensure that the helmet

performs optimally at lower crash speeds, as it is not necessarily the case that a helmet which performs well in a high-speed impact would also work well in a lower-speed event.

"In addition to the high-speed test at 9.5m/s we have introduced an additional lower speed test at 6m/s. This corresponds to a lower severity impact and we prescribe a limit value of 180G," says Mellor.

**ROOM FOR MANOEUVRE**

Despite the more stringent test requirements within the standard, manufacturers will still have design flexibility. As long as their designs meet all of the test requirements they can choose from a range of options for the outer shell and internal construction of their helmets.

F1 helmet manufacturers such as Stilo, Bell Racing and Arai all contributed to the extensive

research programme but are now competing to produce the best helmet they can.

"Throughout the R&D we received fantastic support from our partners," says Mellor. "Within the programme we provided the direction and planned the test regime whilst the helmet manufacturers provided the test samples. Their contribution was exemplary and was essential for the success of this activity"

Now it is over to the same manufacturers to deliver production versions of the new helmets for the 2019 F1 season, the first championship where the new helmets will be mandatory.

"We are happy with the final result," says Bell Racing's Stephane Cohen. "The FIA and the Global Institute for Motor Sport Safety are doing a great job and there has been an excellent level of cooperation."

Each manufacturer will be free to use whatever material or technical solution they deem to be



Stephane Cohen, Chairman of Bell Racing Helmets, is excited by the new standard that the company will use to produce F1 helmets in time for next season.



Bell, one of the world's leading helmet manufacturers, has been closely involved in work on the new standard.

most appropriate to pass these tests, which will lead to more design freedom and innovation.

"That's one of the main points about this new standard," adds Cohen. "And the second most interesting point is the fact that the area of testing will be expanded compared to what we currently enjoy, which means that the overall protection of those helmets could be considered better and as usual the FIA will be at the forefront of helmet protection technology."

It will ensure that the world's safest helmets will continue to be used in the fastest FIA series.

As Cohen puts it: "This will be the most advanced standard in the world without any possible discussion." ◀

**Hard-hitting**

The latest test standards are the toughest ever. Manufacturers must supply a minimum of seven complete helmets for testing, each one not exceeding 1.8kg in weight. They must withstand the following:

- 1 STANDARD IMPACT TEST**  
Helmet impact at 9.5m/s. Peak deceleration on 'driver's head' shall not exceed 275G.
- 2 LOW VELOCITY IMPACT TEST**  
Helmet impact at 6m/s. Peak deceleration shall not exceed 180G.
- 3 LOW LATERAL IMPACT TEST**  
Helmet impact at 8.5m/s. Peak deceleration shall not exceed 275G.
- 4 ADVANCED BALLISTIC PROTECTION TEST**  
A 225g metal disc fired at 250km/h. The peak deceleration shall not exceed 275G.
- 5 CRUSH TEST**  
A 10kg weight falling five metres onto helmet. Lateral and longitudinal tests.
- 6 SHELL PENETRATION**  
A 4kg impactor dropped onto helmet at 7.7 m/s.
- 7 VISOR PENETRATION**  
Air rifle fires 1.2g pellet at visor. Pellet must not penetrate the interior of the helmet.
- 8 VISOR COATING**  
Transmitter test to ensure colouration and vision is not significantly changed or distorted.
- 9 RETENTION SYSTEM**  
Roll-off test and dynamic test to ensure strength of chin strap and its attachments.
- 10 CHIN GUARD LINEAR IMPACT TEST**  
Impact test with full headform at 5.5m/s.
- 11 CHIN GUARD CRUSH TEST**  
Hammer hits chin guard and measures ability to keep impact away from the head.
- 12 FHR MECHANICAL STRENGTH**  
Test to ensure high strength of attachment points for Frontal Head Restraints.
- 13 PROJECTION AND SURFACE FRICTION**  
Test to ensure helmet surface uniformity and that friction is minimised. Shell surface also subjected to BARCOL hardness test for resistance to penetration.
- 14 FLAMMABILITY TEST**  
Helmet exposed to 790 C° flame; it must self-extinguish once flame is removed.

04

While other motor shows deal in the showroom stars of the next 12 months, the automobile arena at Las Vegas' mammoth Consumer Electronics Show looks further into the future. And at this year's show the shape of things to come was almost exclusively autonomous. AUTO looks at five of the most fascinating ideas to emerge at CES 2018

# Driving towards a driverless future



No 01 **Toyota E-Palette**

TEXT / JUSTIN HYNES

Mobility-as-a-Service concepts traditionally tend to invoke visions of calling up a driverless taxi to ferry you to the shopping mall, but at CES Toyota took a different tack, unveiling a concept in which it brings the mall to you. E-Palette is a concept featuring "fully-automated, next generation battery electric vehicle[s] designed

to be scalable and customisable for a range of Mobility-as-a-Service [MaaS] businesses". In essence, they're transparent boxes on wheels that are customisable by size and appearance and that can deliver product to wherever the vehicles are called. Toyota envisions e-Pallettes being used in a variety of ways

from MaaS operations, such as ride-sharing and car-pooling, to functioning as mobile office and retail spaces, medical clinics, hotel rooms and more. "By combining several e-Pallettes in one place, businesses or communities can quickly create a mobile hub for services ranging from medical clinics

to entertainment and festivals," said Toyota President Akio Toyoda at CES. "Every e-Palette can be reconfigured for a variety of applications within a single day, all managed by our Mobility Services Platform and serviced by our retail network." Toyota is so convinced of e-Palette's viability that according

to the company it is "creating an alliance of forward-thinking business partners, called the e-Palette Alliance, to support e-commerce mobility". The group includes Amazon, Didi Chuxing, Mazda, Pizza Hut and Uber. Toyota says it hopes to debut the e-Palette project at the 2020 Olympics in Tokyo.



No 02 **Nissan's Brain-to-Vehicle Technology**

Japanese car maker Nissan had plenty to talk about at CES, including the latest version of its Leaf electric model, but nothing caught the imagination (in the most literal sense) like the company's Brain-to-Vehicle (B2V) technology.

While not quite a driverless development, the technology is designed to enable vehicles to speed up decision-making in critical situations by cutting out sluggish human reaction times.

The B2V system uses an electrode-studded skullcap (right) to capture the driver's brain activity and artificial intelligence to interpret it. The system detects brain signals that will trigger the movement of the driver's hands or feet a moment before the movement begins.

In this way reaction times are cut by as much as half a second. The driver still responds with steering or pedal input but the car is already ahead of the game, making the controls feel agile, responsive and capable of the correct response.

"When most people think about autonomous driving, they have a very impersonal vision of the future, where humans relinquish control to the machines. Yet B2V technology does the



opposite, by using signals from their own brain to make the drive even more exciting and enjoyable," said Nissan Executive Vice President Daniele Schillaci. Elsewhere, Nissan North America announced an agreement with the NASA Ames Research Center in California's Silicon Valley to collaborate on research and technology development for future autonomous mobility services, including a working demonstration in Silicon Valley. ▶



**N03** **Nvidia vs Intel**

If autonomous cars are to have a fully functioning future as capable carriers of people and goods they'll need extraordinary computing power. And while it's not the glamorous end of the business, building the electronic brains to pilot future vehicles is where the big battles are taking place at the moment.

At this year's CES, graphics

specialist Nvidia revealed its latest offering, the Drive Xavier processor, which is specifically designed to power robot taxis.

According to the company, the unit "puts more processing power to work using less energy, delivering 30 trillion operations per second while consuming just 30 watts. It is 15 times more energy efficient than our previous generation

architecture". All well and good, but what does that mean? Well, apparently it's the equivalent of a having "a trunk full of PCs in an auto-grade form factor the size of a license plate, it's the world's first AI car supercomputer designed for fully autonomous Level 5 robotaxis."

Nvidia has already convinced a host of automotive industry experts that its systems are the

future and at CES it unveiled two more heavyweight supporters in the shape of Volkswagen and Uber.

Not to be outdone, rival chipmaker Intel also launched new tech at CES in the shape of its AV compute platform, which it naturally believes is more powerful and efficient than its rivals' offerings.

**N04** **Kia 'Boundless For All'**

Korean car maker Kia attempted to cover all future bases with its CES presentation, 'Boundless for All', demonstrating a new range of technologies that it says echo its philosophy of 'ACE' (Autonomous, Connected, Eco/Electric).



"Consumers are bound today by the idea that a car is 'just a vehicle', but Kia is committed to providing a broader solution to mobility. 'Boundless for All' represents a future in which a vehicle can be so much more than the sum of its parts," said Dr Woongchul Yang, Vice-Chairman and Head of Kia's R&D Centre.

To demonstrate an element of that the Korean company showed off its latest Human Machine Interface technologies and, it claimed, the world's first in-car 5G connection in a set of futuristic cockpit displays that it said offered idle passengers technology to keep them busy during autonomous journeys.

The first cockpit (left) replicated the new HMI of the firm's Niro EV

Concept vehicle, with enhanced interaction between visitors and the vehicle. The infotainment and HVAC (heating, ventilation and air conditioning) systems are controlled by touch and gesture, with the steering wheel acting as a remote. The driver can 'swipe' along a perforated leather area on the base of the wheel, with different gestures serving to switch between music tracks, adjust the volume and adjust cabin ventilation settings. A digital dashboard display provides additional information to the driver such as vehicle settings, powertrain status and trip information.

A second cockpit demonstrated the firm's 5G connection, which Kia says enables users to stream contents reliably into the car, linked to the exhibit's infotainment system.

**N05** **Byton**

Another show, another Chinese future vehicle start-up, except that Byton comes with some heavyweight personnel onboard including ex-BMWi boss Carsten Breitfeld. And its first vehicle, an SUV it claims will be in production next year, promises to deliver Level Four autonomy, a classification by which cars are "designed to perform all safety-critical driving functions and monitor roadway conditions for an entire trip".

To deliver that spec Byton is, like Volkswagen and Hyundai, teaming up with Aurora, the autonomous driving start-up founded by Google's former autonomous driving boss, Chris Urmson.

The Byton is set to be available in two powertrain configurations, with either a single 268bhp electric motor driving the rear axle or a four-wheel-drive version with motors driving each axle. The two motors in the 4WD version combine for 469bhp.

Power will be stored in lithium ion

batteries that form part of the vehicle chassis. According to Byton its SUV will have a range of 399km, increasing to 520km with an upgraded battery pack.

Instead of door handles, the concept features facial recognition cameras that check biometric data and will only unlock the door to authorised users.

The interior is dominated by a huge 1250 x 250mm 'Shared Experience Display' that fills the whole dashboard. Featuring three customisable panels, it also shows images from three rear-facing cameras: two take the place of the wing mirrors, with a third mounted in the car's rear. The display features gesture and voice control, or can be operated by a smartphone app. Two further displays are for passengers in the rear, while the main driver information, including navigation systems, is shown on yet another screen, a touch-controlled 8in Driver Tablet in the steering wheel. ◀





05

# MOTOR SPORT'S NEW SUPERHERO

The 'generation-two' Formula E car – poster child for season five of the championship – is more than just a pretty face. AUTO looks under the skin of the car set to revolutionise the world of electric racing

TEXT  
/  
TONY THOMAS

If the first-generation Formula E car, which made its debut in 2014, was 'Star Trek for motor sport' – boldly going where no race series had gone before – the second-generation car is surely its superhero successor.

"Kapow! Straight outta Gotham" proclaimed the series' own social feeds as images of the dramatic, Batmobile-styled 'Gen-2' vehicle were released at the end of January.

Techeetah driver Jean-Eric Vergne quickly proclaimed himself 'Batman' to team-mate André Lotterer's 'Robin', while moody shots of the aggressively-styled new car featured it amid a gritty urban backdrop – all acutely on-message for a racing machine designed to compete on unforgiving, temporary street circuits.

More powerful, faster and containing a battery that can last a full race distance, the Gen-2 car, which will race from the start of the series' Season 5 at the end of 2018, represents a bold leap forward for a championship growing daily in confidence.

And while it's the car's flared and angled bodywork – featuring an elegantly integrated Halo device – that catches the eye, it's what lies beneath that will allow Formula E to take a step forward with its racing credibility.

"The future is here, now," declares series CEO Alejandro Agag with the infectious mixture of conviction and charisma that has been essential to the championship's success. "Season 5 will be when we come of age, if you like. Our journey so far has been very tough and exciting; Season 5 should be our big breakthrough." ▶



With its new, Batmobile-styled Gen-2 racer, the Formula E championship finally has an electric car capable of covering a full race distance.

Formula E CEO Alejandro Agag has been the series' guiding light and believes Season 5, with the arrival of the Gen-2 car, will be its "big breakthrough".



**'We never knew what position we'd be in when we started, if maybe we would slowly fade away. Instead, we're experiencing our best moment'**

ALEJANDRO AGAG

Bold statements indeed, but perhaps Agag is right to be emphatic, for if Formula E is proving anything it is Victor Hugo's maxim that "nothing is more powerful than an idea whose time has come".

As other series experience their own existential crises of relevance, cost, declining audiences and legacy rivalries that at times seem both feudal and myopic, Formula E continues to operate with cost-capped budgets, spec chassis and Michelin tyres, a common battery and (so far) a unifying spirit among competitors almost utopian in its idealism.

"We never knew what position we would be in when we started," admits Agag. "We thought that in Season 1 we would get some excitement and that we would cause some attention, because we were something new, but then maybe that we would slowly fade away, with Season 5 being when it all finished, basically. Instead, Formula E is experiencing its best moment ever."

#### GENERATION GAINS

The Gen-2 car, the SRT05e, has been designed to strict FIA technical prescriptions by Spark Racing Technology, in collaboration with Italian chassis manufacturer Dallara and other technical partners. It marks a significant advance over the SRT01 that has served the championship and all its teams since 2014, and has a larger-capacity, higher-efficiency battery at its core. This will allow Formula E races to be run for the first time without the need for each driver to perform a mid-race car-change pit-stop.

These unique changeovers, which have become something of a crowd-pleaser in much the same way that mid-race refuelling once was in Formula One, were forced upon the championship by virtue of technical necessity. Simply put, first-gen battery tech did not enable cars to cover a full race distance at racing speed – hence mid-race car swaps.

This quaint practice will cease from Season 5, thanks to a new battery. Weighing around 385kg, it is both larger and heavier than the current energy store and will be fitted underneath the chassis. Its peak output of 900 volts is an increase of 200 volts over existing technology and it will permit peak qualifying power of 250kw – approximately 330bhp.

But of more significance to the championship and its ideological commitment to road-relevant technology is that the battery will store enough energy to answer critics who maintain that 'car-swaps' have served only to highlight existing public 'range anxiety' with regard to electric cars. It's all very well, they say, for racing drivers to hop into another ready-and-waiting car when he runs out of juice, but that's hardly a practical solution for the John Doe motorist.

That sub-optimal messaging has been the reason that BMW, for one, has not yet committed to racing in Formula E, despite supporting the series from the outset with its i3 and i8 models as medical and safety cars. This hesitancy is about to end, however, thanks to the longer-life battery: BMW is in for Season 5, to be followed by Porsche in Season 6, with Mercedes also committed to enter.

FIA technical director Gilles Simon, who wrote the Season 5 technical template, explains: "The important point about electric vehicle technology is that we all know that one of its limitations is battery capacity. So evolving the capacity seems to be very logical – we will be tracking the industry with Formula E's own evolution."

Simon notes that one compelling element of MAT's successful tender for the battery supply contract was its familiarity with the particular demands of motor sport – not least its craving for efficient packaging

and the requirement that any racing component be robust enough to withstand the rigours of competition.

"The lithium cells that are used are very sensitive to temperature," Simon adds, "so just as in other racing categories, temperature control is very important. If the batteries are too cool then efficiency is not optimised; too hot and the output life and efficiency are not so good. The temperature window is actually quite restricted and the big challenge is to cool all the cells – homogeneous cooling – not just a few."

Functional bodywork is an essential part of the cooling process and while the Gen-2 exoskeleton has been styled for visual affect, it's also hard at work aerodynamically.

Techeetah team boss Mark Preston, an ex-senior F1 engineer, applauds the logic of the aero thinking inherent to the design – in particular the low-drag principles that underpin its form: "This is a car that has downforce largely from the floor and rear diffuser and minimal frontal area. That's the way to go for an electric vehicle – there's almost no drag and you have high aerodynamic efficiency."

It's reminiscent, he says, of a prototype he co-developed for the first Formula E chassis tender process, which was essentially an F1 car with bodywork removed, but its wheels covered.

"We produced something very pragmatic with minimum time," he says. "But what they've done with the Gen-2 car is a stylised version of that kind of thinking. And they've done an amazing job – it looks really good."

Lots of 'show', then, and if testing figures are accurate, plenty of 'go' too: simulations have indicated that top speeds of up to 300km/h will be possible with the new battery and ever-advancing powertrain technology – although few insiders believe Formula E would benefit from having cars that are too fast for the city centre circuits on which they are designed to race. ▶



It might be more powerful thanks to a bigger battery but the Gen-2 racer is safer too, incorporating the new Halo device to protect drivers from flying debris.

"That speed is, if you like, a theoretical maximum," says Agag, "and Formula E drivers, like any drivers in any series, will have to moderate their speed according to the track. They know when to brake, they know when to accelerate – but definitely the speeds are going to be higher with the new car and definitely it will be more exciting. And if they go incredibly fast... then we would have to find some new tracks, but for the moment we will continue where we are."

In practical terms that means Formula E will adhere to another of its USPs: city centre racing. While this tenet has caused problems every season to date on account of (a) finding suitable venues, and (b) being subject to the political whim of mayors who may be pro or anti the series (as happened this year with the cancellation of the Montréal round), Agag has no doubt that 'destination cities' are the right host venues for the championship. "Cities are the challenge for us," he says, "because we've had to learn to live with changing situations – they are living entities. So we live with it, but we have asked the stakeholders – teams, sponsors, partners – 'what do you prefer? A race track and we have a permanent calendar, or do we stay in city centres and have a bit of change and less stability?' They all, clearly, go for option two."

As well they might, both from racing and 'promotability' perspectives. "City races allow us to take our brand, our drivers and our technology directly to the fans," says Jaguar team boss James Barclay. "It's one of the many aspects that make the championship so appealing."

**STRENGTH IN NUMBERS**

Meantime the cut-and-thrust of close-confines street racing provides plenty of stimulation for the guys behind the wheel. Formula E's first champion, Nelson Piquet, now with Jaguar, considers the series to be a uniquely challenging form of motor sport that requires a driving style and mental approach unlike any other. "And it's a contact sport," he enthuses, "we're always running really close to each other."

But he cautions that the carefully crafted carbon body parts that give the Gen-2 car its pugnacious appearance may not survive too long in the heat of battle. "With the huge diffuser at the back and a bunch of bodywork on the side we might find aero pieces flying everywhere. The car looks very good, but are we going to have a safety car every three laps to remove track debris?"

Spoken like a true racer, but perhaps what's most remarkable about Piquet's comments is that this still-young series has flourished sufficiently to allow him to opine on its second generation.

Many were quick to dismiss the notion of an all-electric racing series when it was launched in 2014, but how they're eating their words now as the championship strengthens year by year, attracting works entries from the world's most prestigious car manufacturers and globally significant technical partners such as Qualcomm and ABB, Formula E's new title sponsor.

And while seasons one to four have been all about establishing Formula E's viability, then credibility, Season 5 (end of 2018 to mid-'19) is when it will aim to demonstrate that electric motor racing is much more than some quirky technology-proving showcase.

"What's so encouraging," says Jaguar's James Barclay, "is that it's really positive to see a championship establish itself as a completely new form of mobility in a short space of time and as a credible new force in the sport."

The burgeoning manufacturer contingent are compelled almost by sheer force of logic to enter Formula E, Barclay believes, such is its technological relevance and its opportunities for value-for-money brand promotion. ▶



Jaguar team boss James Barclay says more manufacturers are being drawn to Formula E for reasons of cost-effectiveness and technological progress.

**'It's really positive to see a series establish itself as a new form of mobility in such a short space of time and as a credible new force'**

JAMES BARCLAY



"As manufacturers we are aligned with the fact that the more cost-effective a championship is, the more manufacturers will do it," he says, "and Formula E is delivering exactly that. Most feel the same way about this: they want a technically progressive championship that promotes electrification technology."

Some fear that a proliferation of manufacturer entries could leave Formula E vulnerable to an 'arms-race' escalation of technical spending, though the series' regulatory framework restricts open development largely to powertrain research, thereby 'baking in' cost control.

And even if a boom-bust cycle of manufacturer participation were to become apparent in Formula E, Agag reckons the series is robust enough, now, to survive.

"If we had, say, eight manufacturers, then obviously only one can win, only one can finish second and only one can finish third," he says. "Maybe some of them will get frustrated and stop participating. But as long as we have a system that supports the independents and allows them to be competitive, as we do now, it's all fine because the championship will go on perfectly well."

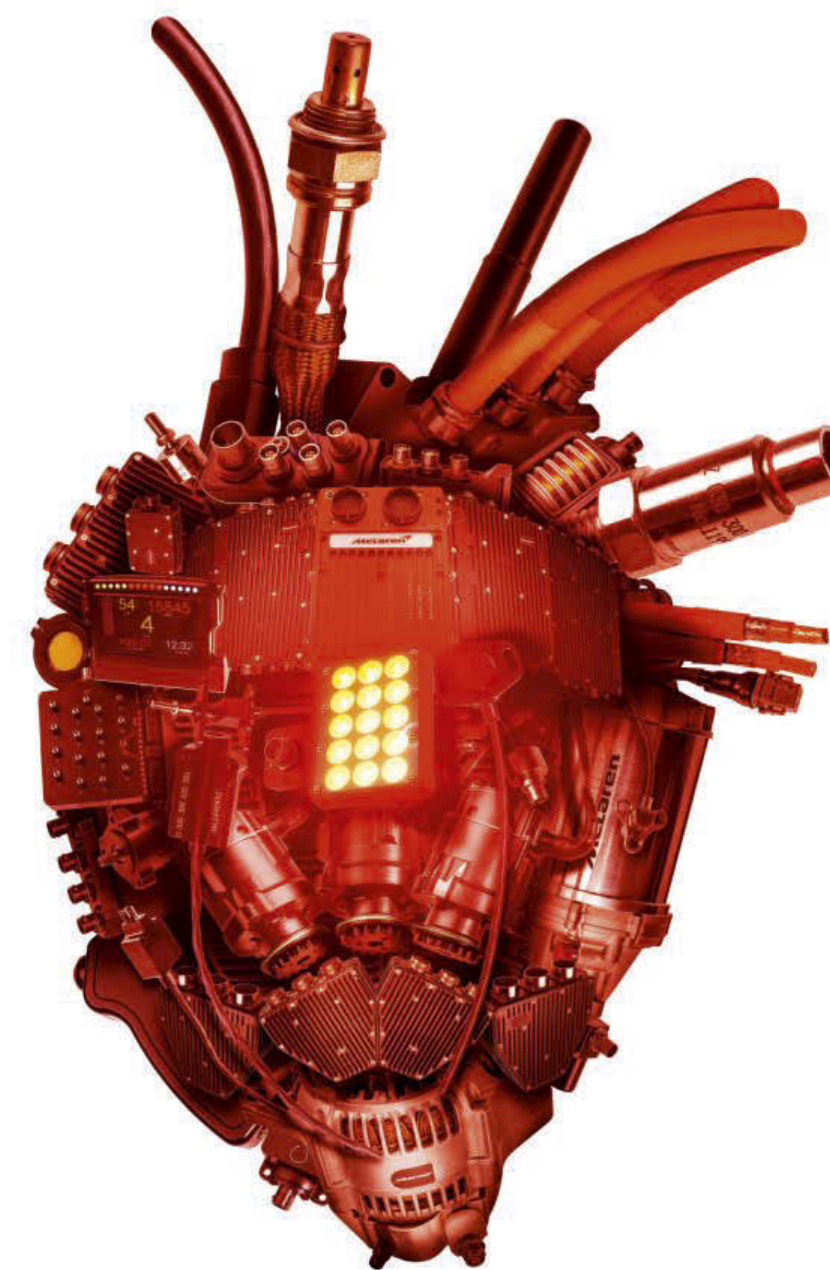
"And, you know, with the new car we have a great asset to capture the imagination of the fans. They will love it when they see it racing in the cities."

Formula E's first champion, Nelson Piquet, is well-placed to comment on the next generation of electric racer of which he is a fan, despite the odd reservation...



'With the huge diffuser at the back and a bunch of bodywork on the side we might find aero pieces flying everywhere'

NELSON PIQUET



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06

# 'I don't see myself as any different to any other racing driver'

TEXT  
/  
DECLAN QUIGLEY

PHOTOGRAPHY  
/  
RICHIE HOPSON

Less than a year after a horrific crash resulted in the loss of both legs, British racing driver *Billy Monger* is back behind the wheel of a single-seater car. But for last year's FIA President's Award winner, it's just the start of a whole new chapter of competition



## 'We got onto the topic of Alex Zanardi and what happened to him, and what he'd gone on to achieve. At that point it went from "I wish I could race again" to "oh, so I can race again"'

For Billy Monger, 2018 began pretty much as it did for any young racing driver – talks with his race team engineers, planning and organising the upcoming testing programme, sponsorship hunting and endless simulator work dovetailing with a rigorous physical training programme. Maximum focus on the ultimate goal: Formula One.

Except Billy Monger is no ordinary racing driver. In the past 10 months, the 18-year-old from Surrey has been an inspiration to millions ("that's hard to get my head round"), a crusading rule change lobbyist and a tirelessly positive influence on his home and racing environment.

He's also a double amputee, adding the challenges presented to him in his life-altering crash in the FIA British F4 series at Donington Park last April to the inevitable difficulties of putting together a competitive season of racing this year.

The bouquets and plaudits have been ceaseless since his accident, including the FIA President's Award and a nomination for the Laureus World Sports Best Sporting Moment Award. For Monger, the loss of his legs could have been overwhelming let alone the glare of attention that has come with it, but through it all 'project single-seaters' has kept him focused.

"It has kept me going," he says. "People see me as an inspirational, young role model. I get told that a lot. But the way I see it is that if I didn't have my racing, I don't know if I would be able to handle it as well.

"The racing side of things has really kept me on track with the other parts of my life just because I know that if I work hard I can achieve good things. I can achieve something positive out of it. That has been the motivation behind me getting on top of things and trying my best to make sure it happens."

Monger's career has been on hold since that cruelly abrupt moment when the unsighted JHR driver slammed into the back of Patrik Pasma's stationary Carlin Motorsport machine at upwards of 190kmh. A racing return would have been far from the mind of many recovering with the resulting injuries. For Monger, it was quickly placed at the top of the agenda.

The first part of getting back to racing was deciding to do it. That took minutes, it seems, if even that. The next decision was where to race. GTs or saloon cars may have seemed the obvious route, but Monger was quickly musing on the possibilities of racing single-seaters.

It hadn't been done before by a driver with his injuries, but he enjoyed considerable

encouragement from one of the most inspiring racing drivers of all time.

"My team manager and my mechanic and everyone, they kept coming to the hospital and just wishing me the best," he says. "I was just chatting away to them about how [and] if people had done anything like it before.

"Very quickly we got onto the topic of Alex Zanardi and what happened to him, and what he'd gone on to achieve. It was at that point where it went from 'I wish I could race again' to 'oh, so I can race again. People have done it before me, Let's make it happen.'

"When I was going through everything he got in contact and he's a real character. He specifically told me that racing is something that anyone can do no matter what their disability. He basically said that if it's something I really want to do, then if I work hard I can get it.

"That was really inspiring for me in hospital after such a big crash to hear such positive things about being able to race and stay as a driver. And competitiveness, as well. He has done it at a higher level. He didn't just race for the sake of racing. That was really a gift to hear."

### RE-WRITING THE RULES

Racing was back on as he began physio, but single-seaters have never been the preserve of disabled racers. The FIA had a rule preventing Monger from resuming his career trajectory, but he is quick to point out that there was plenty of support from the governing body when he and the British MSA went about challenging it.

"It was a slight restriction saying that disabled drivers cannot compete in a single-seater start procedure, kind of," he explains. "We decided to ask the FIA and see what the rule actually meant because it wasn't entirely clear and they weren't sure why they had the rule.

Monger's passion for racing is obvious on a visit to his Surrey home, where his collection of trophies from his career so far are proudly on display.

"Then it kind of went from there. I realised when I spoke to them that there wasn't a rule that they wouldn't be able to change with a bit of hard work and effort. That is when I kind of threw everything I had at it, to try and make sure that [it] was changed before the start of this season."

Challenge one met and dispensed with, the next item on Monger's agenda was where to race in 2018. His friend and reigning British FIA Formula 4 champion Jamie Caroline provided the inspiration.

"I knew the quality of Carlin Motorsport after they took the back-to-back F4 titles," says Monger. "Jamie invited me down just to have a little look around and I thought why not take the opportunity to meet the guys. When I told them what I hoped to achieve in the next few months, they seemed really interested in being a part of it and, yeah, it went from there."

It was time to put F4 behind him in every sense and the opportunity to race in the re-emerging BRDC British F3 Championship with a world-class team is one he is eager to grasp.

For Carlin, assimilating Monger into their British F3 plans for 2018 has been a stimulating engineering challenge. Initially, the expectation was that he would focus on adapting to full hand controls with brake, throttle and gear change on the steering wheel.

Quickly, through regular development using the simulator, the team and Monger switched to braking with his right leg. His left leg, the natural braking option for a young racer, is not resilient enough for the physical demands.

Regular simulator work verified through track testing created several iterations of the basic system that Monger is currently using. It is, though, very much a work in progress.

"At first, we were thinking that I would have to be using all hand controls – throttle, brake and gears," he says. "That was the thought process just because obviously my legs were still recovering and we didn't know if I would be able to use them or not. Especially with my left leg, where I don't have my knee, it would be very difficult in a single-seater to operate a pedal.

"It has been a challenge and we've been adapting all the time, moving from complete hand controls to partial hand controls. Then once we had the system of gears on the steering wheel and braking with my right leg, it was a process throughout the testing we have done so far of me trying slightly different adjustments of the controls and seeing if it is better or worse and if I prefer it. ▶





**Monger in the Carlin F3 car, which features specially adapted hand controls. Below: on track testing at Oulton Park, Cheshire, in the build-up to his 2018 race season.**

“I think we will arrive [at the first race] with the idea of what we have got so far but getting it to operate at the highest level is going to take a bit of trial and error and a few attempts, really.”

And it's not as if he wouldn't already have quite a bit on his plate with learning a new environment as it is. Adapting to the increased power and downforce available in the 2-litre 230bhp Tatuus-Cosworth British F3 car would test any newcomer, let alone one learning an entirely new driving technique. To his advantage is the pliability of youth.

“Every lap I do in the car I learn something different on how to control it,” he says. “People forget and sometimes I even forget because the whole process has been on the controls and how I am adapting to them.”

“I'm also adapting to the British F3 car that I have been driving so far, which is a quicker car with more downforce. So it is a step up for any young driver and then add in the whole new

control system, and yeah, it has been a lot to take in. But we are doing good so far.”

**FOCUS ON FITNESS**

The physical challenge is ongoing, too. While he continues to work on his F3 dream, Monger has been playing wheelchair tennis and swimming, along with plenty of gym work, to build his physique and keep himself prepared for racing opportunities.

His legs are constantly changing and are likely to continue to do so for at least another year, leading to constant revisions to his prosthetics. The Just Giving Fund created by his F4 boss Steve Hunter and British Touring Car racer Tom Ingram accumulated almost €950,000, and Monger's prosthetic work has already accounted for a six-figure sum. The fund is only available for medical expenses.

Meanwhile, as his body adapts to ongoing

change, Monger's fitness has been ramped up ahead of his return to track action. A trial run in a Beetle FunCup machine last summer whetted the appetite, but nothing compares to track time in a bespoke single-seater.

Monger began his F3 odyssey in a private test session at Bedford Autodrome and further private testing with Carlin led to public outings as the season approached. It's been a methodical process for team and driver to date.

“Braking is a very different form of physical exercise to any other and it is hard to replicate that in a gym situation,” he explains. “Obviously, I have been doing a lot of physio for my recovery and my prosthetics, which has helped my core strength and my upper body strength.”

“Now that I am up on my feet and kind of walking about more often, that is also helping to train my legs up. That has been a real process from a physical point of view, from where I have started on the simulator.”

“Being able to hit the brake pressures in single-seaters is quite difficult. That is where I have found most of my training has been focused, on building up the leg muscles, especially in my right leg.”

With a clear direction for 2018, Monger, sees only possibilities not problems and, while he is not declaring any specific performance goals for his racing return, he is clearly not in racing just to make up the numbers.

Expecting wins and a championship assault may be a little unreasonable for a driver facing so many adaptations, but you sense the palpable relief for Monger as the focus shifts from rehabilitation to the altogether more appealing topic of racing.

“I don't see myself as any different to any other racing driver at the minute because I am competing in the car. Hopefully I will be... I would like to think I will be very competitive from the start of the season.”

“So I haven't set myself any goals but realistically I would like to do as well as I can. If I come out of the season knowing I have given it my all and that I've tried my best... As long as I do my best, I'll be happy with that.”

“Obviously it would be nice to pick up some silverware somewhere along the line. But, yeah, time will tell what we can achieve, but I am looking forward to things.” ◀

**‘I haven't set myself any goals, but if I come out of the season knowing I have given it my all and tried my best, I'll be happy with that’**



06

# CREATING THE HALO EFFECT

It's strong enough to support the weight of two African elephants and sturdy enough to deflect a large, full suitcase at a speed of 225kph. So how is motor sport's new Halo device made to withstand such forces? AUTO visited a manufacturer to find out

TEXT  
/  
MARC CUTLER

A detailed and extremely controlled build process ensures that the Halo is capable of providing a high level of protection to the driver in the event of a potentially serious accident.

It all starts with titanium. Lots of titanium.

"We had to buy about 10 tonnes of high-strength titanium within one-and-a-half months, and receive it all in time and in perfect quality," says Steffen Zacharias of Germany's CP Autosport, one of the three manufacturers chosen by the FIA as official suppliers of the new Halo safety device.

The device is made from Grade 5 titanium, which is extensively used in the aerospace industry and is known for its high strength and stiffness compared to its relatively low weight. Fortunately, CP Autosport is well-versed in dealing with the stuff.

"We have a long history in motor sport, being involved since the 1990s, but we have an even longer background in aerospace materials and fabrication," says Zacharias. "We have been building titanium parts for aerospace and for outer space – for the EU's Ariane rocket programme – and this background is where we come from and how we ended up in Formula One."

This experience put CP in pole position when it came to producing the first Halo prototype for FIA testing. Alongside the UK's SSTT and Italy's V System, CP was tasked with building a prototype within six-and-a-half weeks to be tested at the Cranfield Technical Centre, in the UK, in October 2017. ▶





## 'Coming from the aerospace industry, we have a very intense testing area. We test all our parts in-house to an aerospace standard'

STEFFEN ZACHARIAS

It was the first company to pass the test and has been chosen by nine of the 10 F1 teams to supply Halos this season (although some teams have purchased the device from all three companies).

It helps that CP's manufacturing facility was ideally matched for the task.

"You need state-of-the-art machining parts to do the pre-machining and the post-welding final machining," explains Zacharias. "You need a welding chamber in a closed atmosphere to do the welding process, and you need the supply chain for the material."

Before working with the titanium it must be heat-treated to be optimised for the task. The company generally receives forged blocks that have been pre-treated to an individual CP specification to help withstand the loads that the final device will face.

"We have been given a challenging load case that the Halo should perform to in the physical test," says Zacharias. "One thing to give a part function is the geometry, but when it comes to welding and metallurgy the heat-treatment process is one of the key drivers. With the heat treatment you set up the physical strengths of the part in combination with the geometry."

The next step is to pre-machine and gun-drill the tubes that will be welded together. The Halo itself is built from five different parts. The half ring at the top is made from two quarters of the circle. Then there are the two end pieces that attach to the back of the car and the centre pillar in front of the driver.

The welding process is performed in a closed chamber to prevent any foreign objects from interfering with the material. The whole device then undergoes further heat treatment for additional strengthening before it is sent for testing.

"The challenge is definitely in forming the tube in this titanium five-grade condition without weakening it," says Zacharias. "And then having the heat treatment in the right set-up. Heat treatment is one of the technical tricks you need to bring in to make the parts work as they are supposed to."

Only the reference production device is tested to destruction at Cranfield. Each subsequent device is made from an exact process sheet that is approved by the Global Institute for Motor Sport Safety, the FIA's safety research partner.

But every device is geometry-checked, weight-checked and undergoes non-destructive testing, including x-rays and crack tests.

"We do these tests in-house," says Zacharias. "Coming from the aerospace industry, we have a very intense testing area, including physical test benches and life-cycle testing. We test all our parts in-house by certified people to an aerospace standard."

The x-ray test involves an approved engineer screening all of the welding seams and this is followed by a dye penetration test to check for any cracks in the material. Then an ultrasonic test is used to ensure that the wall-thickness of the tube is the same at every point. No area is left unchecked.

Once complete, the Halo is manually shot-cleaned to create an abrasive surface that makes it easier for teams to attach any aerodynamic parts that are permitted by the FIA. This does not modify the strength of the material or put any stress on the parts.

### PEAK PERFORMANCE

All of these steps are essential to producing such a high-performance device. The Halo has to withstand 125 kiloNewtons of force (equivalent to 12 tonnes in weight) from above for five seconds without a failure to any part of the survival cell or the mountings. It must also withstand forces of 125 kN from the side. Without question, it is now the strongest element on a Formula One car.

"It has been a task to bring all the production technology together in a part like that," says Zacharias. "We have been producing titanium structures for years but to bring it all together – the machining, the gun-drilling of the material to produce a tube with such wall thickness, the welding process and geometry from all five parts coming together, and the heat-treatment process – to meet this precise window of technical function, that was the main task. Each field itself was like what we have been used to, but to nail it down together in six-and-a-half weeks, that was the hardest task."

It helped that the F1 teams were fully supportive at every step of the way.

"I've been in this business now for almost

20 years and I have never experienced such an open-door philosophy from the teams," admits Zacharias. "Whatever question we had, whichever expert we needed to talk to, we have been connected. Every door has been opened."

Clearly, the F1 teams have been doing everything they can to help integrate the Halo onto their cars. Although a huge effort has been made to decrease the weight of the device, each one still comes in at 7kg, a not insignificant element for an F1 chassis to deal with.

"Adopting it has been a significant challenge," admits Mercedes Technical Director James Allison. "It's several kilograms of titanium that needs to be put on the car, and all of the changes that we needed to do to accommodate it had to be made so that the overall car would still stay below the weight limit."

The main issue was to make sure the rest of the chassis would match the strength of the Halo to ensure it all works uniformly.

Allison adds: "We had to strengthen the chassis so that it would take roughly the weight of a double-decker bus sitting on top of this Halo to make sure it is strong enough to withstand the type of event it's designed to protect the driver's head against."

This is why each team has purchased numerous Halos, some from all three suppliers. As always in F1, the pursuit of the perfect package has been unceasing.

CP has already produced and shipped 70 Halos and is expecting to have made 100 by the end of March. Not only is it supplying nine of the 10 F1 teams, it is also supplying the F2 and Formula E championships, which are then distributing to their teams.

But CP is grateful to have won this responsibility. When the F1 teams line up on the grid for the first race of the season it will be a proud moment for the company.

"We have 200 people working here and we usually produce parts that are underneath the car and covered up by carbon fibre," says Zacharias. "So to be able to show a physical part that's more visible to the public means our employees can say, 'this is what we've been working on, and this is what drives me to stay longer to fulfil my job and overcome obstacles that others may be stopped by'. So yeah, that really makes us proud."

## Produced to the highest standards

1 / Each part of the Halo is sculpted in a high-performance milling machine that can cut titanium elements with absolute precision, while maintaining their strength.



2 / Pre-milling of the central pillar. The Halo itself is built from five different parts – the two rear pillars, the front centre pillar and the half ring at the top, which is made from two quarters of the circle.



3 / The welding process is performed in a closed chamber to prevent any foreign objects from interfering with the material. The whole device then undergoes further heat treatment for additional strengthening before it is sent for testing.



4 / Every device is geometry-checked, weight-checked and undergoes non-destructive testing, including x-rays and crack tests, in order to receive FIA homologation.



5 / Packed and ready to ship. CP is expecting to have made 100 Halos before the start of the 2018 Formula One season.

06

# Star in the ascendant

Marrying forward-thinking design to a strong heritage of exemplary quality control, Mercedes boss *Dr Dieter Zetsche* has taken the three-pointed star to the top of the premium segment of automakers, all aided by the fostering of a hugely successful motor sport culture

TEXT

/

EDOARDO NASTRI

Dr Dieter Zetsche talks the talk. The Daimler AG Chairman, who is also Head of Mercedes-Benz Cars, has spent his life promising to increase the profitability of the various divisions of the German colossus and, to date, he has hit those targets. Not only that, he has also overseen the transfer of an engine and much current Formula One technology to road-going cars.

Having announced in 2014 that with the arrival of turbocharged hybrid power units into F1 the company's "Formula One targets are now much more similar to those of our road cars", the Mercedes boss was on hand a little over three years later, at last September's Frankfurt Motor Show, to unveil Project One. This was the most significant expression yet of the firm's track-to-road philosophy and a car that could still be built at the Mercedes-AMG High Performance Powertrains factory in Brixworth, UK, which has produced all the three-pointed star's F1 engines since 1995.

"Motor sport is not an end in itself for us," said Zetsche at the launch. "Faced with intense competition we develop technologies from which our production vehicles also subsequently benefit. We are drawing on our experiences and successes to bring Formula One technology to the road for the first time."

The project is emblematic of Zetsche's rise at Mercedes, which has been characterised by a determination to leverage the best engineering to build increased commercial success.

After graduating from Germany's Karlsruhe University, Zetsche joined Daimler's Research and Development department where, having studied

mechanical engineering, he was appointed as Assistant Chief Engineer in the commercial vehicle division. During the 1980s his career progressed rapidly. His life as a manager began in 1988 in South America, as Chief Engineer and head of the development department of Mercedes-Benz Brazil. By 1991, Dr Z, as he would come to be known 20 years later when he headed up Chrysler, had moved to the United States to overhaul the American industrial vehicle manufacturer, Freightliner, which resulted in a return to profitability for the Daimler-owned brand.

More globe-trotting was to follow, with a four-year spell as President of Mercedes-Benz Argentina. He eventually returned to Stuttgart in 1995, joining the Daimler board. Zetsche's achievements did not go unnoticed in Germany and, in November 2000, when the Stuttgart group acquired Chrysler, he was invited to Auburn Hills, Detroit to revitalise the ailing American manufacturer.

## DETROIT RENAISSANCE

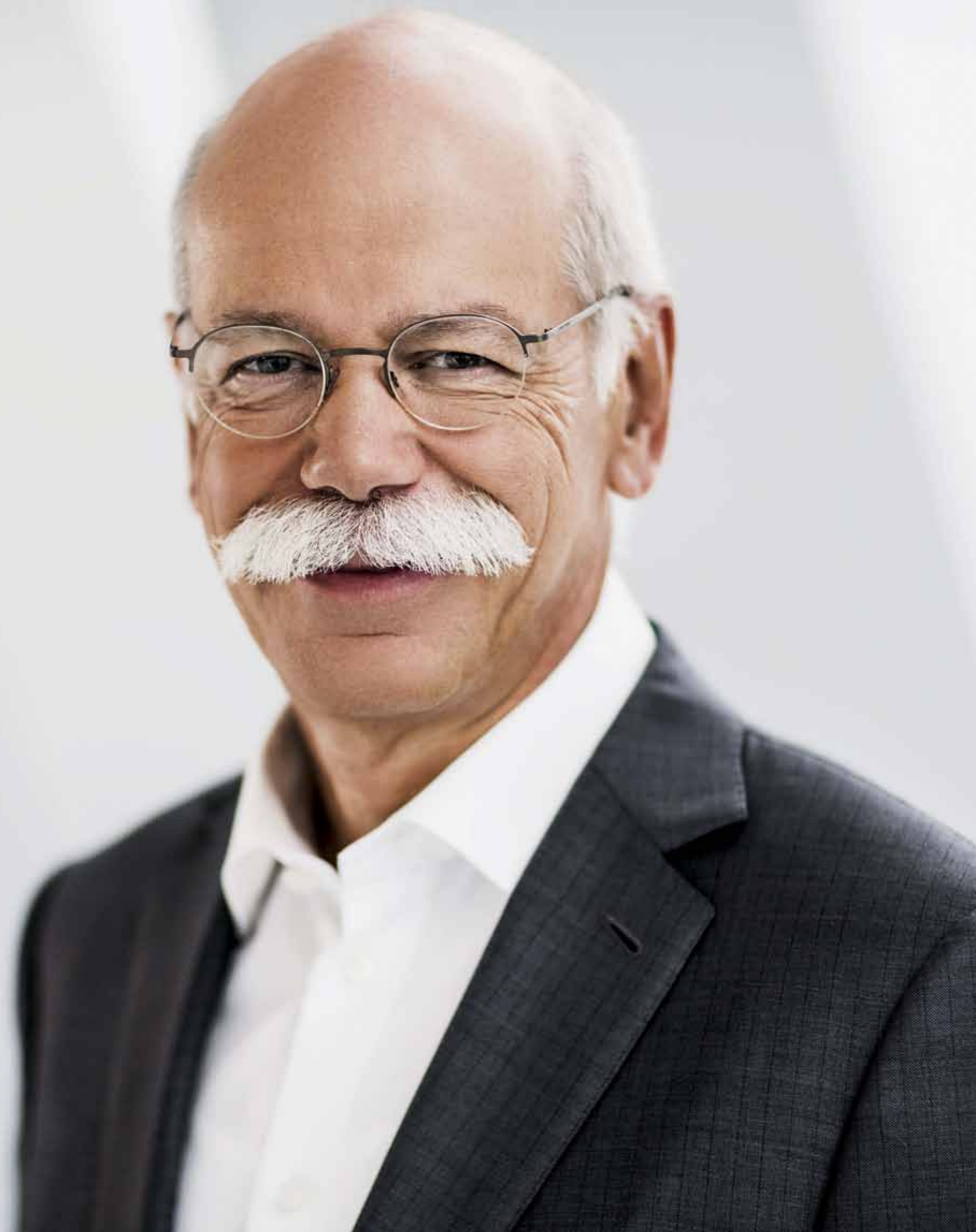
This was yet another 'mission possible' for Zetsche, who turned things around despite a downturn in the economy and a stalling market. On 1 January 2006, he was appointed Chief Executive Officer of Daimler AG and *Time* magazine put him on its list of the hundred most influential people in the world.

On the subject of the upturn in Chrysler's fortunes, Zetsche had this to say in April 2003: "We are only in the third year of our plan and so far we have substantially delivered on all the

promises we made. The most significant figure is definitely having delivered an operational profit of \$1.3 billion in 2002, having lost \$1.9bn in 2001."

Much of Chrysler's renewal was down to the improved quality of the product. Zetsche brought Mercedes' 'quality gates' system to the Detroit firm, a methodology that involves 11 intermediate checks during the development of a new vehicle to boost and maintain the quality level. Thanks to the system, the launch of new models such as the Dodge Viper, Jeep Liberty (Cherokee in Europe) and Dodge Ram Pick-Up met all targets when it came to timing, costs and quality. In simple terms, there was a reduction of more than 20 per cent in warranty costs in the first 12 months of ownership compared to previous models that were built prior to the new quality control system. ▶

The Concept EQ A is Mercedes' first all-electric vehicle in the compact segment. Right: Dr Dieter Zetsche has overseen enormous success for the German car maker.



**PREMIUM BATTLE**

One of Zetsche's key aims in recent years has been to increase sales through a complete rethink of the Mercedes image, fitting out the cars with avant-garde technology and implementing more attractive designs – banishing the somewhat dusty image the brand had become saddled with.

Zetsche's ambitious goal, announced in 2011, was to once again make Mercedes the number one premium car brand in the world by 2018. It seemed like a big ask, given that at the time the company was third behind BMW and Audi. But two years ahead of schedule Mercedes overtook its German rivals, with 2016 sales of 2,083,888 units compared with BMW's 2,003,359 and Audi's 1,871,350. Last year the gap grew wider, with Mercedes some 200,000 units clear of BMW and 400,000 ahead of Audi.

Various factors contributed to this success, as Zetsche explained to *Automotive News Europe* at the Paris Motor Show in 2016. "The three elements I consider as the true foundations of this result are the design, a wide and complete range of products and a better understanding of the Chinese market. There is no precise or correct order in which to place these elements and I hate to put them in a list, but I am convinced that for a premium brand like ours, design is very important."

It explains why Zetsche spends so much time in the Mercedes styling centres, trying to find time, at least once a week, to see what the

designers are up to. Image and design are clearly focal points for him.

"We must combine the safety and quality that has always characterised our brand with design, which is typically seen as an Italian quality," he said. "That's why we opened a style studio in Como, which focuses mainly on interior design. We have had extremely positive feedback from customers who are pleased with the quality and love the style of their Mercedes."

Commenting on Chinese expansion, which included nominating a board member to head up the Chinese operation based in Beijing, Zetsche added: "One of our problems was a lack of understanding of China. The problem is that while we thought we understood everything about China, our partners were obstructing our success, which was a simply stupid approach."

The challenge now facing Zetsche is maintaining a sufficient profit level while going through the complicated transition period leading to the pre-eminence of electric-powered vehicles. By 2035, 15-25 per cent of Mercedes sold will be electric (either battery or hybrid plug-in). To spearhead this, Mercedes launched its EQ sub-brand in 2016, with the latest entry in its range being the Concept EQ A, the company's first compact electric vehicle, which it unveiled last September.

"Our electric initiative is gathering pace: by 2022 Mercedes-Benz Cars will have launched more than 10 all-electric vehicles on the market.

And the Mercedes-Benz Concept EQ A proves that we are serious about introducing electric mobility throughout the portfolio."

While Mercedes is investing heavily in electric and autonomous cars, it continues to work on new internal combustion engines, including diesel powerplants. Despite measures to restrict the use of diesel-powered vehicles in some European cities, the OM 654 diesel engine is proof of that. Designed five years ago and already able to pass the latest emission standards, it is a product the Stuttgart company has strong faith in, partly because its design and production line costs are in the region of €3bn...

During a press conference in January at the Detroit Motor Show, Daimler's number one also touched on Formula One and its entry into the FIA Formula E Championship.

Even though Mercedes has enjoyed enormous success in F1 in recent years, winning four consecutive Constructors' and Drivers' titles between 2014 and 2017, for Zetsche, F1 and Formula E are two separate entities that are not in competition with one another.

"We are in F1 to stay," he insists. "Obviously, this will also depend on how the regulations evolve. We have entered Formula E out of curiosity. For the moment, FE is more of a show than a sport, but we believe we can contribute to its growth. If we succeed, that will be a good thing and we can enjoy being in Formula E, but for us, it's not a choice or an alternative to F1." ◀

Zetsche at last year's unveiling of the Mercedes-AMG Project ONE supersports show car, which boasts F1 hybrid technology transferred from track to road.



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# HEAD FIRST FOR SAFETY

06

With the use of two-wheeled transport on the rise, especially in developing countries, the FIA Foundation and its partners are striving to promote the use of helmets to combat an alarming increase in fatal road accidents

TEXT

KATE TURNER

If the 20<sup>th</sup> century was the age of the car, then as this century has begun we have witnessed the rise of the two-wheeler. Cheaper than cars and more practical for many than public transport, the popularity of motorcycles and mopeds has boomed, particularly in developing countries. And with this has come a fatal toll rising towards 300,000 deaths on the roads each year.

Two-wheelers have become ingrained in the cultural and economic fabric of many low- and middle-income countries, fuelling commerce and employment as well as providing the main source of transport for whole families. The benefits of nimble, cheap transport, however, are pitted against the risks – riders lack all the protections of even the most basic cars and make up around a quarter of all road deaths, with 90 per cent of those occurring in developing countries.

South East Asia in particular has adopted the two-wheeler as the transport of necessity, if not choice, with three-quarters of the global fleet registered in the region. The reasons for the boom are numerous but include increases in expendable income, unmet transport demand, and increasing traffic congestion in urban areas.

The popularity of motorcycles and mopeds in the region comes at a tragic cost, however, with two-wheelers accounting for 34 per cent of South East Asia's total road fatalities. The death toll is of epidemic proportions, yet the solutions are not just known but readily available to any country that wishes to use them. Through public awareness, legislation and enforcement, it is possible to substantively impact the frequency and outcomes of life-altering crashes on roads across the globe.

The United Nations, as part of its Sustainable Development Goals (SDG), has introduced road safety as part of its mainstream global priorities up to 2030. A specific stand-alone target in the Health Goal is to reduce road traffic fatalities by 50 per cent by 2020. In November 2017 a voluntary target to 'increase the proportion of motorcycle riders correctly using standard helmets to close to 100 per cent' by 2030 was agreed by governments at the UN. But in many countries, especially those lagging behind in legislation and enforcement, to even begin to work towards these goals rather than continuing the trend of rising deaths means action must be taken swiftly.

Helmet campaigns, while essential for motorcycle safety, cannot of course be taken in isolation. Of all the factors contributing to deaths and injuries on the roads, speed is arguably the most significant and controllable. Around one-third of all fatal road crashes in high-income countries, and up to half in low- and middle-income countries, are attributable to speed. Generally, a five per cent cut in average speed can result in a 30 per cent reduction in the number of fatal crashes. In the US, 34 per cent of all motorcycle riders involved in fatal crashes were speeding compared to 21 per cent of car drivers.

Another significant factor is impairment due to alcohol consumption. Alcohol consumption is also associated with other risky rider behaviours, such as speeding and non-use of helmets. A study in Australia showed that motorcyclists involved in crashes due to intoxication had the highest average length of hospital admission and the longest average periods with disability before returning to their previous occupation. One study in Sri Lanka showed that the majority of night-time crashes – an extraordinary 67 per cent – were related to alcohol.

## THE CASE FOR HELMET USE

Helmet use is one of the most significant factors in the outcome of motorcycle crashes and an area where effective programmes – particularly in SE Asia – have had significant results. Correctly worn, helmets can reduce the risk of death by almost 40 per cent and the risk of severe injury by more than 70 per cent. Despite overwhelming evidence that mandating the use of motorcycle helmets is the most effective way to lead to behavioural change, fewer than 50 countries have comprehensive legislation governing use and standards of motorcycle crash helmets. Without such laws, enforcement agencies are powerless to prevent hundreds of thousands of entirely preventable deaths and serious injuries.

To mark a decade of successful helmet programming in Vietnam, the FIA Foundation and its partner the Asia Injury Prevention Foundation (AIP) recently published a report that documents how helmets have saved lives. 'Head First: a case study on Vietnam's motorcycle helmet campaign' shows that legislation in a lower-income country

can be effectively enforced. In the 10 years since Vietnam's helmet law was introduced, an estimated 500,000 head injuries and 15,000 fatalities have been prevented.

Set against the overwhelming evidence, however, some countries are actually taking backwards steps. In the US, state-by-state legislation has seen the relaxation of some road safety laws; the state of Michigan repealed its 35-year-old motorcycle helmet law in 2012, introducing looser legislation permitting many drivers to ride without a helmet. The human toll of this change has been devastating: just three years later 68 per cent of motorcyclists died at the scene of the crash, compared to 14 per cent prior to the change.

Saul Billingsley, Executive Director of the FIA Foundation, says: "As the Vietnam experience shows, it is possible to combat the devastating toll of motorcycle fatalities and injuries. The example of Vietnam's very real success following the introduction of helmet laws a decade ago can be measured in tens of thousands of deaths prevented, hundreds of thousands of serious injuries avoided and billions of dollars saved. The motorcycle helmet, with associated measures to ensure its effective use, is a public health vaccine that will pay for itself many times over. The Vietnam experience demonstrates how and why other countries must act using the tools that have been proved to work time and time again, and with urgency."

Over the coming decades in developing countries the use of two-wheel vehicles looks set to increase sharply and the need for action has never been more clear. Legislation and enforcement will save the lives of thousands, but only if leaders are prepared to make change.

In many Asian countries motorcycles and mopeds are the main form of transport, but the legislation needed to protect riders is often lacking.

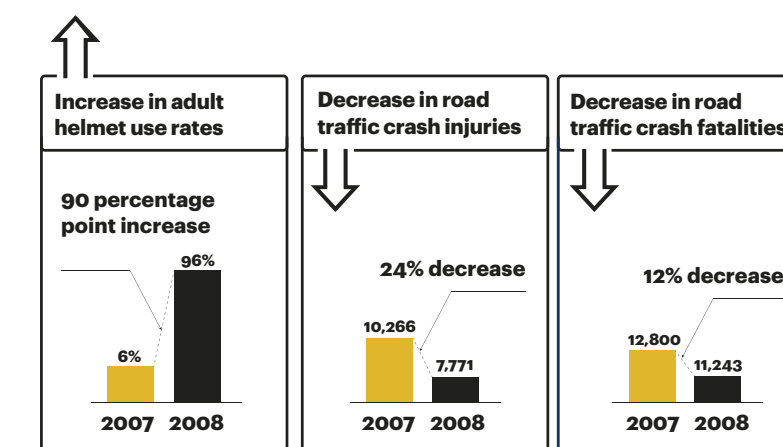


## Breaking the cycle in Vietnam

Vietnam experienced a sudden boom in motorisation and motorcycle injuries as the number of registered motorcycles rocketed from 1.2 million in 1992 to more than 12 million by 2003, making up 97 per cent of all vehicles on its roads. In December 2007, Vietnam's universal helmet law came into effect, which required that all motorcycle drivers and passengers wear helmets while travelling. With effective campaigning carried out by the FIA Foundation and supported by the AIP Foundation, the results were immediate: adult helmet-wearing rates surged to more than 90 per cent from as low as six per cent on city roads. Within the first year alone, road crash injuries

dropped by a quarter, while fatalities dropped by 12 per cent. Over the 10 years since the law was introduced, an estimated 500,000 head injuries and 15,000 fatalities have been averted due to increased helmet use. This has also translated to financial gains, saving an estimated \$3.5 billion USD in medical costs and lost output. The impact of this work, set out in the FIA Foundation and AIP Foundation's report – Head First: a case study of Vietnam's motorcycle helmet campaign – forms a road map for other developing countries experiencing similar rapid motorisation, with the potential of replicating this ground-breaking legislation.

### How Vietnam's 2007 helmet law saved lives



Over the past two decades increasingly powerful simulators have revolutionised race car design and development. Now, tools built to hone track performance are being utilised to spearhead the design of the automated road cars of the future

06

TEXT  
/  
BEN BARRY

# Virtually autonomous

Driving simulators have become crucial in gaining a competitive edge on the race track over the past decade, as software and hardware have replicated car dynamics with increasing sophistication. In parallel, the realism of state-of-the-art simulators has made them indispensable tools in road car development. Now, as road car development focuses on autonomous cars, simulators are again – perhaps surprisingly – playing an indispensable role.

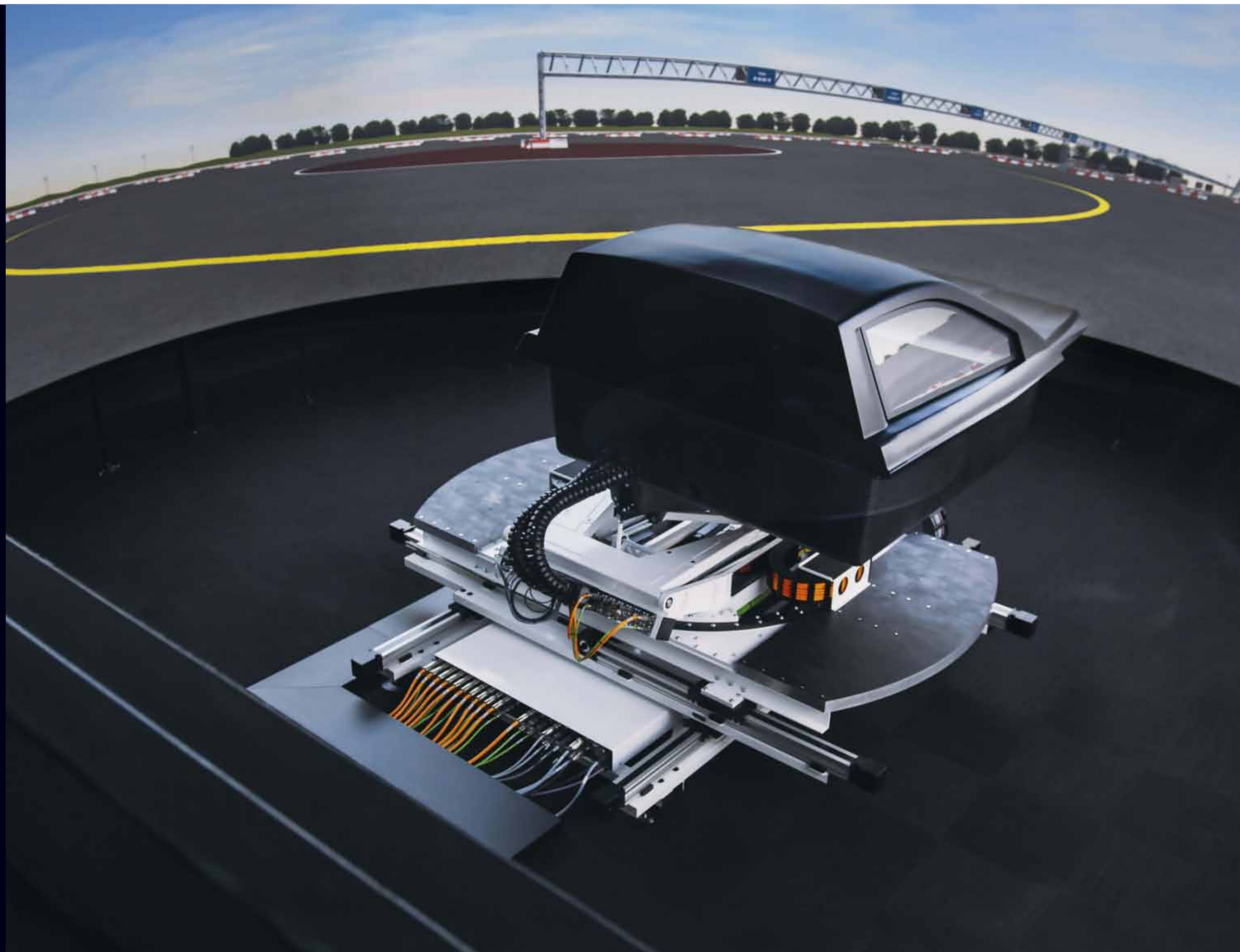
The technical arms of race teams such as McLaren, through its McLaren Applied Technologies division, and Red Bull Racing, through its Red Bull Advanced Technologies offshoot, have pioneered the translation of simulation tools to wider industry and the same is true for UK simulation expert Ansible Motion.

Based in Norfolk, England, Ansible Motion is run by automotive engineer Kia Cammaerts. With a background rooted in motor sport, Cammaerts' CV includes work on experimental aerodynamics at the Ralt Formula One team from 1988 and a stint at Lotus F1 from 1990-92. Later, he switched to software at TAG Electronics, McLaren, and vehicle-performance modelling.

It was from these foundations that Cammaerts set up independently as Ansible Motion and moved into driver-in-the-loop simulators. "Computational power had improved massively, you could simulate the car very accurately, but the limiting factor was the human side of things – humans could drive cars in a way that software couldn't," he explains. "We needed to put humans in touch with our programming, and we needed motion to accurately convey understeer and oversteer and gradients. That's where our driver-in-the-loop simulators came from."

Today, alongside race teams, Ansible counts numerous OEMs as clients, including two of the big three US manufacturers and two of the Japanese big three. ▶

Advances in race car simulation are now being put to use in road car development, with an increasing focus on autonomous technology. ▶



“We came at the problem from the extreme of dynamics with race cars, but we could see potential for the majority of our business to be with the OEMs,” says Cammaerts. “Currently, that figure stands at about 60 per cent and autonomy is increasingly part of the workload – along with electrification and connectivity, autonomy is one of the three main pillars of research money from the OEMs.

While Mercedes had an S-class mounted on a hexapod directly derived from aircraft simulators in the 1970s, Cammaerts says that it's only in the last seven or so years that simulators have become sophisticated enough to accurately model vehicle behaviour and therefore be of use for road car development.

Ansible's latest simulators use a patented six-degrees-of-freedom (up/down, left/right, forward/back, yaw, pitch, roll) stratiform motion system, giving better performance and a lower centre of gravity than hexapod simulators derived from the aircraft industry. You sit inside a production car-like cockpit with a roof and windscreen pillars in the middle of a darkened room. Behind you, engineers monitor and control procedures like a sound engineer might oversee a rock band's recording session. Up ahead, a large curved screen wraps around you, completely immersing the driver in the experience, including peripheral vision.

The simulators are now said to be advanced enough to accurately reproduce the effect a new shock absorber has on steering vibration and the turn-in feel of a new tyre on five different road surfaces. One OEM engineer who had suffered a real high-speed crash at the Nürburgring braced for impact when he 'crashed' the simulator at the same place, so convincing was the virtual impact.

“Sometimes an engineer will say, ‘I like going to Death Valley and the Arctic Circle for testing, and you're going to take that away from me’. But we're not, we're eliminating the time-consuming early stages, for instance where you're constantly fitting new damper specs to test cars and immediately realising they're unsuitable,” explains Cammaerts. “We can focus in much more quickly on something that's very close to the correct specification and let the engineers devote more attention to suspension tuning at a very high level of sophistication.”

Simulators are also increasingly replacing the traditional 'mule' stage of car design, often cut-and-shut older cars designed to rudimentarily represent a next-generation model. “Simulators can be better than mules, you can explore that space much more effectively,” says Cammaerts.

And that allows development to progress directly to more representative prototypes that have much more in common with the finished production car. Cammaerts does not think, however, that a production car will ever be virtually signed off – real-world road testing will remain the acid test.

#### AUTONOMOUS ROUTE

The development of autonomous cars has been a more recent phenomenon. As you'd expect, simulators are perfect for providing a safe virtual space to experiment with how the technology responds in certain scenarios, or how a driver interacts with advanced driver safety systems.

“We can look at a white truck crossing the road in bright sunlight,” says Cammaerts, referencing a well-documented crash that affected a Tesla automated test in the US. “But it's important to get a driver in and see what happens when they do odd things, because that throws all your algorithms out.”

More surprisingly, simulators are being used to examine motion sickness in autonomous cars. Advocates often claim that autonomous technology will not only help reduce accidents, ease traffic flow and cut pollution, but turn commute time into far more productive work time too. However, according to a study by the University of Michigan Transport Research Institute, up to 66 per cent of adults could experience “moderate or severe motion sickness at some time” in an autonomous vehicle, throwing the contention into question.

### ‘Along with electrification and connectivity, autonomy is one of the three main pillars of research money from the OEMs’

“There's an awful lot of research going into autonomy, but most of it is to pass the first test – not hitting things,” says Cammaerts. “They're not really focusing on the quality of the experience.”

Cammaerts explains that when Ansible produced its first simulator in 2010, it aimed to tackle Simulator Adaption Syndrome – nausea brought on by sensory-stimulation conflicts, which affects more people in simulators than motion sickness in cars. Since then, the simulators have been finessed to reduce if not eliminate the problem. In some cases, those same strategies are being reversed, to intentionally get volunteer passengers reaching for the sick bag.

“Motion sickness relates to our physiological response to yaw rate, acceleration, braking and cornering,” says Cammaerts. “Essentially, it's a result of perceived mismatches between the eyes and the vestibular system in our ears – when motion is seen and not felt, or vice versa. Looking

out of a car window can help the brain make sense of such information, but with autonomous cars – particularly with electric cars – the architecture of the car and what you're looking at can change dramatically. You'll probably be looking down, but you might also spin the seats round to have a business meeting, or lie down to watch a film, but not if you feel sick – imagine if Tom Cruise steers left in a film, but your car turns right, exactly the opposite of what your brain is being conditioned to expect!”

#### BALANCING ACT

The vestibulum, part of the inner ear, is key to our perception of motion and balance, and is the focus of Ansible Motion's work. “We looked at the first-principle requirements to provide levels of vestibulum stimulation and came up with a software model designed to stimulate the brain's perception of movement and spatial orientation,” continues Cammaerts.

In research conducted with Coventry University, surprisingly eager volunteers have been invited into the simulator wearing blindfolds and earplugs before being subjected to identical motion experiences. The results have been surprising. “Some people described the experience as a figure of eight, some as a vertical arc, and they were all certain of that,” reveals Cammaerts. “It proves that humans don't have absolute motion sensors and can experience identical motion in very different ways. That's a problem if you're trying to apply one set of rules as a solution.

“But there's a lot the car can do to make you feel more comfortable and reduce the sensory load,” continues Cammaerts. “Nausea often comes from a mismatch between expectation and reality, so perhaps you can pre-condition your expectation so that the mismatch to the reality is minimised. There can be haptic feedback in the seats to indicate which way the car intends to turn, perhaps the screen you're looking at can display dynamic graphics as an indicator, or there's a view of the road ghosted in the background, or there could be audible cues. The main question is how might real people react to such indicators?”

Making occupants feel more comfortable when they're not at the wheel could also be key to brand differentiation – and therefore sales success – when autonomy becomes mainstream. Cammaerts cites the prospect of Tier-1 automotive suppliers providing all OEM manufacturers with the same autonomous algorithms. “If I were a prestige European maker, I'd be very nervous about how to project my brand values when that technology is uniformly available to everyone,” he comments.

Successfully reducing motion sickness could well help define a brand 'experience', but it might also be key to the widespread acceptance of the autonomous car itself. Perhaps it's ironic, then, that machines developed to help racing drivers hone their skills might help make us better at not driving at all. ◀



British firm Ansible Motion is at the forefront of simulator use in road car development, where the human touch is still valued in the cockpit and behind the scenes.



# TOWARDS NEW RACING HORIZONS

TEXT  
/  
JUSTIN HYNES

06

A year into his tenure, the FIA's Secretary General for Motor Sport, *Peter Bayer*, looks at the current shape of global motor sport and to a high-tech future that he believes will always feature "a passion for driving"



**You've been in your role for just over a year now. What did you find when you arrived and what did you identify that needed development?**

When I arrived I was impressed by how well the FIA was organised. In terms of what I discovered, well, honestly, what I didn't know so much about was the mobility side of the Federation, which I think is underestimated, because with 80 million members the FIA is one of the world's biggest consumer organisations and that obviously opens up a lot of interesting areas of engagement for a sporting federation.

When I arrived we had just signed the Formula 2 agreement and we had to immediately start working on the future of Formula 3. And then we had quite a bit of work to do with the World Touring Car Championship and the World Endurance Championship, which were all going through some big changes, so I was pretty busy from day one.

In terms of what I thought could be improved, I spent quite some time basically integrating myself into the system, but once I had an overview I thought that on the organisational side some improvements could be made and we have done that.

Given my sporting background and federation background with the IOC, I felt the member side of the sporting organisation a bit more needed more support because at the end of the day the Federation is as strong as its members, and I felt that more could be done to support that.

We've restructured a new ASN development department, which I am personally heading, to make sure that we can deliver services to our members at the highest level, making sure they get the support they need. We've also taken on some new people with the department in a bid to create what I would call a full matrix kind of organisation. And we're also seeking to streamline how we work. We recently announced that the Formula One technical department reports to the technical director Gilles Simon, which gives our sporting directors a very clear line, making sure that the sporting and strategic side is taken care of together with the Sporting Commission Presidents, while the technical development is managed by the technical department in this matrix approach. That has improved overall organisation.

**Does that approach extend to how the FIA manages grassroots competitions?**

Grassroots growth is something that every sport has to be keenly aware of. Society is changing and the environment is changing, and if you're not in touch with reality then reality can overtake you. I come from a



marketing and events background having worked for many years on the youth Olympic games, and it's crucial to have a dedicated focus on youth and the future of motor sports.

**A new 'super-season' format for the 2018/19 WEC has, says Bayer, helped to bring about a boost in grid numbers.**

**Is there an element of social responsibility in that, and is it something that is increasingly important for sports federations?**

Absolutely, and it's something we have had a lot of success with. If you look at our women in motor sports initiative, which has been supported by the European Union, the project we submitted was, I think, one of the top 10 projects out of more than 400 presented to the EU, and the Girls on Track programme we are launching is a result of those efforts. Projects such as this exactly serve that social purpose. It's making sure that we are aiming at young drivers, that we are attracting young women to motor sport, raising awareness with the younger generation on road safety and other key issues.

It's one of the key projects we are embarking on and another, which will be announced shortly, is that we are going to take part in the Youth Olympic Games for the first time ever in 2018 in Buenos Aires with an e-karting/road safety project.

**You arrived at a time of significant change in Formula One, with a new Commercial Rights Holder (CRH), new technical regulations and new cars. What's your view of F1 at the moment and where it is headed?**

I can't compare to how things were before

the new Commercial Rights Holder took over as I have no experience of that, but what I definitely can say is that the new CRH has a very professional team on the commercial side of Formula One.

We have a very good co-operation with them with a clear separation of who is responsible for what areas. I read the other day an interview with [Mercedes F1 boss] Toto Wolff who said he sometimes misses the hand grenades that were tossed around in the past, but for myself, I live quite well without hand grenades!

We have some big discussions ahead of us regarding the future after 2021, and these are exciting times because the major decisions in that regard will have to be taken this year to

allow everyone sufficient time to prepare for the future. There's a lot happening in F1 at the moment and although the FIA clearly has been reinforced in its position as regulator and legislator of the sport, we are also involved more and more on other topics with the CRH, which again is very positive. For example, we recently announced the Grid Kids initiative, a joint effort between F1 and the FIA, which gives Formula One Management a very interesting commercial proposition. To once again come back to youth and the grassroots, it is also a great initiative for the FIA in that it gives young drivers the possibility to be on the grid with their idols. It's an amazing opportunity and it's basically coming out of this joint approach we have with Formula One and this new spirit of working together, which I think is hugely important.

**The FIA and Formula One have put forward a possible power unit specification for 2021 and beyond. Is there a deadline for when you need to basically let manufacturers know what they are facing?**

We will have a Strategy Group meeting in April where the next steps will be discussed. Our technical director, Gilles Simon, believes that to be a reasonable deadline. There is a bit of pressure.

**Another recent development was the announcement that former McLaren team boss Martin Whitmarsh will be working with the FIA on trying to define some cost control mechanisms for the sport. What is the process there?**

All of these elements are connected – the power unit, the cost of it, governance, revenue distribution – although that is solely the CRH's area – all of those things are part of the recipe for a successful future for Formula One, and then there is an overall effort to manage costs in Formula One. ▶



**WTCC and the TCR series have combined to produce the new FIA World Touring Car Cup for 2018, again with a strong entry.**

For the FIA, one of the key imperatives is to make sure that we have fair and relevant sporting competitions that aren't decided by who has the deepest pockets.

**The World Rally Championship was also entering a brave new era when you joined the FIA. Again, are you happy with how that worked across 2017?**

The 2017 championship was as exciting as it can get, really. The cars are simply amazing. I think we had seven different winners last year, so the championship was exciting until the end. We had M-Sport finally securing the title, which was great for the sport. The promoter is working hard and we have a couple of new candidate rallies coming in for new and exciting events, so honestly, the WRC is kind of the poster boy at the moment!

We have a new rally director in Yves Matton and with him I think we need to look at how to develop the sport further overall – how to focus again on grassroots, how to make sure that we control the cost of rallying, not only at the top level but also at entry level, which is a continuous discussion. It's a challenging question. I can give you an example. Last year we implemented new regulations, globally, on safety fuel tanks, but they come at a certain cost and we had many competitors calling us saying 'look, the safety tank will cost more than my car'. But at the same time we cannot compromise on safety – ever. However, we will try to look for solutions to make sure rallying can develop and remain a great opportunity to get started in sport. The Cross Car project is a good example. We recently sent our ASNs the regulations for the concept, which is for safe and fun cars powered by a motorbike engine and it's at entry level. France, Sweden and Finland have been very active in this and we've worked together with those countries to develop a concept that could work globally to make sure rallying remains as relevant and interesting as it is now. Clearly there are challenges, environmentally and commercially, so we need to spearhead development and make sure that we are on top of things.

**There was upheaval in a couple of championships, with the World Endurance Championship losing Porsche and the World Touring Car Championship coming to an end. Are you satisfied with the future direction of both series or is there more work to do?**

With WEC I think we came out stronger than we were before. Last month, we announced the super-season grid with more cars than ever. There are 36 or 38 full-season entries for the eight rounds of the WEC. By coming up with this new concept of the super-season, including two Le Mans cycles, not only did we manage to earn a new record



**Bayer describes the WRC as the current 'poster boy' of FIA motor sport due to its successful revamp for last season.**

grid, it also gives us time to prepare the 2020 regulations where we will come up with, I think, a revolutionary concept in order to secure the future of endurance racing. In WTCC, we came to the end of the homologation period for the existing cars, and [FIA] President [Jean] Todt was very clear that the touring car championship is of major importance to the FIA, but only if we manage to have the best possible touring car world championship. So we're discussing with DTM, we're discussing with the Japanese Super GT series, and with Discovery to develop a new concept for 2020, because we believe we need to unify the key players in this area. So far the discussions are promising enough that we can keep moving. In the meantime we've achieved a very interesting co-operation with [the] TCR [series] and I think we have 28 cars on the WTCR grid now. I cannot wait for the championship to start in Marrakech.

**By contrast, Formula E doesn't seem to have too many problems. Do you worry, though, that the currency of the championship's electric format means that manufacturers will flock to it, to the detriment of other series?**

Personally, I think there are very different audiences at a Formula E event than at a WRC or Rallycross event or even a Formula One race. At the moment it serves a great interest, but the question we have to ask ourselves is how sustainable is it to have eight,

**Formula One will have to agree on a new power unit specification for 2021 and beyond this year, and Bayer believes that "exciting times" lie ahead for motor sport's flagship series.**



nine, 10 or even more manufacturers in one championship and how long will all of them stay, because at the end of the day there will be one winner and defeat is never easy for manufacturers. Time will tell, but today I think the championship is in a really good place and it underlines the importance of new technologies. Regarding the argument that it might take manufacturers away from other series, you have other big automotive groups with lots of brands and it's healthy for them to engage in a number of championships with a variety of brands.

**Rallycross is also going fully electric in 2020 – is that something you are excited about?**

In rallycross I think currently we hold eight memorandums of understanding (MOU) with manufacturers who participate, because again the FIA has done a very good job to strategically align with the manufacturers in terms of what are rallycross's specialities – it's quick, it's spectacular, it's fun and the cars accelerate like rockets. That all says electric. Rallycross is about short distances, so we can basically showcase what electric cars can do, how fun they are, how reliable they are and how competitive they are. So that's why in 2020 this will be introduced and I think it will be a success story.

**Does it mean the current style of supercar will not compete?**

The current supercars will be leaving and the world championship will become electric, while the supporting series will be run on a combustion engine, potentially with a hybrid element, which is to be discussed.

**Finally, in your personal opinion, what does global motor sport look like to you in five years' time?**

If we go a bit further – 10, 15 years – then that is a really interesting question because society is changing. We have these trends of electrification, hybridisation, autonomous driving and hydrogen fuel cell technology, but what I think will remain relevant is the pleasure of driving. It's easy to assume that motor sport is being defined by all these trends and that in 20 years' time nobody will drive their own car anymore and in 50 years' time nobody will have a driver's licence. Now, that may be the case, but what we can say is that the pleasure of driving will not disappear. There will still be a passion for driving and maybe that will be experienced through motor sport. It's very interesting. Technology is always developing and the FIA will be at the forefront of those developments. We just need to remain open and interested in what is happening. ◀



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06

## Driven to move forward

At last December's FIA General Assembly in Paris, a number of key appointments were made, with eminent sporting and political expertise being brought in to help drive progress and innovation across a number of areas. These include the development of junior and endurance racing, working with global motor manufacturers to create the road and racing machines of the future, and building two new Commissions for sustainability and accessibility. Here, AUTO speaks to the men and women leading the way forward for the FIA

TEXT  
 /  
 JUSTIN HYNES



### François Fillon

President of the FIA Manufacturers' Commission

*A passionate motoring and motor sport enthusiast, the former French Prime Minister was instrumental in bringing Formula One back to France this year and now leads the FIA's liaison with the world's car makers*

#### What's your view on the future of autonomous driving and mobility as a service?

The FIA – through its Member Clubs – seeks to protect the rights of road users worldwide. Within that there are areas where the Manufacturers' Commission and the FIA Mobility Clubs' priorities align. In taking on the role of President of this Commission, I'm confident that we can do more in promoting the areas of mutual interest that exist between manufacturers and consumers.

#### The Commission is also involved in trying to implement minimum safety standards among manufacturers. Are you encouraged by what is happening so far?

We have a few exciting projects. Together with the manufacturers, the FIA has developed many safety technologies for motor sport that could have concrete applications in road cars. What we will be discussing is how to pick one or two pilot projects in order to deploy some of that

technology in road cars. This is especially true for some of the crash investigation techniques that have reached an exceptional level in motor sport, such as accident data recorders, in-ear accelerometers, biometric gloves and high-speed accident cameras.

#### You have a deep passion for motor sport. Where did that come from and what form does it take now?

In the 1960s, every year, during the week of the Le Mans 24 Hours, the Austin-Healey team would set up across the road from my school in Cérans-Foulletourte, Sarthe. As soon as the bell rang, we'd spend the rest of the afternoon admiring the Austin-Healeys. The excitement of it all really had an impact on me. For a long time my passion revolved around Le Mans and my personal interest in fast cars. Later on, it compelled me to take up racing and I regularly take part in historic races. My favourite memory is definitely the first time I tackled

the Mulsanne Straight on the Le Mans circuit at night.

#### Are you pleased to see a French GP back on the F1 calendar?

Absolutely! The French Grand Prix is the original grand prix. It's almost unthinkable to have F1 without a French GP. I am happy about this comeback because it's a project that was launched when I was Prime Minister. France is an important country for the automobile industry and for motor sport, so it was important to get this event back on the F1 calendar. Let's hope it stays forever.

#### Rallycross is going electric. What is your view on e-categories within championships?

It is clearly the direction manufacturers are investing in and, as such, there is going to be a level of demand from them in their racing interests. It is a great indication of the power of motor sport that global corporations still want to incorporate their latest technologies in sport. It's essential for motor sport to maintain technological interest at some level – or it risks becoming irrelevant.

#### In recent years manufacturers have left some series, such as the WEC, and flocked to others, such as Formula E. Is there any way in which their involvement can be safeguarded and their withdrawal not be disruptive?

There is an element of natural fluctuation in motor sport, whether it's manufacturers, teams, sponsors – they come and go depending on what suits their commercial needs. But we must do everything we can to be prepared. We want a constant dialogue with the manufacturers and to work with them and the other Commissions on creating regulations that address their interests. The most important thing is that the manufacturers remain in motor sport – and it is up to us to make sure there is an avenue for them to do so.

## Felipe Calderón

President of the FIA Environment and Sustainability Commission

*With first-hand experience of balancing rapid growth with the need to safeguard a unique environment, former Mexican President Felipe Calderón has a clear vision for his new role within the FIA*



### What is the aim of the FIA's new Environment and Sustainability Commission?

The aim of this Commission will be for the FIA to maximise its sustainability credentials. At a global level, the world faces significant challenges across a wide spectrum of economic, social and environmental matters. The FIA has both an opportunity and a duty to act in this global debate. Personally, I have a close interest in these issues and I'm confident that through the Commission, the FIA can stand up for consumer choice by helping to promote freedom of mobility through clean, safe and affordable motoring.

### What are the main challenges the Commission needs to address?

On the mobility side, air quality and vehicle emissions will play a prominent role in the Commission's early work. Following the 'Dieselgate' scandal, the adoption of real-world emissions protocols have been a priority for the FIA. The Commission will be

strongly involved in this area, and will look to strengthen independent emissions testing and data collection in order to ensure accurate and up-to-date information for consumers.

Other potential challenges we will look at include urban mobility policies, such as congestion and poor integration of transport modes, regulatory instruments and global standards.

On the sport side, the FIA has marked environmental sustainability as a key component of its governance. By co-operating with its ASNs and other motor sport stakeholders, the FIA has worked to ensure that they understand, measure and improve their environmental footprint. The FIA has also begun to regulate its championships and events. The first of these is the FIA World Rally Championship, where all events are required to be fully accredited under the FIA's Environmental Accreditation Programme. The Commission will also be looking to promote the FIA's 'Track to Road' concept. It will do so by continuing to pioneer

technological innovation on track, and through that promote consumer acceptance and awareness of these new technologies.

### Through your former role, you have first-hand experience of dealing with rapid urbanisation and the need to improve infrastructure in less developed areas. How do you see the future of sustainable transport in countries that are heading in the same direction as Mexico?

In many respects, the key to resolving the numerous transportation issues that developing cities are facing involves making infrastructural improvements. This is something we are acutely aware of in Mexico. For many years now, we have been investing in a road network that will not only facilitate greater personal mobility, but which also promotes more efficient transportation of goods countrywide. In tandem with this, other forms of transport must also be developed. This is where issues such as intermodality of transport systems become important, as they not only improve user choice but also help make transport systems more inclusive.

### What's your vision for this Commission over the coming years?

To further establish the FIA as a leading voice in the global sustainability debate. The FIA is already a strong actor in this area, but by bolstering our sustainability credentials, the FIA can be a principal voice in global urban mobility issues. I am confident that over the coming years the Commission can deliver policies to help our members ensure that obstacles to sustainable transportation are addressed. In doing so, the Commission will help the FIA achieve one of its foremost missions – ensuring clean, safe, affordable and inclusive transport for all.

## Richard Mille

President of the FIA Endurance Commission

*A lifelong passion for racing and sports cars in particular makes elite watchmaker and experienced motor sport partner Richard Mille well qualified to help define the future of endurance racing*



### Tell us about your passion for sports car racing. Where did it originate and how are you involved today?

The first time I got a watch, I immediately wanted to open it and find out exactly what made it tick. It was the same with cars. I needed to understand not only what makes them go, but also what makes them go fast! Like most young boys I made my own model cars, but the crunch came when my dad started taking me to real Formula One races, such as Monaco. Even today, in my head, I can still hear the buzz

of the tyres whirring round the hairpin bend – so much power contained in these perfectly shaped pieces of metal, all being pushed to its limit. It was the beginning of a lifelong passion. It's why I am very happy to lend my time and support to some unique events such as Rétromobile in Paris, Chantilly Arts et Éléance and the Le Mans Classic, where I can relive some of those early childhood memories with superb models from the 1960s and '70s. I also enjoy being the sponsor of some F1 teams. Motor racing is my life!

### Endurance racing at the highest levels has been reframed for the immediate future. Is it on a good path now?

Absolutely. The work that the FIA Endurance Commission did last year in plotting a path forward is definitely a step in the right direction. Making the Le Mans 24 Hours the finale of the [FIA World Endurance Championship] season is great, and the interim 'Super-Season' will be a one-off but it should be very exciting. We should have some really good competition in LMP1 this year with the regulation adjustments, and the GT category is really strong with BMW and Aston Martin joining alongside Ferrari, Ford and Porsche. On top of that we're working really hard with all the stakeholders – especially manufacturers past, present and future – on fully defining what the WEC should look like in the 2020/21 season. The Endurance Commission has done a lot of work with the Manufacturers' Commission already and we have some very interesting proposals that we're investigating. We have a thriving GT championship and our aim is to deliver a premiere prototype class.

### Can the sport once again attract major manufacturers to the top

**'There is absolutely room for a prototype car as the pinnacle of endurance racing'**

### LMP1 category or do you think that era is now over?

We have Aston Martin, BMW, Ferrari, Ford and Porsche committed in GT, and of course Toyota in LMP1, so there is clearly goodwill towards the championship from manufacturers. They have been willing to work on solutions they would like to see that could facilitate their involvement with prototype-style cars. It's an ongoing process, but the signs are positive to date. Our indications are that there is absolutely room for a version of a prototype car as the pinnacle of endurance racing. Some of the proposals are genuinely exciting – of course, I can't go into any details until we're much further along the process, but we're committed to delivering an updated prototype class.

### What is your hope for endurance racing over the coming years?

We need to harness the spirit of what endurance racing means to people – which is racing at iconic venues, incorporating future technology that is appropriate for endurance racing, competing with cars that are extremely exciting to watch and a spectacle that brands can use for marketing. Our goal is to deliver on those things through the regulations across both prototypes and GT.

## Felipe Massa

President of the CIK-FIA  
Karting Commission

*The 11-time Formula One grand prix winner discusses his new role as president of the FIA/CIK and the issues facing the entry level of motor sport in the future*



**Karting is obviously important to you. What did karting do for you as a young racer?**

Definitely, karting is the school for the driver. Karting was very important for me because, first of all, it just gave me happiness in terms of competition, as my dream was to become a professional driver. Without karting I could not have achieved what I did in motor sport. Karting gave me a good education and mentality as a sportsman but also as a person. In karting I learned to work hard and always to believe in my dreams.

**What do you want to achieve in this role? What's the ultimate goal for you?**

I've always been lucky to achieve what I wanted and everything started from karting. So I'm sure I can give a lot back to karting based on my experiences and what I've learned during my career. I want also to try to improve the things that require improvement, to have strong relationships and constructive exchanges with all of the relevant

manufacturers and the people involved in karting.

**What are the immediate issues you see?**

There's a lot to get into. For a start, we have a new promoter for the CIK-FIA European and World Championships and one of the first things will be to work with them to help make these championships even more successful. There are a few issues with licensing around the world to look at as well. In terms of the bigger picture, I think we have to consider the position of karting within motor sport. I know some people question the future role of karting in a world where kids spend so much time gaming and in which virtual reality is improving all the time, but karting will always be relevant for teaching the basics of what actual racing is like in the real world. That doesn't diminish the role of those other areas – and as a governing body, we have a responsibility to work with them to help draw more people to

karting, because there is nothing like the real thing.

**Does karting need to be streamlined in some way?**

I understand the structure is something that is always being looked at. I know the FIA has worked hard to restructure the single-seater ladder – and it makes sense to ensure that karting is similarly well structured. To me, the elite level – CIK-FIA – is pretty well-structured today. But there is some work that we could do at national level. We need to keep an eye on age restrictions and then there is the topic of electric karts, so there is some work to do. The main thing for me is to get my head around where all the challenges are and then work on improving those situations.

**Speaking of electric karts, what's your opinion of those?**

As more racing categories introduce electrification – either full or partial – it makes sense that karting moves with the times to be

## 'Karting will always be relevant for teaching the basics of racing'

able to provide some experience of that. Part of the challenge for me will be working with my team to structure karting in a way that can accommodate both electric and traditional drivetrains – which is something that I know the CIK-FIA has already been working on. We need to find ways of incorporating and embracing technology where it is possible and appropriate. If we just ignore it, well, this is the best way to make karting irrelevant.

## Nathalie McGloin

President of the FIA Disability and Accessibility Commission

*After a 1999 road accident left her tetraplegic, Nathalie McGloin turned the trauma into a quest to become a top-class racing driver. Having succeeded in her mission, she's now been chosen as president of the newly-created FIA Disability and Accessibility Commission*

**What does the creation of this new Commission mean to you?**

The creation of the Commission marks a big step forward for me in terms of my career, but more importantly for global motor sport generally. The importance of making motor sport more inclusive and general mobility more accessible is massive and having the FIA take a direct responsibility for this by the creation of this Commission marks an extremely positive direction for the future. I am so excited to start work with the Commission to make some lasting

changes that benefit everyone involved, not only in motor sport but also in mobility in general.

**What do you want to achieve in this role? What's the ultimate goal for you?**

The goal of the Commission is to improve accessibility for all in both motor sport and general mobility in the broader community. In mobility, there are a much broader array of factors affecting access, which vary greatly depending largely on social-economic factors. In motor sport, the focus is on ensuring people with disabilities

can compete fairly and safely. The uniqueness of our sport means that through technology, disabled drivers can compete against able-bodied drivers on a level playing field. We are the only sport in the world that does this and I really want to start celebrating the fact that motor sport is for everyone.

**What are the immediate issues in your view?**

In motor sport, I'd say the biggest issue is around licensing. We're absolutely committed to continuing to grow the participation of people with a disability in motor sport, which is something that the FIA has been doing for some time. However, there is a responsibility to make sure that this is done in a safe and, especially, an understanding way. We'll be working closely with the FIA's Safety Commission and department to make sure we work more closely with ASNs and competitors to improve this process for everyone. In mobility, one of the biggest issues is around trying to improve accessibility of more

advanced safety technology for people in developing countries – whether vehicles, roads or signage systems. Again, it's only early for me – and this is a brand-new Commission, but I'm looking forward to spending some time with the FIA's Mobility department to see where we are on this issue.

**Are you encouraged by the steps that have been taken recently?**

With regard to my area of expertise... Absolutely! I'm proud of the giant leaps that have been taken in motor sport. A lot of people have their own opinions on the involvement of technology in motor sport, but one of its greatest achievements has been how people with a disability are now able to overcome their physical challenges. You look at Alex Zanardi winning WTCC races, Frédéric Sausset at Le Mans, Billy Monger testing a British F3 car only 10 months after losing both his legs... There are far fewer factors that prevent people participating in motor sport today than ever before.

**How much positivity and public awareness of the need for accessible racing can be drawn from your achievements and those of the drivers you mention?**

It's crucial to be able to show people out there that it can be done! And the more we see this in higher-profile categories, the more people will start to believe that it's not an unusual thing. It will help normalise motor sport as a legitimate pursuit for people with a disability – as well as for other competitors, fans and sporting bodies. For me, we will really know that we as a sport have made an impact when our children start hanging posters of Alex Zanardi next to those of Lewis Hamilton on their bedroom walls. When our children start celebrating our motor sport heroes in the face of adversity, that will mark a big success in terms of disabled representation in motor sport.





06

TEXT  
/  
JUSTIN HYNES

# A vision of safety

Hollywood's *Michael Fassbender* is the latest star to become an ambassador for the FIA's #3500LIVES campaign. Here, the actor and motor sport fanatic explains why regular eyesight tests are crucial for safe driving and what it's like to win races with Ferrari

## What prompted you to get involved in this campaign?

I was inspired to get involved with the campaign because there are so many road accidents every year and I take safety on the road very seriously. The work that the FIA is doing to increase safety on the road is very impressive and I am proud to be involved.

## The campaign slogan you are associated with is 'Check Your Vision'. Why is this important?

Having excellent vision is paramount when getting behind the wheel. After all, vision is 85 per cent of driving effectively. I have my eyes tested regularly to ensure I maintain my vision when I'm driving. Luckily, I have always passed my eye tests!

## Have you had personal experience of the other safety issues outlined by the campaign – buckle up, respect the highway code, wear a helmet, obey the speed limit, drive sober, pay attention, protect my children, stop when tired, etc?

I often take long drives through Europe and always make sure I pull over regularly and sleep for between 10-15 minutes. This practice of power napping is really effective in refreshing the brain and eyes before driving again. It's never worth it to keep driving. If you feel tired you need to pull over and close your eyes.

## The campaign images of you and the other celebrities are appearing all over the world. What's your hope for its impact?

I really hope the campaign catches people's attention and that they think about the specific safety issues when it comes to driving. The campaign concentrates on the individual things to be thinking about when driving and collectively my hope is that safety awareness will be brought to everyone's attention by targeted messages.

## How much do you think the involvement of celebrities as role models can help spread the message of road safety?

Celebrity engagement is often successful in raising awareness for charities and organisations when there's a genuine message. Road safety is incredibly important and I am really happy to be getting involved, and hopefully people will respond and take more precautions on the roads to prevent possible accidents.

## There are a number of motor sport stars involved in the campaign – Fernando Alonso, Felipe Massa, Nico Rosberg, Marc Márquez. What parallels do you see between increasing safety in racing and the promotion of safety on the road?

I think the technology and understanding that comes from motor sport directly influences the manufacturing of road vehicles as well as road safety awareness. Drivers are out on the track pushing cars to their limits and learning about what the technology can do.

## What about your own passion for motor sport. Where did that come from and what series do you enjoy?

My grandfather introduced me to motor sports and Formula One when I was a child, and I will forever be grateful to him as I love it and have been incredibly lucky to be at some exciting races over the years – and to have raced on some of the most famous tracks in the world.

## 'Having excellent vision is paramount when getting behind the wheel. After all, vision is 85 per cent of driving effectively'

## You've been racing yourself in recent times, in the Ferrari Challenge Trofeo Pirelli series in the US and in January you took your first win at the Daytona International Speedway (left). How are you enjoying that experience?

Over the last year I've been racing with Ferrari in their Ferrari Challenge. I met some great drivers and coaches during the season, and my love for motor racing grew even deeper! I was also able to practice on some beautiful tracks in the US and in Europe. It's been a great experience and I plan to keep at it.

## We know you're a big fan of motorbikes. What key pieces of safety advice would you most stress to riders and just as importantly to drivers in being aware of motorcyclists?

Yes, I love motorbikes. A key bit of advice I would pass on is to always implement the life-saver as a motorcyclist or automobile pilot. What I mean by life-saver is a look over your shoulder when changing lanes or making a turn. Don't just use your mirrors – it's a key move. ◀



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# 07 'I'd get into race mode and turn into a bit of a not-nice person'

The epitome of the 'straight talking, firm but fair' attitude that defines Australian sportsmen, *Alan Jones's* journey to the top in Formula One was characterised by hard graft and a bruising competitive spirit. "I was there to go motor racing and that was it," he tells AUTO

TEXT  
/  
TONY THOMAS

As the velvet-flared 1970s shifted into a brasher, less cosy decade, Formula One found itself on the cusp of seismic change. Newfangled turbocharged motors were edging out the engineering certainties of Cosworth V8s and Ferrari flat-12s; powerful ground-effect aerodynamics were redefining cornering speeds, and a gifted generation of young, hot-shoe racers were starting to make their mark. The '70s had been the Stewart-Lauda era; the '80s were for Villeneuve, Piquet, Prost, Senna and Mansell.

But right in the middle, a fulcrum on which eras tipped, there was 1980 world champion Alan Jones, who, in hindsight, was in every way the right man for the moment. An Aussie slugger, noted as the very firmest of the 'firm-but-fair' brigade, he was old enough to have earned his spurs but still sufficiently youthful to have everything to prove. Ready, in other words, for his big break and with enough chops not to blow it when it came.

"I'd come to England to make my way in the Mecca of motor sport," he says of his pilgrimage

from the Melbourne racing scene, "without ever being able to go home for Sunday lunch. So I guess you could say I was pretty determined."

By 1978, in his fourth F1 season, Jones had battled his way into a seat with an emerging top team, Williams Grand Prix Engineering, much as their founder, the future Sir Frank, had grafted and ground his way to racing respectability amid a sceptical peer group.

When they found each other - unwitting paramours - Williams would draw approving pitlane glances with their first pukka car, the FW06; Jones would steer it with the confidence bump of an eye-catching '77, during which he'd scored his first grand prix win in Austria.

Jones-Williams couldn't have known it then, but greatness beckoned. Each saw something in the other and, 40 years on, Jones still feels the love: "First of all, Frank is the best bloke I've ever driven for and Patrick [Head, Williams' co-founder and technical chief] is the best engineer I've ever worked with," he says. "And I think it was just one of those things where we all gelled. ▶



Right: Jones with Frank Williams in 1980, his title-winning season. Above: He came close to landing a second crown in '81 in later versions of the FW07.



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Right: Jones with Frank Williams in 1980, his title-winning season. Above: He came close to landing a second crown in '81 in later versions of the FW07.





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07

# FORD'S FINEST HOURS

Born in anger but driven with precision, skill and daring, the Ford GT40 remains one of sports car racing's most iconic machines. AUTO looks back at two of its most memorable victories

TEXT

/

JUSTIN HYNES

The story of the GT40's genesis is oft told, but it remains one of racing's great legends, a tale of revenge born of bruised pride, ego, money and the world's most famous endurance races.

In the early 1960s, despite on-track success, Ferrari was a company in financial difficulty. Ford, meanwhile, was an auto-making behemoth in search of racing success. Tentative approaches were made to Ferrari and, after the overtures were positively received, the work of hammering out a deal began.

Over an intense three-week period in the late spring of 1963, Ford's General Manager Donald Frey worked with Enzo Ferrari to put together a deal said to be worth in the region of \$10 million. The negotiations allegedly got as far as discussing how jointly produced cars would be branded. And then, overnight, the deal disintegrated.

According to Ferrari's personal secretary, Franco Gozzi, the deal required Ferrari to submit to Ford 'for quick approval' any racing budget over 450 million lire, a sum then worth around \$257,000, and the amount of Ferrari's race budget for the 1963 season. Ferrari, wishing to have complete control of the racing team, balked. According to Gozzi, Ferrari said the

clause "seriously compromised the total freedom I had been promised as racing team director" and at 10pm, with final negotiations in full swing, Ferrari turned to Gozzi and said quietly, "Let's get something to eat". The pair walked out, leaving the 14-member Ford delegation speechless. The talks were over.

The fallout was immense, with a slighted Henry Ford II immediately vowing to beat Ferrari on track, and Frey given the task of going to Le Mans and "beating his ass" as Ford was reported as saying.

Frey enlisted the help of a Briton named Roy Lunn, who had worked on Aston Martin's 1949 Le Mans effort, an early mid-engined Mustang concept, and who was running Ford's advanced vehicle department.

Despatched to the unlovely surrounds of Slough in the UK, Lunn pounced on Lola's Mk6 and its originator Eric Broadley, hired ex-Aston Martin man John Wyer and brought in Bruce McLaren to evaluate a 1963 prototype. The GT40 was born.

Success was hard won, however. A Le Mans test in 1964 revealed high-speed instability issues and its first three competitive outings – in the Nürburgring 1000km, Le Mans 24 Hours and Reims 12 Hours, resulted in a dispiriting string of DNFs. ▶

Victory for Bruce McLaren and Chris Amon in the GT40 at Le Mans '66 was also a win for Ford in its bitter feud with Ferrari.





The result was a shift of base to the US and the arrival of American racing legend Carroll Shelby. Out went the small-block 4.2-litre 255 cu in the V8, in came a 7.0-litre 427 cu unit and, at Daytona in 1965, the Mk II GT40 scored its first win with Ken Miles and Lloyd Ruby at the wheel. A podium in Sebring followed a month later, but Le Mans was a disaster, with the five GT40s entered failing to finish. Rubbing salt into the wound, Ferrari scored its ninth win at La Sarthe with the 250 LM.

**THE TIDE TURNS**

The following year would be different. There was a 1-2-3 finish at Daytona. Thirteen Fords raced at Sebring and the GT40 landed a 1-2, with Miles victorious. Ford finished second at the Spa 1000km. And then came Le Mans. In the Shelby-American cars were Dan Gurney and Jerry Grant, Bruce McLaren and Chris Amon, and Ken Miles and Denny Hulme. The Holman & Moody team included Mark Donohue and Paul Hawkins, Mario Andretti and Lucien Bianchi, and Ronnie Bucknum and Dick Hutcherson, while a car for Graham Hill, Dick Thompson and Brian Muir ran under the Alan Mann banner. After the start Hill took an early lead. Miles had to make an early stop, but was soon slashing seconds off the lap record in an effort to catch up. After the first hour, Ford held five of the first eight places. By early evening Miles had fought through to the front, but by this stage of the race the result was still up for grabs. After six hours and several pit-stops, Ferrari moved into first and second spots, but not for long. Miles retook the

Ronnie Bucknam and Dick Hutcherson's Holman & Moody GT40 helped to complete a podium lockout for Ford at Le Mans '66, behind the Shelby example of Ken Miles and Denny Hulme.

lead before midnight and over the next few hours the furious pace set by the Mark II started to tell on its competitors. By four o'clock in the morning Ford occupied the first six places, and with most of the Ferraris having dropped out due to mechanical failure or accidents, the second half of the race looked to be more about durability than speed. It looked good for Ford, but with seven hours to go, Jerry Grant came into the pits in the car he had taken over from Gurney. It was out of water and overheating badly, and within an hour Grant and a disconsolate Gurney were out of the race. The final hours were extremely tense, both in the pits and in the cars. Ford had hoped to arrange for Miles and McLaren to cross the line together and record the first dead-heat in Le Mans history, but this plan was scotched by race officials who said that as the Le Mans staggered start meant the cars did not start at the same point, a dead-heat was impossible to organise. It was decided that McLaren would take the chequered flag and, as the race drew to an end,



McLaren famously told Amon (pictured) to 'Go like hell' after a switch to Goodyear tyres on the winning car.

he and Miles bunched up with Hutcherson, who was several laps behind, to provide the most dramatic and memorable finish ever seen at Le Mans. Recalling the race in 2016, the late Chris Amon said of the start: "Bruce drove the first stints. I recall it was damp and we were running on intermediate Firestone tyres, and at 210-220mph on the Mulsanne Straight the tyres were shedding tread. I took over from Bruce and he spoke to Firestone and they generously said we could switch to the Goodyears that the other GT40s were running." Sensing what was possible Bruce leaned into the car and screamed "Go like hell!" at Amon. The rest is history. "There was a bit of history to that [statement]," said Amon. "We had both driven the first two 7.0-litre cars at Le Mans the previous year: Bruce with Ken Miles and myself with Phil Hill. We were warned to be careful with the gearbox as they were new and unproven, and both cars retired with gearbox failures. The McLaren team was commissioned by Ford to build a lightweight version of the GT40 for possible use in 1966. I did the testing and drove it in some Can Am-type events in the US in late '65. Around that time I was also doing testing at Sebring and Daytona with the standard car and was experiencing a few mechanical issues.

"As a result of the above when I went to Daytona for the 24 hours paired with Bruce, I was not fully confident on the reliability front if we were to drive hard the whole race. So I suggested to Bruce that we set a fairly conservative pace for the race, and while we might be running out of the top three in the early stages, we might be the only one there at the end. We finished fifth. "Our attitude for Le Mans, because of the Daytona result, was obviously different. We decided to set a pace for ourselves, which would keep us in touch with the lead, and then go for it later in the race. This strategy fell apart when our tyres started losing tread early in the race and we lost considerable time. Bruce and I were both contracted to Firestone so it was a difficult thing for Bruce to negotiate a switch to Goodyear. When I was called in to change tyres I think Bruce's frustration had reached boiling point, and he put his head through the car door and said 'Go like hell!'"

**A LEGEND TAKES SHAPE**

Henry Ford's wish had been realised. The American company had taken on the might of the previously unbeaten Ferrari and tamed the Prancing Horse. It was the shape of things to come for the next three seasons at Le Mans. Across the Atlantic, one of the Ford GT40's most famous wins came at Sebring in 1967, where this time McLaren, in the brand-new Mk IV version, was teamed with Mario Andretti, who had been involved with the GT40 programme for some time. "We tested only briefly and it was the first

race for the Mk IV," recalls Andretti. "The car was competitive right from the start because we had very good mechanical knowledge and they had used much of the chassis from the Mk II, with some mods, but with a new aerodynamic shape it proved to be quite good." A positive relationship with McLaren also boosted the team's chance of a debut victory for the Mk IV. "Bruce was great to be around and I enjoyed spending time with him," says Andretti. "It was easy to be friends with him. On the racing side, I had a real interest in developing my skills in road racing because I was eye-balling F1 at that time, and Bruce was a very technical driver and he taught me a lot and I observed him a lot." And in the race the pairing was dominant. With no Ferraris present, the only real opposition came from the two Chaparrals entered. And when the leading Chaparral of Mike Spence and Jim Hall retired after 145 laps, Andretti and McLaren powered to victory. "It was a hard-fought race. The Chaparral was the favourite, but we were competitive," says Andretti. "At Daytona earlier that year, we had some issues and Ford felt they needed to come up with a different model car, a little slicker and quicker in a straight line, especially

McLaren (left) and Mario Andretti proved a happy pairing at Sebring in '67, where the Mk IV variation of the GT40 proved unstoppable.



**'It was a hard-fought race. The Chaparral was the favourite, but we were competitive'**



Ford got the upper hand over the favoured Chaparral at Sebring, paving the way for further success at Le Mans.

for Le Mans, and Phil Remington was given the task of designing that car quickly. He did it and that car won Sebring and Le Mans." The legend was being fast written. The Sebring win paved the way for a second Le Mans victory courtesy of Gurney, who made up for his 1966 disappointment by winning with AJ Foyt. The following year Pedro Rodríguez and Lucien Bianchi won by five laps with GT40 chassis number 1075. It was to prove a hugely successful car, winning at Brands Hatch, Spa and Watkins Glen that year and then, nicknamed 'The Old Lady', carrying Jacky Ickx and Jackie Oliver to a final and spectacular Le Mans win in 1969. It was, however, the year that Porsche gave a debut to a new car. The radical 917 was fastest in practice and led for a considerable time before the final official entry retired while well out in front. The omens were there, however, and dominance of the race in 1970 and '71 spelled the end for the GT40. Its purpose had been served, however, and revenge, often said to be best served cold, had instead been achieved in the white-hot heat of racing competition. ◀



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## Moving in harmony with nature



Ecuador is one of the world's most biodiverse countries, and motoring organisation ANETA is committed to balancing an increasing demand for mobility with the need to protect its rich environment. But in a nation where road safety is precarious, driving standards also remain a priority

TEXT  
/  
GAIA PELLICCIOLI





As more of its citizens demand greater mobility, Ecuador's leaders must balance their needs against the country's environmental credentials. Below: The Automobile Club of Ecuador's (ANETA) headquarters.

In September 2008, a small Latin American country was preparing to do something other countries considered unthinkable at the time: to officially recognise the constitutional rights of nature, treating it not as property but acknowledging its "right to exist, persist, maintain and regenerate its life cycles".

In a land where roughly eight per cent of the world's amphibian species, five per cent of reptile species, eight per cent of mammal species and 16 per cent of bird species are found – in a territory comprising just 0.2 per cent of the world's land area – the move was perhaps not surprising, and since then the Republic of Ecuador has become a model for various

organisations supporting a more ecologically focused approach to sustainable development.

And while the idea of the rights of nature, or, as the Ecuadorians call it, 'buen vivir' ('living well') is definitely not a new one, the political project of institutionalising principles and practices associated with the concept at national and international levels is. But it has had a marked effect and the concept has not been lost on Ecuador's institutions – even to the level of the nation's motoring organisations.

Aware of the country's territorial diversity and wealth – across fewer than 300,000 square kilometres, the country encompasses the Andes, Amazon rainforest, the Galapagos archipelago and the major urban



ANETA's General Manager Gorki Obando has a strong focus on road safety while also looking to promote motor sport activities in the country.



FIA President Jean Todt was a witness of honour to ANETA's agreement with Conservation International to promote environmental protection and sustainable development in Ecuador.

Obando says that much still remains to be done in terms of education and the culture of mobility.

"In Ecuador, 95 per cent of crashes are due to human error," he explains. "Only three per cent are related to mechanical failures and just two per cent to road infrastructure. Within this 95 per cent of crashes caused by human failure, 80 per cent are due to inexperience, a lack of education, and the remaining 20 per cent to negligence.

"It's no good having the best roads in the region if we don't have a true road safety culture that reduces traffic accidents," insists Obando. "This is currently ANETA's biggest concern."

With a view to changing driver behaviour, the club's two main aims are the training of new drivers and awareness-raising activities.

ANETA's Driving School, set up in 1970 for members and the wider community to learn to drive in a responsible manner – and still with the highest coverage in the area – is the first choice, especially for young people aged between 16 and 24.

"It controls 82 per cent of a market of more than 130 non-professional driving schools," explains ANETA's CEO. "Although the sale price of the course is low, the volume of sales contributes significantly to the income of our organisation."

Apart from the driving school, the club organises road safety conferences for high school students and promotes road safety education through the Itinerant Road Safety Unit (IRSU), a travelling unit equipped with the latest technology to teach road safety best practices to students aged between six and 16. ▶

ANETA's Driving School has worked for more than 40 years to promote responsible driving and organises road safety conferences for high school students.



centres in which 61 per cent of its population lives – the Automobile Club of Ecuador (ANETA) has adapted to changing needs with ever-greater success since its foundation in 1950, providing Ecuadorian motorists with targeted services, depending on their regions.

"Nowadays, ANETA has 635 employees, 29 offices and 10 points of sale in 20 of the country's 24 provinces," says Gorki Obando, General Manager of ANETA. "The club has created specific benefits for each locality. It is even present in the Galapagos Islands, with eco-friendly driver training programmes."

With per capita emissions of 2.44 metric tons of CO<sub>2</sub> in 2016 and with that figure set to increase as mobility demand from the region's emerging middle classes grows, conservation of the environment is an essential part of the Ecuadorian club's programme.

"The objectives of ANETA are directly related to sustainable mobility, the environment and technology," explains Obando. "We strive to ensure that the cities develop environmentally sustainable cultures."

As an example, Obando points to last month's signature of agreement by the club with environmental organisation Conservation International, in favour of environmental conservation and sustainable development in Ecuador. FIA President and the UN Secretary-General's Special Envoy for Road Safety Jean Todt was a witness of honour at the event.

**ROAD SAFETY FOCUS**

ANETA is also proud of having actively participated, together with the FIA, in international events that promote sustainable mobility such as the UN Habitat III Conference, hosted in capital city Quito in 2016. The conference, which brought together leaders from around the world to agree on the implementation of a New Urban Agenda, was a major opportunity to continue promoting sustainable urban economies and ensure safe, sustainable and accessible mobility in cities worldwide.

However, while building a sustainable future for mobility in Ecuador is a key ambition, club personnel are keenly aware that creating a safer future for road users is of paramount importance.

With 30,000 accidents a year involving 20,000 injuries, Ecuador is second only to Venezuela in Latin America with regard to fatalities on the road network. For ANETA, the result of this carnage is a growing focus on road safety education.

Although over the past 10 years there has been a considerable evolution in the Ecuadorian infrastructural network, thanks to significant state investments,

**'ANETA has created specific benefits for each locality. It is even present in the Galapagos Islands'**

The latest simulator and virtual reality technology is utilised by ANETA's Drivers' Academy to provide an interactive approach to learning for new drivers.



The #AlColeSeguros campaign started by ANETA aims to educate young people on four key areas of road safety designed to reduce pedestrian casualties.

**'It's no good having the best roads in the region if we don't have a true road safety culture that reduces accidents'**

"Since 2005, the educational activities of ANETA in educational establishments and through the IRSU have contributed to the training of 500,000 children and young people throughout Ecuador for free," says Obando. With 30 per cent of road fatalities in Ecuador occurring among pedestrians, the club's #AlColeSeguros campaign, started in 2017 with SafeKidsWorldwide, is an initiative it is keenly focused upon. "Aimed at young people between 13 and 19 years old, especially on trips to and from schools, the campaign puts four road safety messages forward: staying aware of your surroundings when using an electronic device, maintaining eye contact with drivers, using zebra crossings and being cautious when listening to music with headphones on," explains Obando. "In this campaign, 800 posters have been printed so far and nearly 50 schools have been visited where these messages are promoted through 45-minute presentations." In addition, the FIA's #3500LIVES

campaign, the first worldwide outdoor campaign on road safety produced in partnership with JCDecaux, will be rolled out in the country from March to December 2018, with four Ambassadors raising awareness on the number of people who die on the road every day. Another of the club's successful road safety education projects is the Drivers' Academy, launched on 30 January 2018 in the presence of Jean Todt, NACAM President Jose Abed, FIA Region IV delegates and other national authorities. "The academy mixes experience and innovation to teach driving through an interactive process using simulators and virtual reality," says Obando. "Its main goal is to help new drivers develop abilities for perfect control of a vehicle in any risk situation. This teaching process is carried out through real simulation with the latest virtual reality equipment. "It is a new concept of teaching, where the theoretical classes are 100 per cent interactive in order to transfer a full knowledge regarding

the rules of traffic, road education and real risk situations, and collaterally generate awareness." Although the club is a leader in the training of new drivers, its membership base is affected by a highly competitive market where insurance, credit card and telephone companies offer the same services at different price points. "We had to innovate and develop attractive services to increase our membership," says Obando. "Examples include the Oil Change at Home Service [ANETA also has two gas stations in Quito], a Vehicle Technical Review Service and designated driver services." Finally, the Club is involved at a governmental level advocating for changes in road safety policy in Ecuador. On January 30 the Ecuadorian Club's General Manager, along with FIA President Jean Todt met with the President of the National Parliament Mr Serrano to discuss the reforms needed to improve the Transit Law,

and develop stronger international collaboration for road safety. **SPORTING PROGRESS** ANETA is also the FIA-affiliated national motor sport organisation or Ecuador, and though it remains something of a niche sport in a country where football is king, there is a solid racing sub-culture conducted at some spectacular circuits, including Yaguarcocha International Speedway – a huge 10km track located north of Quito around the volcanic lake from which it takes its name. The circuit, also known as Autódromo José Tobar Tobar, was once home to a number of international motor sport events such as the 1971 Marlboro 12 Hours, and today hosts a mix of regional and national series. While Ecuador being included on the route of events such as the Dakar Rally remains a possibility for the future, the club is currently focusing on the promotion of motor

The Driving School's Itinerant Road Safety Unit features a mobile classroom equipped with the latest technology to teach road safety to young students.



sport among younger generations. "During the past decade ANETA has led the most important karting school in the country, where about 400 children studied and some obtained important achievements in national and international competitions," says Obando. "Our focus is to professionalise motor sport in order to train drivers that stand out in the international context, as well as promote safety in motor sport." As for the club's future, it's President harbours no doubts. "The future of ANETA is to consolidate its schools as academies," her says. "with the aim of generating a transformation in driver teaching, while also incorporating electric cars to teach and promote environmental care. ◀



With an eye on developing motor sport activities and talent in Ecuador, ANETA has run a successful karting school that has so far benefited around 400 young students.

09

# #3500LIVES, 1 YEAR

A year after the launch of the FIA's groundbreaking partnership with outdoor advertising giant JCDecaux, which aims to use the firm's spaces to spread road safety messages globally, AUTO looks at what the #3500LIVES campaign has achieved so far, and where it's headed in 2018.

AS THE WORLD'S LARGEST OUTDOOR ADVERTISING AGENCY, JCDECAUX REACHES SOME

# 410m

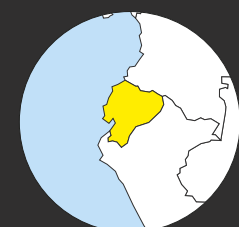
people around the world, daily - utilisation of its assets presented an unprecedented opportunity to provide road safety education on a global basis.

FOLLOWING A RENEWAL OF THE AGREEMENT BETWEEN THE FIA AND JCDECAUX, THE #3500LIVES CAMPAIGN IS TARGETING SOME

# 80

COUNTRIES IN 2018

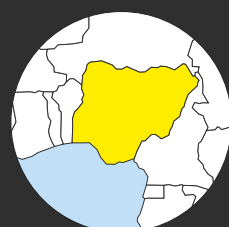
including new territories Ecuador, Mongolia and Nigeria



NIGERIA



MONGOLIA



ECUADOR

CELEBRITY AMBASSADORS. THE #3500LIVES CAMPAIGN IS FRONTED BY

# 14

global stars each of whom delivers a key road safety message drawn from the FIA's Golden Rules for Road Safety. Crossing all boundaries, the campaign features influencers from the worlds of sport, screen, politics and policy.



# 50,000

MORE THAN 50,000 JCDECAUX DISPLAY PANELS HAVE BEEN UTILISED TO BRING KEY ROAD SAFETY MESSAGES TO MILLIONS

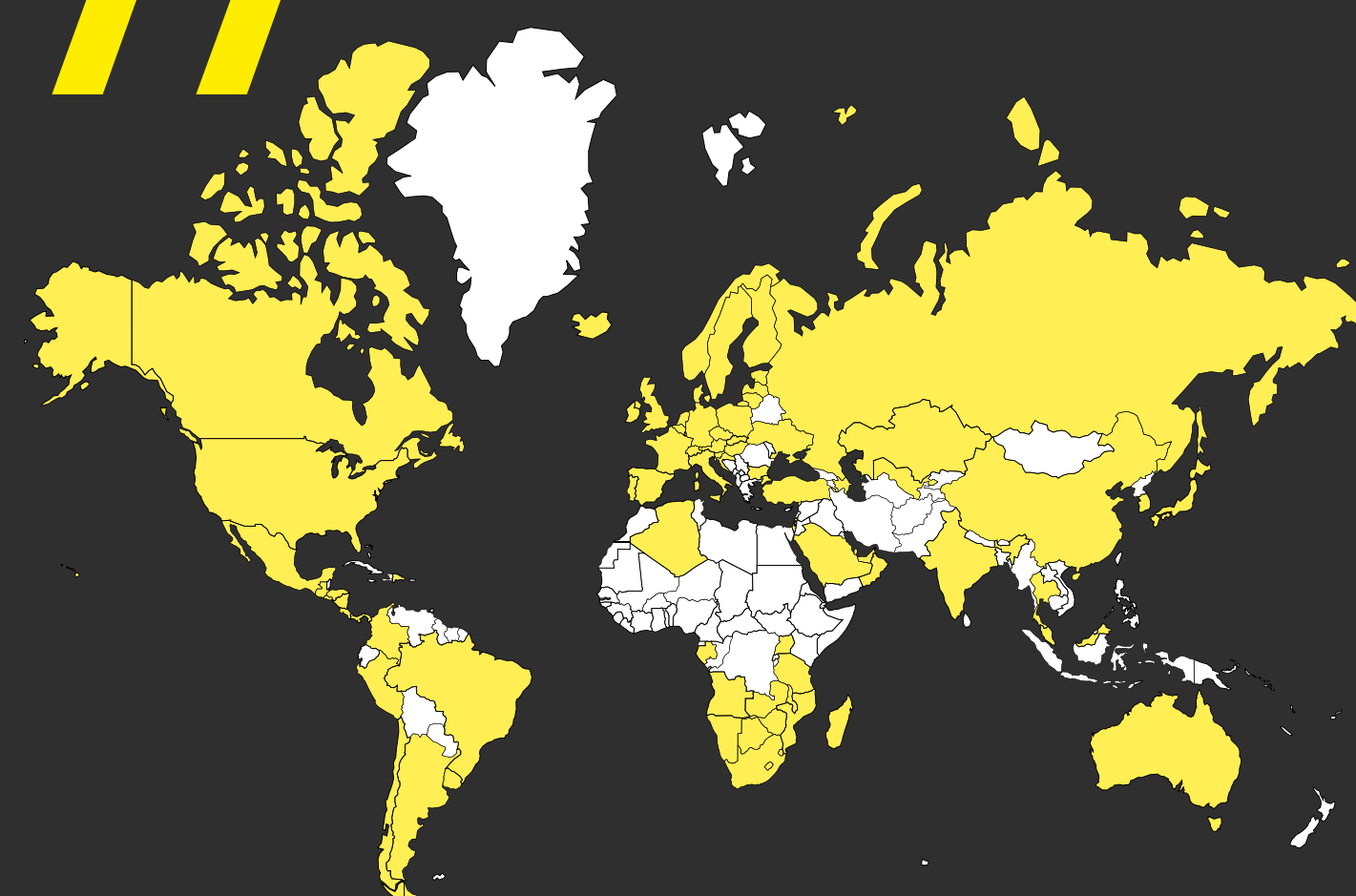
IF THE VALUE OF THE PANELS UTILISED GLOBALLY WAS TOTALLED IT WOULD REPRESENT A SPEND OF APPROXIMATELY €10M ON ADVERTISING SPACE.

# €10m

# 900

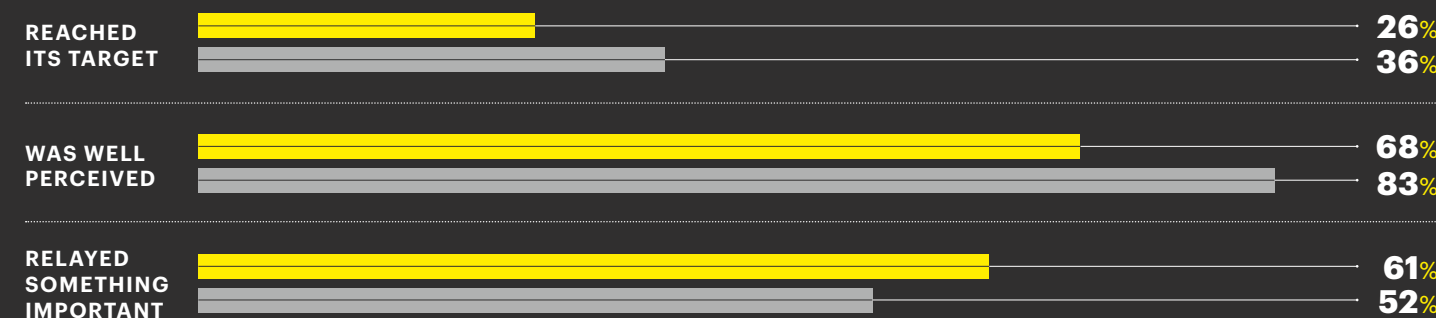
From Albertslund, Denmark to Zaprešić, Croatia, #3500LIVES posters and visuals were seen in a staggering more than 900 world cities in 2017 alone.

77 COUNTRIES IN WHICH THE #3500LIVES CAMPAIGN IMAGERY WAS DISPLAYED IN 2017



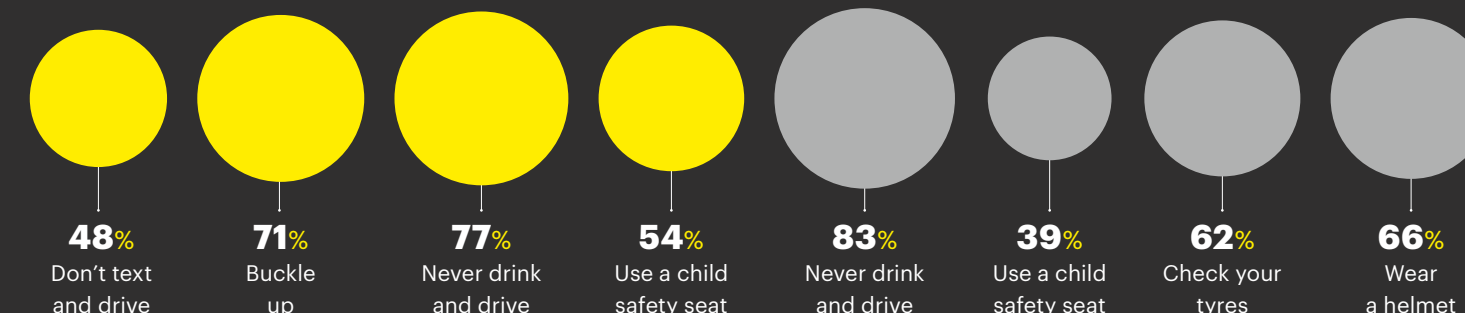
### POSITIVE IMPACT

To gauge the success of the campaign, a survey of people who had come into contact with the campaign in Austria and Thailand was undertaken by market research and consulting firm Ipsos. According to respondents in both countries the campaign:

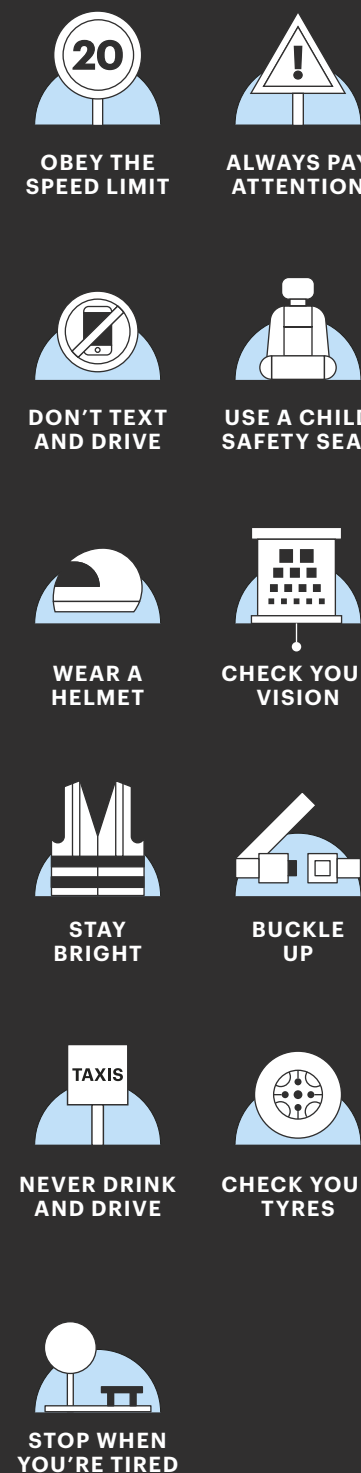


### POWER OF RECALL - HOW #3500LIVES WAS SEEN

According to the survey, respondents recalled particular messages in detail, depending on local relevance. The following were the best remembered by respondents from each territory.



### THE FIA'S GOLDEN RULES FOR ROAD SAFETY





# All-American Legend

With the passing of American racer, constructor and innovator *Dan Gurney*, the world of motor sport lost a true legend. FIA President *Jean Todt* pays tribute to a man who inspired his love of racing



10

TEXT

LUCA COLAJANNI

Not many people have made as indelible a mark on motor sport history as Dan Gurney. Born in Port Jefferson in the US on April 13, 1931, Daniel Sexton Gurney raced all over the world, not only as a driver but also as a racing car and motorcycle constructor of such creativity that his name was a byword for innovation. In fact, an aero device fitted to wings universally known as the 'Gurney flap' is still used today on racing cars and even planes.

Gurney was the first American driver to make his name not only in the US Indy and NASCAR series but also in the major European categories, Formula One and the classic endurance races. He pulled off a memorable feat in the space of just eight days in 1967, driving a Ford GT40 to victory at the Le Mans 24 Hours – on the podium of which he is credited with inventing the custom of spraying Champagne – and then a few days later he won the Belgian Grand Prix at Spa in an Eagle F1 car of his own design and build. It was a great victory and also the only time an American driver has won a Formula One race at the wheel of an American car. Gurney was also one of the founders of the US CART series.

In the space of a 15-year driving career, from 1955 to 1970, Gurney took part in 312 races in 20

**'We owe a lot to his character and innovations; motor sport would not be what it is today without him'**

FIA PRESIDENT JEAN TODT

countries, driving 100 cars built by 51 constructors including his own race-winning Eagle. In 1965, he and his friend and colleague, Carroll Shelby, set up the All American Racers team and constructor that garnered victories in the most important US races, including two wins in the Indianapolis 500 as well as taking three Indycar titles. Gurney's passion for all things mechanical, his creativity and a love of innovation also extended to two wheels with the Alligator, a motorcycle featuring an unusual riding position that was very low compared to the usual standards.

"He was a great driver who truly inspired my love of motor sport," said FIA President Jean Todt on January 14, the day of Gurney's death. "I was very fortunate that he became a good friend. We owe a lot to his character and his innovations, and I know that motor sport would not be what it is today without him."

1983



1995 NÜRBURGRING



2004 SHANGHAI INTERNATIONAL CIRCUIT

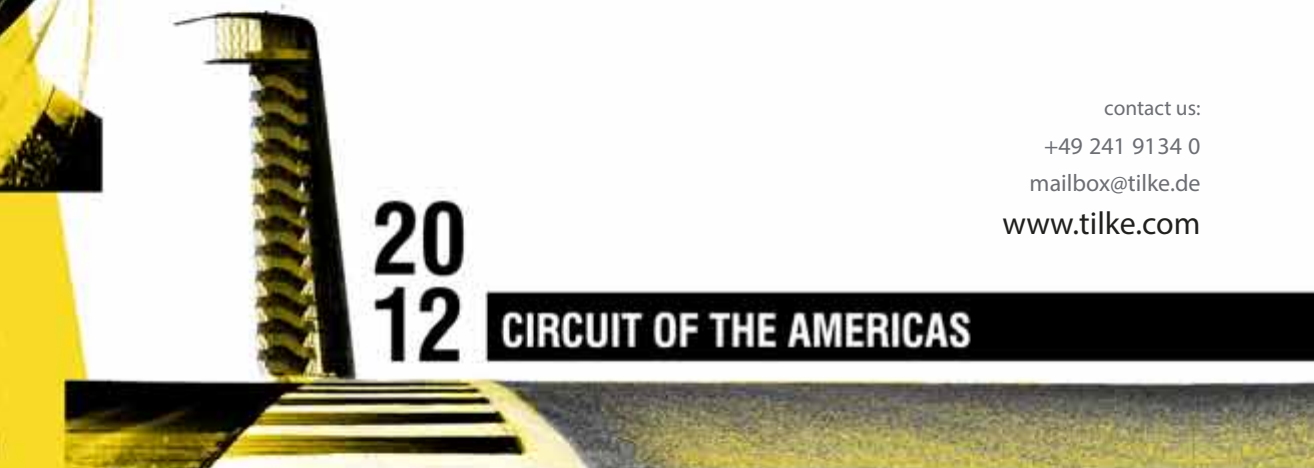


2009 YAS MARINA CIRCUIT



2014 SOCHI AUTODROMO

2014



2012 CIRCUIT OF THE AMERICAS



2015 AUTÓDROMO HERMANOS RODRÍGUEZ

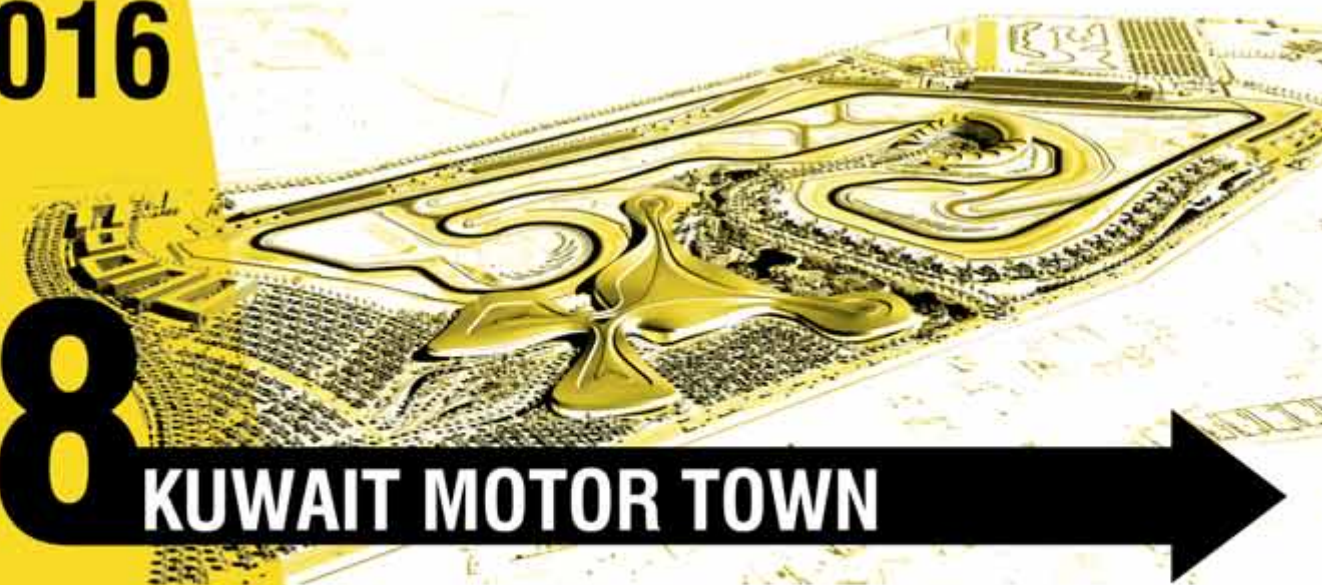
2015



2016 BAKU CITY CIRCUIT

2016

2018 KUWAIT MOTOR TOWN



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