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INTERNATIONAL JOURNAL OF THE FIA

issue #27

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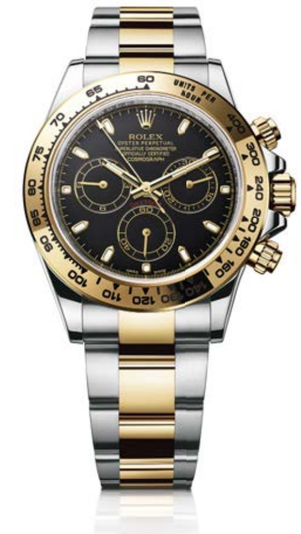

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AUTO INTERNATIONAL JOURNAL OF THE FIA

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seidldesign

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.

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Dear reader,

The second issue of AUTO this year includes conversation starters, ideas and opinions on several important topics. The cover story deals with a subject much in the news: how motor sport can play its part when it comes to ENVIRONMENTAL SUSTAINABILITY.

I firmly believe that our sport can act as a laboratory for technological innovations we can bring to road cars, making them more efficient and kinder to the environment. At the same time, motor sport innovations can be applied to a huge range of sustainable solutions – from more effective mass transit systems to water conservation and waste management. We must work hard to reduce the impact motor sport has on the environment, and great progress has been made thanks to the efforts of the FIA staff and many Clubs and ASNs. But there is still a long way to go.

In this edition we also launch a new series of single-voice opinion columns in which figures from the worlds of mobility and motor sport deliver their thoughts on a current issue. This time it's IIM FAHIMA from Indonesia, founder of Queenrides, a community platform that aims to empower women to achieve safety in driving and riding. Iim has been included on a list of nine young world-changers at the 2019 annual meeting of the World Economic Forum in Davos. Meanwhile, in our regular series of automotive industry profiles we feature LUCA DE MEO, the man who has transformed SEAT.

Elsewhere, we talk to MARCUS ARMSTRONG, the young racer from New Zealand, one of the frontrunners in the first season of the new FIA Formula 3 Championship. In our Legends section we interview NIGEL MANSELL, a driver much loved by millions of fans for the courage and grit he showed when racing in the 1980s and '90s.

The world of digital motor sport is growing at a remarkable pace, in terms of it economic power, its competitor base and also the sheer number of fans who tune in to watch virtual racing, which is now around the half a billion mark. As we reveal, the FIA is at the forefront of this growth, through the cutting-edge FIA GRAND TURISMO CHAMPIONSHIP.

These and many other features make up this issue: I hope you enjoy it and, as usual, please write in with any ideas and suggestions you might have for making it even better. Have a great summer.

JEAN TODT,
FIA President

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contents

From sustainability and innovation in motor sport, to the rise of digital racing, to Nigel Mansell's heroics in F1 first turbo era, this is AUTO

LE MANS 24 HOURS

TOYOTA DOUBLES UP AT LE MANS

Two-time Formula One World Champion Fernando Alonso can now count himself as a double Le Mans winner after victory at the famed French enduro in June, which also earned the Spaniard and Toyota team-mates Sébastien Buemi and Kazuki Nakajima title success in the 2018/19 FIA World Endurance Championship. The trio's No7 TS050 hybrid inherited the lead in the 24-hour race with just one hour to go when the rival No8 Toyota had to pit with a puncture, only to have to stop again when it was found that the wrong tyre had been changed. It was a cruel blow for the crew of Mike Conway/Kamui Kobayashi/José María López, who had led the LMP1 category throughout in a race dominated by the Japanese make.

FORTUNE FAVOURS NUMBER EIGHT
Le Mans 24 Hours winner Fernando Alonso, right with Toyota team-mate Sébastien Buemi, was the first to admit that luck had played a part in his back-to-back victories in the endurance classic. "Car seven was quicker than us, they really deserved the victory," he said. "Luck sometimes plays an important part in motor sport and today we feel extremely lucky."

FIA FORMULA E

VERGNE VICTORIOUS

At the end of a close title fight in the ABB FIA Formula E Championship, DS Techeetah's Jean-Eric Vergne pulled his way up into the points in the final race in New York to clinch a second consecutive title.

Holding a strong overall points lead going into the final double-header weekend, Vergne only needed a clean weekend and runs to the points to secure a second consecutive crown, but after crashing out of the first race things became more complicated, with four drivers in contention for the crown. However, in the final round Vergne drove a clean and clever race, advancing up the order to seventh place to score enough points to put him beyond reach.

TWICE AS NICE FOR JEAN-ERIC
For French racer Jean-Eric Vergne becoming the first driver to successfully defend a Formula E was a vindication of his team's efforts: "Last year we did an amazing job, being a private team with very little resource. This year, DS brought more and of course, it took time to successfully work as a team. But in the end, we did a great job and I'm so proud of them."

01

NEWS

In this issue: New WEC rules gain manufacturer support; FIA campaigns for bike helmet standard; Volvo and Uber unveil self-driving SUV; Tesla achieves new safety standard in Euro NCAP; Swedish firms in ground-breaking helmet tests; Goodwood Festival of Speed round-up

NEWS Toyota and Aston Martin commit to WEC as FIA expands 'Hypercar' regulations

Toyota will race a hybrid-powered prototype based on its GR Super Sport in next year's WEC.

Aston Martin will compete with a minimum of two works cars based on its Valkyrie hypercar.

Following confirmation that the rules governing the 2020-2021 FIA World Endurance Championship will allow for cars derived from road-going hypercars both Toyota and Aston Martin have confirmed their commitment to the series' new top class.

At the June meeting of the FIA World Motor Sport Council (WMSC) in Paris it was decided that the 2020 Technical Regulations regarding Le Mans Prototype (LMP) cars be expanded to a hypercar developed from road cars sold by the manufacturers, of which a minimum of 20 road models must be produced over a two-year period. According to the council, expansion of the rules will enable additional manufacturers to enter the championship. Also, the implementation of Balance of Performance (BoP) rules will enable the different types of cars to compete on the same level.

In the wake of the confirmation, automotive manufacturers Toyota and Aston Martin have said that they would bring competition versions of new models to the WEC.

Toyota Gazoo Racing will compete with a hybrid-powered prototype based on its GR Super Sport road car. Both road and race car are currently undergoing design and development at the company's technical centres in Toyota City, Higashi-Fuji and Cologne.

"I am pleased to confirm that Toyota Gazoo Racing will continue its challenge in endurance racing beyond the current regulations," said Shigeki Tomoyama, Gazoo Racing Company President. "Thank you to the ACO and FIA for their hard work in finalising these regulations, which we hope will bring about a new golden age of endurance racing, with several manufacturers fighting for Le Mans and the FIA World Endurance Championship.

"For Toyota Gazoo Racing, this new era of competition is a fantastic opportunity to demonstrate our credentials not only as a race team against some of the best in the business, but also as a sportscar manufacturer. I am sure I join fans and competitors in welcoming the new regulations and looking forward to an exciting era of competition in the WEC and at Le Mans."

Aston Martin, meanwhile, announced that it will bring its Valkyrie hypercar to the 2020-2021 championship, building on the track-only AMR Pro variant of the car to create "a minimum of two works cars" for the series.

"The FIA World Endurance Championship and the 24 Hours of Le Mans represent the ultimate challenge for the Aston Martin Valkyrie – the world's most extreme hypercar," said Aston Martin Vice-President and Chief Special Operations Officer, David King. "Designed and built with the purpose of pushing boundaries on the road, it's natural to conclude that the next stage in its development would be to measure its capabilities on the track. I can think of no better way to do that than to compete in a world championship, and the most prestigious and famous race of all."

NEWS FIA calls for motorcycle helmet safety rating

The FIA has called for the creation of an international motorcycle helmet safety rating, to encourage consumers to select helmets with greater safety performance.

As part of this campaign, the FIA invited key stakeholders from across the industry, including laboratories, motorcycle associations and nine major motorcycle helmet manufacturers, for a high-level meeting at its Geneva office.

FIA President Jean Todt, who is also the United Nations Secretary General's Special Envoy for Road Safety, told the meeting that the FIA aims to establish the new safety rating as an additional requirement for manufacturers, on top of existing United Nations (ECE 22-05) and United States (DOT) standards.

"Every year 1.35 million people die on the roads and 30-50 million are injured. Motorcyclists are some of the worst affected, particularly in developing countries," said President Todt. "We are calling on helmet manufacturers and other road organisations to come together to ensure every helmet is certified to a minimum safety standard to help save lives across the world."

According to studies conducted by the UN, motorcyclists are 27-times more likely to die in traffic crashes than passenger car occupants, and six-times more likely to be injured.

The FIA believes the new safety rating will enable the recognition and promotion of helmet manufacturers who introduce innovative safety features. It will also give consumers clear information, encouraging them to purchase the safest helmets.

"The FIA wants to harness best practice from the development of motor sport helmet standards to produce an industry-wide rating system," said Adam Baker, FIA Safety Director. "We want a system that will encourage innovation, and lead to the development of helmets with major improvements in safety, and one that will significantly reduce injury and fatality rates."

A key focus for the project will be targeting widespread adoption of safe helmets in low-income countries through the promotion of the highest performing helmets in local markets. The FIA is looking at affordability and wearability while ensuring they meet existing standards.

The FIA believes an international safety rating for bike helmets will help cut fatalities.

NEWS F1 and Monaco royalty join FIA campaign

Ferrari Formula One star Charles Leclerc and HSH Princess Charlene of Monaco are the latest high-profile names to add their support to the FIA's #3500LIVES campaign designed to reduce the number of road fatalities worldwide.

Princess Charlene and Leclerc were named as promoters of the campaign's new 'Watch out for pedestrians' rule at the Monaco Grand Prix in a pre-race event attended by HSH Prince Albert II of Monaco and FIA President Jean Todt.

Calling for increased attention to pedestrians, the new rule will strengthen the #3500LIVES campaign by focusing on one of the most vulnerable road user groups.

"Always watch out for pedestrians, whether they are using pedestrian crossings or not," stated Princess Charlene. "Following simple rules can help save your life and the lives of others, and that's why awareness campaigns such as #3500LIVES are so important."

Leclerc added: "As racing drivers, we have a duty to promote road safety messages. When on the road, always watch out for pedestrians and make sure to reduce your speed in urban areas to be able to stop whenever needed."

"Road safety remains one of the world's biggest challenges," said President Todt. "We are really proud to welcome two new ambassadors who will help us further mobilise road users to be safe on the roads."

Princess Charlene and Leclerc are the 16th and 17th ambassadors to join the campaign, which has been deployed in 80 countries so far thanks to global advertising firm JCDecaux.

FIA President Jean Todt, Princess Charlene, Charles Leclerc and Prince Albert II with the new #3500LIVES campaign poster.

NEWS International child partnership joined by CHI

The FIA Foundation's Child Health Initiative has joined a new partnership of international agencies working on child and adolescent health, to call on governments to recognise adolescent health as a key component of universal healthcare at the World Health Assembly in Geneva.

The initiative joined major international agencies to launch a new report recognising adolescent health as integral to the healthcare agenda, with road traffic injury prevention highlighted as a key measure. The Child Health Initiative's Global Ambassador, Zoleka Mandela, has raised awareness of neglected issues that are impacting the lives of millions of adolescents including road traffic injury, mental health, gender-based violence and sexual reproductive health.

At the launch of a new joint report: 'Adolescents: the missing population in Universal Health Coverage', the First Lady of Kenya, Margaret Kenyatta, made a keynote address followed by a panel discussion on the major threats to adolescent health with road traffic injury at the centre of the exchanges. UNICEF, Partnership for Maternal and Child Health and the UN Independent Accountability Council leant their expertise. Many panellists supported the Child Health Initiative's call for a global summit on adolescent health to escalate the urgency of action in terms of funding and policy-making.

"I'm calling for global and sustainable action when it comes to adolescent health," said Zoleka Mandela. "It is high time that our policy makers make our young people a priority."

Child Health Initiative Global Ambassador Zoleka Mandela wants more action to help young people.

Volvo and Uber reveal autonomous car

Volvo Cars and ride-hailing firm Uber have unveiled a jointly-developed production car capable of driving itself as part of a strategic collaboration between the two companies.

Uber and Volvo entered into a joint engineering agreement in 2016 and have since developed several prototypes aimed at accelerating the companies' self-driving car development. The new Volvo XC90 SUV is the first production car that, in combination with Uber's self-driving system, is fully autonomous.

The XC90 base vehicle is equipped with key safety features that allow Uber to install its own self-driving system, enabling the possible future deployment of self-driving cars in Uber's network as an autonomous ride-sharing service.

"We believe autonomous drive technology will allow us to further improve safety," said Håkan Samuelsson, President and Chief Executive of Volvo Cars. "By the middle of the next decade we expect one third of all the cars we sell to be fully autonomous. Our agreement with Uber underlines our ambition to be the supplier of choice to the world's leading ride-hailing companies."

"Working in close cooperation with companies like Volvo is a key ingredient to effectively building a safe, scalable, self-driving fleet," added Eric Meyhofer, CEO of Uber Advanced Technologies Group.

The XC90 includes several back-up systems for both steering and braking functions as well as battery back-up power. If any of the primary systems should fail, the back-up systems are designed to immediately bring the car to a stop.

In addition to Volvo's built-in back-up systems, an array of sensors atop and built into the vehicle are designed for Uber's self-driving system to safely operate and manoeuvre in an urban environment.

Volvo's new XC90 SUV will be the first production car to feature Uber's self-driving system.

FIA F3 World Cup to return to Macau with current cars

The FIA Formula 3 World Cup will return to the streets of Macau on November 14-17 with the latest-specification cars competing at the 6.2km circuit as the headline feature of the 66th Macau Grand Prix.

Since 2016, the FIA F3 World Cup has been a key proving ground for the rising stars of single-seater racing. The Macau circuit is one of the most challenging in world motor sport, although this year promises to be the safest event yet with several updates being made ahead of the 2019 edition including re-profiling the barriers at Lisboa corner.

The FIA Formula 3 Championship, which is running for the first time this year in its new format as part of the Formula One World Championship support package, boasts an impressive 30-car grid of talented young drivers hoping to take the next step to Formula 2 and their ultimate goal of an F1 drive.

FIA Single-Seater Commission President Stefano Domenicali said: "The FIA F3 World Cup is one of the ultimate tests for young drivers and we have worked hard to ensure it remains among the most prestigious events on the motor sport calendar. We are currently enjoying a hugely competitive and hard-fought FIA Formula 3 Championship season and the prospect of seeing this impressive grid line up in Macau is very exciting.

"These cars are more powerful than previous iterations of F3 and have the latest safety features for single-seater machines. Couple this with the changes being made to the Guia Circuit this year, and I'm looking forward to a safe and spectacular FIA F3 World Cup."

FIA F3 CEO Bruno Michel added: "I am very pleased to bring the new-generation F3 car to race at such a prestigious grand prix which is not part of the F3 Championship."

A strong line-up is expected for this year's FIA Formula 3 World Cup at Macau's Guia Circuit.

'Transformative' school road safety programme wins city prize

African road safety group Amend has been recognised for its work with schools.

Amend, an African road safety NGO, has won the inaugural $250,000 WRI Ross Prize for Cities for its School Area Road Safety Assessments and Improvements (SARSAI) programme.

Since its inception, SARSAI has been supported with grants from the FIA Foundation and was recognised for its 'affordable, life-saving and scalable' interventions around school zones. The programme expanded from two high-risk school areas in Dar es Salaam, Tanzania, to more than 50 in nine countries.

The award set out to recognise transformative projects offering new and scalable approaches to solving well-known problems. Amend's programme delivered in the view of a judging panel including founding philanthropist Stephen Ross, architect Sir Norman Foster and Frannie Léautier, COO of the Eastern and Southern Africa Trade and Development Bank. Almost 200 initiatives applied to be considered for the award.

"Cities need to constantly evolve, and creativity and technology can play an important role in seeding change," said Stephen Ross said. "What SARSAI shows is that big changes can start small and make a difference. SARSAI can literally save lives on day one of implementation. They identified a critical problem and created an innovative solution."

Amend Program Director Ayikai Poswayo said: "We accept this award on behalf of the children worldwide, and their families, who have sustained road traffic injury or faced fatalities. We would like to give thanks to the FIA Foundation, which has supported us from the start and without whom SARSAI would not be where it is today."

Tesla Model 3 sets new safety benchmark in Euro NCAP test

The Tesla Model 3 has achieved the highest Safety Assist score ever awarded by the European New Car Assessment Programme (Euro NCAP) under its 2018-2019 protocol.

Tesla has historically received five-star high safety ratings in how the vehicle protects adults and children, as well as in how it treats vulnerable road users like pedestrians. But its safety assist technologies are what sets it apart.

Euro NCAP said the Model 3 has set a "new safety technology benchmark" after scoring 94 out of 100 in Safety Assist. For this, Euro NCAP rates the standard safety features in the vehicle, focusing on the car's automatic emergency braking and its systems that stop drivers from drifting out of lane on a motorway.

The Lane Departure Avoidance and Emergency Lane Departure Avoidance are both designed to stop common causes of accidents, and were added following a software update to Tesla cars in May.

This came after the company collected data from the sensor suite of every Tesla made since October 2016, along with inputs from drivers, to get a better understanding of how people behave behind the wheel. That data was used to build out more accurate prediction models, which enabled the features to better mitigate or avoid accidents.

"Its Collision Avoidance Assist system is first class, with its Autonomous Emergency Braking and Forward Collision Warning systems showing high levels of performance," said Matthew Avery, Director of Research, Thatcham Research.

The Tesla Model 3 has set a "new safety technology benchmark" according to Euro NCAP.

Top-level helmet set for Formula E

Ultra-protective helmets based on a new FIA standard, which were introduced into Formula One this season, are set to make their debut in Formula E from Season 6.

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 all drivers in the FIA Formula E Championship from next season, which starts in November.

All new helmets that achieve this standard offer advanced ballistic protection, increased energy absorption and an extended area of protection for drivers.

Stilo was the first manufacturer to be fully homologated by the FIA having passed all the vigorous tests, including having a 225g metal disc fired at 250kph at the helmet, dropping a 10kg weight on it from five metres, and an air rifle being shot directly at the visor. Other manufacturers to have passed the tests include Bell Racing, Schuberth and Arai.

The new helmets will be welcome by Felipe Massa, who now races in Formula E for the Venturi team, as he was an inspiration for the tougher standards. At the 2009 Hungarian Grand Prix a loose spring hit Massa's helmet at 220kph and this is one of the reasons for the most noticeable development – the visor opening being lowered to incorporate increased ballistic protection in the frontal area.

The new helmets will become mandatory in the World Endurance Championship from 2020/21 and in Formula 3 from 2021.

For Season 6, Formula E will introduce the ultra-protective helmet standard already seen in F1 this year.

The new-for-2019 FIA Motorsport Games will feature a variety of racing disciplines.

Rome to host first FIA Motorsport Games

The FIA has revealed details of a new annual event called the Motorsport Games where drivers from a variety of disciplines will compete against each other under their national flag.

Held at one host venue over a single weekend, the Motorsport Games will initially feature six categories: GT, Touring Car, Formula 4, Drifting, Karting Slalom and Digital Motorsport. Each competition will award gold, silver and bronze medals, contributing to an overall medals table.

The inaugural edition will be held this autumn in the Italian capital, Rome. It starts on October 31 with an opening ceremony before the action moves to the neighbouring Vallelunga race circuit, which is set to play host to three days of competition, from November 1-3.

The weekend culminates with a closing ceremony, during which the National Sporting Authority (ASN) or National Automobile Club (ACN) of the winning country will receive the FIA Motorsport Games trophy.

FIA President Jean Todt said: "I am pleased to launch the FIA Motorsport Games, which will combine a variety of disciplines and all the elements of a major sporting occasion in one event. It is something new not only for motor sport followers and future generations of competitors, but also those with a general appreciation of international sport."

The FIA has appointed SRO Motorsports Group as promoter for the event, which has its origins in the FIA GT Nations Cup held last November in Bahrain.

NEWS Swedish firms pioneer new cycle helmet safety tests

A series of ground-breaking crash tests of bike helmets against cars will form part of a new research project that aims to further protect cyclists.

Swedish sports and safety brand POC has teamed up with Volvo Cars on the project, which consists of a number of specially designed crash tests held at the car manufacturer's safety research facilities in Gothenburg, Sweden and is part of a wider research project designed to understand the types of long-term injuries sustained by cyclists.

During the tests, POC bike helmets are worn by crash dummy heads mounted on a testing rig, from where they are launched towards different areas of the hood of a static Volvo, at different speeds and angles for various measurements.

The tests are based on existing regulatory test procedures for pedestrian head protection. This allows POC and Volvo Cars to make a direct comparison between wearing a helmet and not wearing a helmet.

Current bike helmet testing procedures are fairly rudimentary, involving helmets being dropped from different heights on either a flat or an angled surface, and do not take into account vehicle to bike accidents. The POC-Volvo project aims to further refine and advance such testing.

POC says that findings from the research project will help make its helmets safer and more protective in the event of a car-bike accident, while the tests will also provide valuable insights and learnings for Volvo Cars into these types of accidents for future development.

"Much like Volvo Cars, safety is at the centre of our mission and drives all our ideas and innovations," said Oscar Huss, head of product development at POC. "By working closely with scientific leaders in the POC Lab, we strive to lead the way in introducing new safety ideas."

The POC and Volvo tests are the first to involve bike helmets being launched at static cars.

NEWS Jaguar Land Rover and BMW collaborate on electric future

Jaguar Land Rover and BMW Group are joining forces to develop next-generation Electric Drive Units (EDUs) in a bid to support the advancement of electrification technologies – a central part of the automotive industry's transition to an ACES (Autonomous, Connected, Electric, Shared) future.

The strategic collaboration will build on the knowledge and expertise in electrification at both companies. Jaguar Land Rover (JLR) has brought the world's first premium battery-electric SUV to market – the Jaguar I-PACE, 2019 World Car of the Year – as well as plug-in hybrid models; and BMW Group brings experience of developing and producing several generations of EDUs in-house since it launched the BMW i3 in 2013.

Nick Rogers, JLR Engineering Director, said: "The transition to ACES represents the greatest technological shift in the automotive industry in a generation. It was clear from discussions with BMW Group that both companies' requirements for next-generation EDUs to support this transition have significant overlap making for a mutually beneficial collaboration."

The agreement will enable JLR and BMW to take advantage of shared research and development and production planning, as well as economies of scale from joint procurement across the supply chain. A team of experts will engineer the EDUs with both partners developing systems to deliver the specific characteristics required for their respective range of products.

JLR has also revealed plans to build a range of electrified vehicles at its manufacturing plant in Castle Bromwich, UK. The announcement is the next step in delivering on its commitment to offer customers electrified options for all new Jaguar and Land Rover models from 2020.

The first new electric car to be produced at the plant will be Jaguar's flagship luxury saloon, the XJ. The all-electric model will be created by the same team of designers and product development specialists behind the I-PACE.

Jaguar Land Rover is working with BMW on the development of next-generation Electric Drive Units.

Formula One's stars showed their support for the UN Global Road Safety Week at the Spanish Grand Prix.

NEWS FIA lends weight to road safety event

Members of the FIA community have joined forces to support #SpeakUp, the fifth United Nations Global Road Safety Week, which has called for more 'leadership for road safety'.

The FIA again showed its support for the week-long event, held in May, through a variety of actions designed to remind people that speaking up for road safety on a daily basis is crucial to tackle the global crisis of the rising number of road fatalities.

A strong advocate for the FIA's messages on road safety, the motor sport community supported the event with Formula One drivers gathering for a family photo before the Spanish Grand Prix. They also released an F1 Drivers Advocate for Road Safety video, shedding light on some of the key FIA Golden Rules for Road Safety.

FIA members promoted the UN initiative with projects supported through the Global Action stream of the FIA Road Safety Grants Programme, which receives funding from the FIA Foundation.

Following a call for FIA members to organise activities to advocate for action to reduce risks to vulnerable road users, the programme supported 40 initiatives. Most involved children and were aimed at making their school journey safer. Further projects called for better law enforcement concerning the use of mobile phones while driving, or the requirement for vehicles to be equipped with a minimum set of safety features.

In order to reach out to country leaders, some FIA members organised press conferences and meetings with government representatives, or ran surveys with the aim of sharing conclusions with authorities to raise awareness on local road safety issues.

The helmets of iconic drivers such as Ayrton Senna and Nigel Mansell were put on show by the FIA at Goodwood.

The all-electric Volkswagen ID.R broke the outright Goodwood Hillclimb record in the hands of Le Mans winner Romain Dumas.

Former Ferrari President Luca di Montezemolo with former Ferrari Team Principal Jean Todt.

A car display on the FIA stand included the Citroën Xsara WRC rallied by nine-times World Champion Sébastien Loeb.

The Ferrari F310B Schumacher drove to five grand prix victories in 1997 was put through its paces at Goodwood.

NEWS FIA celebrates 115 years at glorious Goodwood

For the third year in succession the FIA returned to the world-famous Goodwood Festival of Speed in Britain, this year celebrating 115 years of motor sport heritage.

The FIA stand in the grounds of the Duke of Richmond's estate featured a FIA World Rally Championship Hall of Fame exhibit, a display of cars and the helmets of iconic drivers such as Ayrton Senna and Nigel Mansell, as well safety innovations and memorabilia spanning different eras of competition.

In addition to getting up close with the FIA Formula One Safety Car and Medical Car, visitors were able to discover the innovations that have kept the world's fastest drivers safe over the years. The current exceptional standards at the top level of motor sport, Formula One, were shown on a 2019 Ferrari SF90, with safety features such as the anti-launch nosecone, Halo device, high-speed cameras, accident data recorders and side-impact protection highlighted.

Also on display were the Ferrari 248 F1 raced by seven-time World Champion Michael Schumacher, as well as the Citroën Xsara WRC driven by nine-time World Champions Sébastien Loeb and Daniel Elena on the 2003 Rallye Monte-Carlo.

Visitors to the FIA stand were able to make use of state-of-the-art simulators to try out Gran Turismo Sport, the first-ever FIA certified online championship.

Sir Jackie Stewart took his title-winning Matra MS80 for a spin up the famous Goodwood hill.

Visitors to the FIA stand got to try their hand at Gran Turismo Sport – the Federation's first online championship.

Ferrari team members past and present including FIA President Jean Todt marked Michael Schumacher's 50th birthday. They were joined by his wife, Corinna.

Emerson Fittipaldi with Sir Jackie, whose 80th birthday in June was celebrated at the Festival.

Away from the FIA stand the festival was notable for its celebration of Michael Schumacher's 50th birthday and the 25th anniversary of his first world championship title win. A number of the F1 legend's cars from his pre-F1 years, as well as grand prix machinery from Jordan, Benetton and Ferrari, were on show and in action on the famous Goodwood hill.

It was an opportunity for FIA President and former Ferrari Team Principal Jean Todt to join with former team members from Schumacher's heyday at the Scuderia, including former Ferrari President Luca di Montezemolo, former Ferrari Technical Director and current Managing Director, Motorsport at Formula One, Ross Brawn, and also Michael's wife Corinna and his manager Sabine Kehm.

The career of Sir Jackie Stewart was celebrated in the wake of the three-time F1 World Champion's 80th birthday in June. Stewart himself drove his 1969 Drivers' World Championship-winning Matra MS80 up the hill.

Looking to the future of competition, the all-electric Volkswagen ID.R broke the outright Goodwood Hillclimb record, 20 years after it was set by ex-F1 star Nick Heidfeld in a McLaren MP4/13. By stopping the clock in a time of 41.18 seconds the ID.R, driven by Le Mans 24 Hours winner Romain Dumas, averaged 101.4mph along the challenging 1.16-mile course.

The Hillclimb record is the third landmark for the all-electric machine. The ID.R established a new electric vehicle lap record around Germany's famous Nürburgring Nordschleife with a time of 6mins 05.33secs in June to add to its record on the Pikes Peak International Hill Climb in Colorado, USA, (7mins 57.15secs) set in June 2018.

03

The beautiful route to safety

Named as one of nine Young World Changers at the 2019 annual meeting of the World Economic Forum, *Iim Fahima* is pioneering a new form of road safety education aimed specifically at Indonesian women through her Queenrides platform. And she's doing it by speaking their language

Queenrides founder Iim Fahima was invited to speak at this year's World Economic Forum Annual Conference.

TEXT / IIM FAHIMA

Over the past five years the number of female road users in Indonesia, in cars and on motorcycles, has risen dramatically. A survey conducted by Honda Motorcycle in 2014 showed that 42 per cent of Honda motor buyers were women, while according to Google, 41.8 per cent of searches in Indonesia on the subject of new vehicle purchases were made by women.

However, in the case of motorcycles the growth in female riders has been matched by a rise in insufficient knowledge of safe riding skills. This has led to women becoming an increasingly at-risk group on roads that are already among the most dangerous in the world. According to the World Health Organization, Indonesia ranks in the top five countries in the world with the worst road safety and conditions, and also is listed among the countries with the highest number of road accidents.

Additionally, according to the Indonesia National Traffic Management Centre, there has been a significant increase in accidents involving women riders – up to 49.5 per cent in just two years – and women riders are five times as likely as men to be involved in a crash.

Part of the issue is undoubtedly the fact that obtaining a driver's license in Indonesia has been too easy due to corrupt systems and many drivers take to the roads with minimum skills. This lack of education is even more prevalent among women. In a survey of 2,000 women conducted by our platform almost all reported that they had never been exposed to road safety facts or safe driving information.

There is no current institution that specialises in socialising the importance of riding safety towards women, and efficient communication needs a good understanding of female insights. It was this state of affairs that led to the creation of Queenrides.

There is an African proverb that states 'When we educate a woman, we educate the nation' and based on this spirit, I founded Queenrides in 2016. It is currently the only automotive online and offline community dedicated to women drivers/riders, empowering them to ride safely through a feminine approach of safety, style and beauty.

Beyond the simple mission of helping women to drive safely, Queenrides' goal is to empower women to do so in order to allow them to be the best they can be. When women are safe on the road, they have the power to achieve their dreams and become whatever they desire, be it an entrepreneur, a minister or just healthy mothers.

Since January 2016 more than 200,000 women have joined the online platform (web and social media) and over 20,000 have signed up to our offline safety driving education programmes. The group, run by 35 people, works virtually from Jakarta, Medan, Bogor, Semarang, Palembang, Bali, and further afield in New York and Boston.

But despite the success of Queenrides, safe driving is not yet a 'sexy' issue like climate change or plastic waste, and it takes a huge amount of hard work to get public and government attention.

Through social media and marketing communication, Queenrides created its #Isupportwomenridesafe campaign. The campaign attracted huge public attention, not only trending worldwide on Twitter, but also garnering significant publicity in more than 250 media outlets online and on TV as well as in print.

Our education initiatives extend to practical tuition. From a survey of more than 7,500 Queenrides' offline education attendees, 95 per cent approved of and enjoyed the four hours' of riding safety education shared by Queenrides, and all have a strong intention to change their driving behaviour and share their knowledge.

All of this work has not only resulted in support from the public and private sectors and from NGOs, it has also been acknowledged at state level by government.

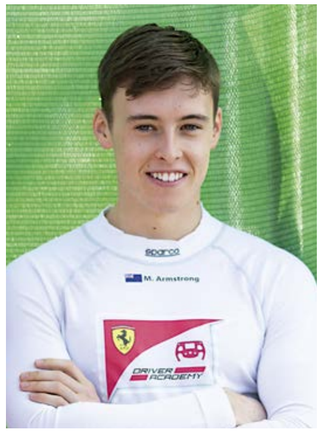
In 2018, Queenrides was selected as one of the most creative start-ups in Asia by the World Economic Forum, and in January of this year I was invited to be panellist at the forum's Annual Conference in Davos to discuss the future of global transportation and the automotive industry in the Fourth Industrial Revolution, alongside other prominent figures including FIA President Jean Todt and Volkswagen board member Andreas Renschler. To my great honour, I was also listed as one of the Young World Changers at the forum.

It has been an immense amount of work to reach this point, but it has been extremely rewarding. Since the company's foundation in 2016, we have been able to monetise Queenrides so that the platform can fund itself. Our source of revenue currently is B2B and mostly stems from advertising and corporate safety drive training/women empowerment.

The next goal is for Queenrides to tap into B2C by developing the safety riding app that aims to make the platform global and to acquire 20 million members over the next five years. It's a big target, but the ultimate aim – to keep women safe on our roads – makes it worthwhile. ◂

'When women are safe on the road, they have the power to achieve their dreams'

Queenrides is helping to educate female riders who are new to the road in Indonesia.



Christchurch teen Armstrong is relishing his role in the Ferrari Driver Academy while competing with Prema in FIA F3.

TEXT / JULIANNE CERASOLI

Rising through the red zone 02

When *Marcus Armstrong* was just eight years old he thought his shot at Formula 1 was over after finishing sixth in his debut kart race. The fast-paced New Zealander has come a long way since, and as a member of the Ferrari Driver Academy is battling for top honours in the all-new FIA Formula 3 Championship on grand prix weekends

What was you first experience of motor sport competition like?

I finished my first karting race in sixth place when I was eight years old. I got really grumpy and said 'I'm never gonna get to F1 now'. I don't remember saying it, but apparently I did! I was a massive Formula One fan. I used to watch F1 in the middle of the night with my dad. Kimi Räikkönen was my favourite driver and that's why my helmet looks like his 2007 design. I've had that same design since I was 10 years old. My dad was a big Michael Schumacher fan, so naturally I went against the grain and thought, 'this guy Räikkönen is giving Michael a hard time, so I'm gonna go for him'.

Your progress in the junior ranks was different to other kids, as you were racing cars while in the middle of your karting career. Why was that?

In New Zealand you can drive cars from a young age, so before I was racing at a world championship level, I was testing cars. They were quite average old cars and we never ran new tyres, it was all very low budget. I was learning how to drive with a manual gearbox, doing heel and toe – all this old-school stuff – when I was 12, 13 years old.

Do you think it helped you?

When I first started in formula cars it was noticeable that the guys from karting were much further behind, because in the car you need confidence due to the speed and I already had that.

How was the move from New Zealand to Europe in your teens?

I actually had to push my dad really hard to let me make the move. We were on holiday and every second of the day I was pushing, because we had an offer. So my dad told me I could go for five months and, if I didn't like it, I could go back. And we forgot to tell my mum! We only thought about it one week before I left. At first, she was okay about it. But the next day she was like, 'oh my God, you'll never come back, will you?'. And actually I haven't!

Were you homesick at any point?

In karting, you're racing every weekend. But when we had a free weekend, everyone else would go back to their families and I was living in hotels and thinking 'what do I do now? Should I go back to the factory?'. But now it's easier because we are like a big family at Ferrari.

How did you come to the attention of the Ferrari Driver Academy (FDA)?

After my second season with Tony Kart I met Massimo Rivola, who was managing the academy at that time. The second time I saw him he was having lunch on his own, so I sat with him. He asked my why I was testing Formula Renault, which I was doing at the time, and I said it wasn't really my intention. Then he asked what I wanted and I basically told him what he wanted to hear. He took my email and a couple of weeks later he invited my to do a scouting at the FDA.

You were already with a top kart team and being offered Formula Renault opportunities, so was the Ferrari test more pressure or did the fact that you had options give you a comfort zone?

I knew 2017 was going to be a big year anyway, things were looking quite positive. When I was going to Fiorano I was with my friend who said, 'do your best and whatever happens, happens'. Again I was the quickest on the track as I had that extra experience with cars.

In your first year as an FDA driver you won the Italian Formula 4 title and took second place in the German championship. Were you surprised that you adapted so quickly?

It actually took a while to get used to. The level was quite high between myself, Jüri Vips and Felipe Drugovich. It was tough. F4 looked much easier than it was. The car is really simple, so you cannot push too much and the tyre compound was very hard. It took me a while to understand that, if I pushed too hard, I'd go slower.

After that F4 success you moved to the FIA F3 European Championship with the Prema team, where Mick Schumacher was your team-mate. How did that work out?

I was really lucky because I had the same engineer who had worked with Lance Stroll and Esteban Ocon. That was my biggest learning curve because he taught me to look at things in terms of the championship and not simply race by race. It was an incredible year because ever since the moment I first tested the car, I felt like it was the reason why I had chosen to do this.

'A lot of drivers just live motor sport when they are with the team and at the track, whereas I live it all the time. There's not one day that I'm not at the factory'

You finished fifth in your debut season in that championship before this year moving up to the new FIA Formula 3 championship, again with Prema Racing. How has the transition been and how have you adapted to the more sensitive Pirelli tyres in the series?

This car is heavier and the tyres work as if they have a memory – you'll feel every slide you do in the next laps afterwards. For me, that's not too much of a problem as I've always been quite smooth with tyres and, in fact, I quite like how technical that challenge is.

In terms of the series itself, I think that my team-mates are strong [Jehan Daruvala and Robert Schwartzman], as are all the ART drivers [David Beckman, Max Fewtrell and Christian Lungaard]. Leonardo Puccini and Jüri Vips are competitive as well. Overall, it's a tough year, but I don't think it's going to be much tougher than last year. I just need to avoid the mistakes I did last year because that was what hurt me.

How does the Ferrari Driver Academy help with that process?

A lot of drivers will probably just live motor sport when they are with the team and at the track, whereas I live motor sport all the time. There's not one day that I'm not at the factory; I live 300 metres from it and I probably don't know how lucky I am! I was a big Ferrari fan when I was younger and I remember that, when Kimi had a bad year in 2008, I got grumpy and said, 'clearly you're not gonna do it, so it will have to be me!'

And how inspiring is it to see Charles Leclerc, a former FDA colleague, now driving for Ferrari in Formula One?

That's cool because I know him and he's extremely talented. It's inspiring to see how he is now with everyone because I remember when he was with us, sitting in a truck watching it all on TV. We get to stay in touch with the F1 guys, though. We had a karting race with Sebastian [Vettel] recently and we gave him a hard time!

So you'll be enjoying this year being able to go to the F1 paddock?

I prefer to stay away as much as I can. It makes me dream too much!

State-of-the-art circuits such as Singapore are helping to lead the way in effective track lighting.

03

GOLD STANDARDS

Circuit safety equipment now has to pass the most stringent tests to receive the FIA's seal of approval, with everything from debris fencing to track lighting coming under close inspection

TEXT
/
MARC CUTLER

It was a matter of milliseconds between Carlos Sainz losing control of his Toro Rosso at 200kph during practice for the 2015 Russian Grand Prix and him being buried under the TecPro barriers at the end of the circuit's long straight.

Sections of barrier were resting over the top of his car's roll-hoop, which meant it took a while before marshals and medical crews were able to extricate the driver from the cockpit and ensure he was OK. While Sainz emerged unscathed after the crash and was able to race the next day, it raised some concerns for the FIA over barrier safety.

"When Carlos Sainz had his accident in Sochi, he got buried underneath the existing design of TecPro," says Stuart Robertson, FIA Head of Circuit and Rally Safety. "So we decided to carry out a test campaign with TecPro to develop a new version of the barrier that would prevent this from happening again."

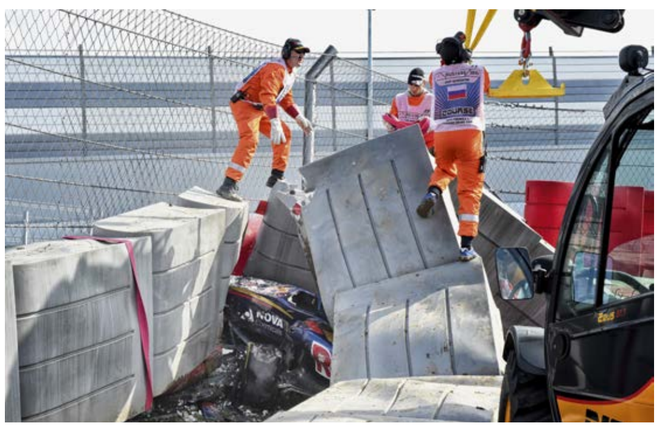
This would prove to be the start of the first-ever test standard created specifically for circuit equipment. The FIA had for many years issued standards for driver equipment such as helmets and overalls – each one having to pass stringent tests before receiving the FIA seal of approval. But circuit equipment was always tested on an ad hoc basis.

The new barrier tests with TecPro sought to prevent against nose penetration, ensure that elements do not lift up and land on top of the vehicle, and be more compatible with a wall behind them. This research led to FIA Standard 3501-2017 being born, whereby the FIA now has clearly defined design requirements, performance pass/fail criteria, and a homologation and certification process for Safety Barriers.

MAKING THE GRADE

TecPro is the first, and so far only, barrier manufacturer to pass this standard, meaning it is recommended by the FIA for use on Grade 1 circuits, used for events like Formula One.

French GP track Paul Ricard is a natural choice for testing new FIA standard skid-proof paint.



Carlos Sainz's dramatic accident at the 2015 Russian GP prompted a redesign of the TecPro barrier.

The grading process for circuits forms a key part of safety in motor sport, as no circuit is able to host an FIA-sanctioned event without it. The FIA categorises a track depending on its characteristics and the power-to-weight ratio of the cars racing there. To gain a licence the FIA must first conduct safety simulations, then review the design of the circuit and the relevant safety installations. An inspector will be assigned by the Circuits Commission to follow the construction process and, once completed, the circuit will be awarded a licence personally signed by FIA President Jean Todt.

Circuits that host F1 events need to be Grade 1 certified, while Formula 2 and the World Endurance Championship can host races on Grade 2 or higher circuits, and this continues numerically down to Grade 6 and includes circuits for autocross and rallycross, ice racing, drag strips and even land speed record attempt venues.

Now the FIA wants to combine the grading system with equipment homologation to help ensure that the top-graded circuits also have the safest equipment.

The next area to receive homologation has been debris fences. Last year, Swiss company Geobrugg became the first manufacturer to be homologated to the new debris fence standard which, starting from this year, all newly-built Grade 1 circuits must comply with.

Geobrugg has spent the past 10 years developing and improving its debris fence technology and is so far the only company to pass the stringent testing procedures defined by the FIA. This includes a head-on sphere test, whereby it has to withstand the impact of a 780kg sphere at 60kph, and a full-scale vehicle test where a car hits it going at 120kph and at an angle of 20 degrees.

To pass this in both cases the fence must not deflect, become detached or be thrown further than three metres behind where it was installed.

"It is a proud moment for our company [to pass the tests] and being the first makes it even more special," says Jochen Braunwarth, Geobrugg's Director Motorsport Solutions. "For our existing customers and their Geobrugg solutions, I am especially proud that our permanent debris fence system was not changed at all to successfully get homologated. Our existing mobile debris fence system only needed one minor adjustment to fulfil the three-metre deflection criteria and the FIA standard. With our upgrade kit, existing mobile systems will also meet the new requirements."

Other manufacturers are currently undergoing tests and are expected to join Geobrugg on the approved list soon.

"We are convinced that the introduction of circuit hardware standards will make life easier for all involved parties," says Braunwarth. "Circuit designers know what they have to specify, circuit operators know which company can supply the required solution and suppliers know what performance level they have to accomplish."

This performance criteria is applicable to any debris fence system and is aimed at encouraging companies that are already supplying circuits with locally-built systems to undergo full-scale testing. The FIA does not want the tests to be prohibitive for manufacturers, so FIA standard equipment will only be mandatory for new Grade 1 circuits.

'We're trying to work with local suppliers to help them become approved, or work on long-term plans with circuits'

Geobrugg is the only manufacturer to so far pass the FIA's debris fence test, which includes a 750kg steel ball fired at 60 km/h (left). TecPro is the only firm to pass the barrier test (below).

"With the amount of investment involved in constructing racing circuits or even upgrading an existing circuit, it's very difficult to turn around and say to circuits, 'You have to only use this company in Germany that is approved by the FIA'," says Robertson. "We're trying to work with these local suppliers and help them become approved, or work on long-term plans with the circuits to gradually bring in upgrades. That is something we have to be sensitive to, particularly when you go down to the lower-grade circuits which do not have as many resources or financial backing."

The FIA also wants it to be a lucrative investment for companies like Geobrugg and TecPro, by ensuring that producing a piece of FIA-homologated equipment is profitable for their business.

"There are a lot of FIA-homologated circuits out there, which is a market for our suppliers to get their teeth into, and we know from our point of view that suppliers corresponding to these standards are demonstrating an appropriate level of safety," says Robertson. "They have a good option for a return on their investment and in the long term through having a list of approved suppliers available online on the FIA website.

"Even lower grades of circuits could look to what is currently being supplied and approved for an F1 circuit, and also cherry pick what products might improve their circuits as well from a lower level," added Robertson. "It's definitely a very positive thing for circuit safety."

SAFETY IN DETAIL

As a testament to how seriously the FIA takes circuit safety, it is even delving into details such as the type of race track paint that circuits use for track edge lines, kerbing and asphalt run-off areas. As a result, the FIA's newest standard is for paint that will prevent skidding and therefore reduce the potential for accidents.

"What we're trying to achieve with the skid resistance of paint is to make it as close as possible to the asphalt," says Robertson. "So we're trying to have a smaller difference between the properties of the two surfaces because it is the change in skid resistance that can cause issues, particularly in wet conditions, or when bikes, which have a much smaller tyre contact patch, are racing on the same circuits as cars."

When testing the paint, the FIA looks at a number of performance aspects such as the thickness of the material, the rate of consumption, the drying time and its visibility in daylight. This is then put under a number of different conditions, such as wet weather, to see how it performs.

This new standard has been developed in close collaboration with the FIM and already three suppliers are aiming to achieve homologation – Italian-based company Colorificio Sammarinese, France's Oré Peinture and Germany's Swarco Limboroute.

Following the controversy during the MotoGP event at Silverstone last year when it had to be cancelled due to torrential rain flooding the newly-resurfaced Tarmac, the FIA considers developing specifications for track surfaces a high priority for the future.

BRIGHT FUTURE

The next standard to be launched is for light panels. These are normally seen along the edge of a circuit and are used to signal the track conditions to the drivers, such as Safety Car, yellow flag, slippery surface or even signal rain at a specific corner.

It's a system that has been progressively implemented into FIA championships over the past 10 years, most notably in F1 and the World Endurance Championship, and it can be an efficient way for marshals to clearly signal to the drivers when they need to slow down earlier because of an incident on track.

'As you can imagine, circuit lighting and stadium lighting technology has developed a lot over the past 10 years'

"We wanted to basically set the minimum requirements for light panels to supplement the traditional circuit flags," explains Robertson. "Then we are able to have a standard that is not only providing light panels at the top level for Grade 1 circuits, but also allow for further homologation of different specifications of light panels for different grades of circuits, really being more inclusive for the suppliers."

So far suppliers that are ready to be approved include EM Motorsport, which supplies its 'T1' panel to F1 and 'T2' panel to other circuits around the world, and DZ Engineering and Pixel Com, which supply light panels to Grade 2 and Grade 3 circuits. The new standard is set to be approved by the FIA World Motor Sport Council in October.

Ongoing research is being conducted by the FIA to refresh its circuit lighting specifications. This research is following a number of circuits, such as Bahrain International and Dubai Autodrome, looking at the possibility of running their lights 24/7 around the clock and the interest for clearer specifications.

"As you can imagine, circuit lighting and stadium lighting technology has developed a lot over the past 10 years, changing from Metal Halide to more LED-based systems," explains Robertson. "We want to refresh our circuit lighting specification and we're working with a number of expert suppliers in the lighting industry to enable us to do that."

Making sure that these systems are all integrated into race control and connected is a key working point for the future, as the FIA is also looking to homologate a race control specification referring to the CCTV requirements, radio communications, networking and management software.

"So, if you've got a light panel on a circuit you need to make sure that you've got the appropriate software to be able to manage that from race control, to send the correct messages to the trackside panels and also to the marshalling system that's installed in the cars," says Robertson.

While circuit safety will be an evolving feature of motor sport's future as lap times get quicker, it's important that the equipment being used is constantly being tested and updated to keep up with safety standards. With the FIA working alongside top-level suppliers for its championships it is significant they are striving to ensure that, right down to club level, these products are readily available on the market.

The next FIA standard will cover light panels, which are increasingly used to convey safety messages to drivers.

MOTOR SPORT AND THE ENVIRONMENT:

/ Change for good

04

GROWING COMPETITIVE SUSTAINABILITY

With the world facing a climate crisis, motor sport has a vital role to play in continuing to innovate and develop sustainable technologies that are transferring from race to road, while also striving to lessen its impact on the environment

04

RACING TOWARDS A SUSTAINABLE FUTURE

TEXT
/
KATE WALKER

Motor sport and sustainability have long been intertwined, and innovations across the FIA's championships are continuing to drive our technological future on and off the road

Formula One has always been a hotbed of technological development, but these days it is focused much more on sustainability.

Intense competition, rigorous standards of fair play, teamwork, entertainment, profit – for 'big' sport all of these are key elements in the battle for hearts and minds in a crowded arena. But for any sport to survive, there is a further imperative – that it operates within a framework of standards set by society. As a microcosm of the world at large, sport cannot stand outside prevailing societal agendas and must play a role in not only matching progress but also defining it.

One of the biggest issues facing the planet today is that of sustainability. While the environment is a primary concern for many, sustainability is about more than just the world in which we live – it is also the sustainability of opportunity, endeavour and progress. It is an issue that the FIA globally – and in more targeted fashion through its Environment and Sustainability Commission – is committed to tackling as Commission President and former Mexican President Felipe Calderón attests.

"The FIA, as an international actor, has both an opportunity and a duty to be directly involved in the global sustainability debate, together with its member organisations, partners and other external stakeholders," he says. "The Federation's contribution to automotive sustainability has already had a positive impact, and a significant amount of the technology and innovation seen in the car industry today has origins in motor sport."

Since its earliest incarnations, motor sport has been a key driver of technological progress – pioneering the development of disc brakes, semi-automatic gearboxes and active suspension systems among other technologies – but over the past decade the FIA has, via the regulations governing championships, specifically targeted increased road relevance through racing innovation and the resultant technology transfer. And the bulk of the innovation has been targeted at efficiency and sustainability.

"To give an example, in Formula One the FIA's vision of motor sport innovation driving road-relevant, sustainable technology stretches back to exactly a decade ago with the introduction in 2009 of the first hybrid and energy recovery systems in the sport," explains Calderón. "Turning lithium-ion batteries from a pure energy storage device into a power delivery device was a technology breakthrough that rapidly began to yield rewards on the race track and whose results are seen today in high-performance EV cars."

The example is one being repeated across the FIA's major championships with the result that FIA Deputy President for Sport Graham Stoker believes sporting engineering is increasingly at the forefront of the drive for sustainability.

"We've got a remarkably successful story to tell because at its heart motor sport relies on efficiency," he says. "Even the driving style of a top-level driver – be it in rallying, Formula One, or, in particular, endurance racing – it's all about efficiency. It's about correct lines, braking properly and looking after cars.

"When you move onto the cars themselves, lightweight chassis are all about efficiency.

Formula E has acted as a proving ground for the evolution of battery technology.

Technology transfer is key to Jaguar's involvement in Formula E, says team boss James Barclay.

> **'The FIA's vision of motor sport innovation driving sustainable technology goes back to the 2009 F1 hybrid and energy recovery systems'**
>
> FELIPE CALDERÓN, PRESIDENT FIA ENVIRONMENT COMMISSION

> Aerodynamics are about efficiency and then, when you come to the engine, the whole ethos behind the development of racing engines is that they're meant to be efficient. That's what it's all about. It is, to me, an integral part of the sport that we need to tell people about. The central point is that any modern sport has to operate within the prevailing issues in society and, at the moment, one of the major issues is sustainability. We have to address this head on and it seems to me that if we do that and show we're contributing, then we protect our sport."

The all-electric FIA Formula E Championship has been a standard-bearer in the drive for innovation since its launch in 2014. The world's first international electric-powered single-seater racing series, Formula E has been a proving ground for the evolution of battery technology. In its early years, each E-Prix would feature a car swap. But in Season 5 of the championship, Formula E was able to feature an electric car capable of completing a full race distance – and with a 50kW increase in power to 250kW. Cars are now powered by second-generation batteries with nearly double the storage capacity of the previous model, a technological development that is making its way onto the road.

During the 2017/18 season, Formula E secured ISO 20121 certification for running sustainable events, becoming the first motor racing series in the world to do so. The series has partnered with the United Nations' Environment Programme to improve air quality and is working on becoming a no single-use plastic event.

For the eight major automotive manufacturers involved in the championship, it is the series' potential to act as a technology lab that lies at the centre of Formula E's attractiveness.

"As a team we have a philosophy – race to innovate," says Jaguar Racing team principal James Barclay. "That stands for a number of things, but key to it is the transfer of technology from the race track to the road and then back to racing as well.

"We're quite early in the development of this technology and, while the hardware might not be exactly the same as what you drive on the road, what we're working with are components, so for example you're trying to go as fast as you can for as long as you can with the battery. That's really relevant learning to apply to a road car."

Formula E launched in the same year that F1 made the move to its current powerplants, with highly-advanced 1.6-litre V6 turbocharged power units replacing the 2.4-litre naturally-aspirated V8 engines used since 2006.

The current F1 hybrid power units produced by Mercedes, Ferrari, Renault and Honda are marvels of modern engineering. In 2019, F1 cars are producing more power and running at greater speeds over the same distance as they were in late 2013, despite using half the fuel.

F1 LABORATORY

Andy Cowell, managing director of Mercedes AMG High Performance Powertrains, is one of those responsible for F1's leap in hybrid technology. For Cowell, it is motor sport's endless pursuit of more – more power, more speed, more efficiency – that has been the greatest driver of advancement.

"Formula One's regulations regarding fuel flow rate control, rather than an RPM and engine capacity control, focus you completely," he says. "You've got a certain amount of hydro-carbon energy going in and you will win races if you can turn more of that energy into useful propulsion. Whether it's an electric machine or an engine or a horse, it's all about propulsion.

"It's all about propelling the person and their goods on their journey," Cowell continues. "That mindset is – I think – a key thing, and that's where the engineers, the craftsmen, the technicians in Formula One are utterly brilliant at having a mindset of, 'Yeah, that can be done. What we raced last weekend isn't good enough for next weekend.' Having the regulations set, where there's a limited amount of hydro-carbons per unit of time and converting that into useful propulsion, meant that we chased everything. It's this sort of obsessive, compulsive approach of, 'Well, we did that, but we did that yesterday, so that's old hat. What can we do tomorrow?'"

For Masashi Yamamoto, managing director of Honda F1, whose 2015 return to Formula One as an engine supplier was in part a response to the challenge presented by the new power units, motor sport is an essential laboratory not only for developing technology but also for helping to develop staff. ‣

FIA Deputy President for Sport Graham Stoker believes sports engineering is leading the drive for sustainability.

As an international body, the FIA is duty-bound to help foster global sustainability, says FIA Environment and Sustainability Commission President Felipe Calderón.

F1's current hybrid power units – such as that used by Mercedes – are producing more power and running at ever-greater speeds but on much less fuel.

Honda F1 MD Masashi Yamamoto says motor sport has a key role to play in developing people as well as technology.

'For Honda, F1 is becoming the place to gather together cutting-edge technologies developed in fields other than the motor industry'

MASASHI YAMAMOTO, MANAGING DIRECTOR, HONDA F1

"It's a useful laboratory in the sense that we can consider utilising some of the technologies to transfer to mass production," he says, "but it is also valuable in terms of the development of our engineers.

"In addition, for Honda, Formula One is now becoming the place to gather together cutting-edge technologies that it has developed in fields other than the motor industry. For example, the last power unit update we brought to the French Grand Prix came about through a collaboration with engineers from the Honda Jet airplane division.

"A useful side-effect of this crossover between various Honda divisions is the interaction and communication between engineers from different disciplines, which leads to fresh thinking and new technologies," Yamamoto concludes. "Therefore, we think F1 is a precious laboratory for us where we can apply trial-and-error methodologies to very high-level technologies."

LANDMARK GAINS

That high-level technology has resulted in landmark gains. Two years ago, just four seasons into F1's hybrid era, Mercedes issued a statement that in a dynamometer test at its High Performance Powertrains factory in Brixworth, UK, its M08 EQ Power+ F1 power unit had recorded a thermal efficiency level greater than 50 per cent. For the first time a racing engine had produced more useful energy than waste energy.

"The naturally-aspirated engines [V8s that preceded the current generation] started at about 29 per cent thermal efficiency," says Cowell. "Fifty per cent translates into being able to go further on the same tank of fuel. So there has been a 20 per cent gain in just a few years."

These phenomenal gains, although aimed at the Formula One car, also have ramifications for the road.

"Take the energy that's in the mass and velocity of the car and put that in a storage device," Cowell says. "Whether that's the lithium-ion battery or an ultra-capacitor or a flywheel, store it and then release it. That knowledge transferred into the road car world means you can have a lightweight system which takes that energy from the mass and velocity of the car, stores it and then uses it to propel you along. And that means you don't use energy out of either your fuel take or your battery to propel you back up to speed."

Formula One is far from alone in advancing our hybrid and battery capabilities. The World Endurance Championship and its showpiece event the Le Mans 24 Hours was an early leader in hybrid engine technology. The TS040 LMP1 car designed by Toyota for use in the 2014 running of Le Mans directly influenced the development of the 2016 Toyota Prius, the world's best-selling hybrid car.

Work conducted by Porsche, Audi, Toyota and Peugeot on hybrid engines and energy recovery systems used at Le Mans has already trickled down to current road cars, much as windscreen wipers and seatbelts made their way from the Circuit de la Sarthe into common usage in years gone by.

And according to Graham Stoker, even events such as cross-country rallies have a role to play. "Rally events are often run though sensitive country; they're being sponsored by the tourist departments of central and local government. They are able to do that because they're run in a sensitive and sustainable way, and they have huge, positive spin-offs. Whenever there's a disaster around the world, the first people in there are in four-wheel-drive vehicles. There's all this development that comes out of motor sport that's got a positive message about it."

Through helping drive the technologies that power our transport, both private and public, motor sport has shown that it has a role to play in developing our future mobility. Whatever the challenges to come, mankind will need to maintain reliable and efficient means of transporting both goods and people. As a driver of efficient technology designed around the highest safety standards, motor sport is well-placed to play a central role in the development of a sustainable future.

"Motor sport has a major contribution to make in the dialogue that's going on at the moment and I think it's rather exciting," concludes Stoker. "It's positive social change and it's dealing with pressing issues in society. Sports have a fabulous role to play, but we've got this very special role – we're able not only to deliver a sport that is empowering and very important to people, but also we can deliver technological change and contribute to the sustainability process." ◂

Work conducted by manufacturers including Porsche on hybrid engines in endurance racing has already trickled down to road cars.

04

PROVING GROUND

The FIA's efforts to boost the sustainability of motor sport are being felt in every area of competition, from the organisations involved in staging events to the circuits on which we race and beyond...

TEXT / MARC CUTLER

It's March 2019 at the Geneva Motor Show. The promoters from the FIA's major championships – Formula One, World Rally, World Rallycross, World Endurance, Formula E and Karting – have gathered at the FIA's invitation to discuss one issue: motor sport's relevance and sustainability.

The one thing they all agree on is that the sport needs to be proactive in proving its environmental credentials.

"They sat around the table for a two-hour workshop, and the subject was about making motor sport more sustainable and relevant for the fans, for the partners, for the industry," says Marina Tailpied, who is in charge of the Sustainability Programme for Sport at the FIA. "There was overall support and enthusiasm from them all, and the general feeling was that the FIA should pursue a stricter policy in this area."

This was music to the ears of Tailpied, who coordinates the FIA environmental accreditation process, which helps motor sport stakeholders measure, improve and be recognised for their environmental performance.

It is one of the first accreditation programmes to have been developed specifically for any sport and it enables all motor sport stakeholders to align their performance to the highest level of environmental standards. Those that sign up are rated on three levels of performance: one-star, two-star and three-star, measuring their sustainability achievement and providing a benchmark against how they can improve for the future. ▸

The WRC has stipulated that all its events must achieve three stars in the FIA's environmental accreditation process to remain on the calendar.

The project follows a broad range of international standards having been created and then guided by Even Wiger, the FIA Sustainability and Environmental Advisor, who is an International Organization for Standards (ISO) certified auditor. Wiger has long experience in this area, having audited and implemented environmental management programmes across both the motor sport and construction sectors.

In the few years since the programme was launched, the FIA has already awarded the maximum three-star accreditation to National Sporting Authorities (ASNs), motor racing teams, promoters, circuits, events and suppliers across the sport. The FIA's long-term objective is to bring all FIA stakeholders on board, through the gradual three-level approach, with the aim to raise collective awareness and improve the overall environmental performance in the motor sport ecosystem.

One of the most successful series has been the FIA World Rally Championship (WRC), which is the first to stipulate that all events must achieve three-star environmental accreditation if they are to stay on the calendar. This has created a unique situation where even prospective events are seeking to prove their environmental credentials before they are part of the series.

Rally Kenya has set the benchmark by being the first WRC candidate event to actively apply for accreditation before being confirmed on the WRC calendar, and this is a significant demonstration of progress for the accreditation scheme, according to Wiger. "Usually an event gets the confirmation from the FIA that it will be on the next season's calendar and then we reach out to them. But in this case, Kenya's promoters took a proactive approach to ensure they are fully aligned with the regulations ahead of the first event."

Kenya will potentially join a host of other WRC events that have already achieved accreditation, between them launching a wide range of sustainability initiatives from waste management programmes and carbon neutral operations to local awareness campaigns and healthcare projects.

Rally Sweden, for instance, has implemented an ambitious environmental strategy called 'Vision Zero', which aims to minimise waste through various methods including the reduction of food waste and the use of recyclable plastic items, and to reduce emissions by promoting transportation with low-carbon footprint vehicles and the use of renewable energy. This 'Vision Zero' approach is also coupled with the event's safety strategy – combining sustainability and safety is expected to optimise returns.

Among other events, Rally Australia has become the first carbon neutral event on the calendar. Rally México has implemented recycling initiatives by producing shoes made out of plastic bottles, along with a 'Health Rally' initiative that provides healthcare for smaller cities around the stage routes. Rally Argentina has implemented a waste collection effort incentive for spectators, as have Rally de Portugal and Rally de España, which both have a progressive waste management programme.

Elsewhere, Rally Italia Sardegna has been raising awareness on environmental sustainability through schools by teaching children about waste management and recycling methods, while Rally Finland has made steady progress by appointing its Rally Managing Director as an Environmental Champion.

FORMULA E-CO

The Accreditation Programme is not just limited to racing events, but also applies to teams and entire championships. McLaren was the first team (and currently the only F1 team) to have achieved accreditation, while the Formula One Group, F1's promoter, is examining the potential to benchmark its environmental credentials.

Perhaps unsurprisingly the ABB FIA Formula E Championship, which uses electric-powered cars, is leading the way, with its promoter being to date the only international promoter to achieve a three-star certification from the FIA alongside the ISO 20121 certification, the highest for green events.

This has extended to the Formula E teams, as Mahindra Racing renewed its two-star accreditation at the start of the year, having joined the programme in 2016. The team now plans to be carbon neutral by 2020 along with achieving a three-star rating.

"We take sustainability and environmental issues seriously at the team, and we are a strong believer that education and information are at the core of the challenges we are facing globally," says Claudio Corradini, Mahindra Sustainability and Environmental Manager. "As a team we work hard to improve our sustainability and fight pollution in our everyday lives, both at work and at home."

Other Formula E teams are keen to follow suit, with DS Techeetah announcing in May this year that it will be joining the programme to work on its carbon footprint, with the support and expertise of leading environment and mobility companies, in order to achieve carbon neutrality of its operations. An FIA meeting with several Formula E team principals and managers on the margins of the Bern E-Prix has secured the engagement of other FE teams in the process, and this is an encouraging sign for the championship.

"It is still a voluntary process in the sense that it is not yet mandatory to join, but in parallel we wish to make it mandatory in the near future through the championship's sporting regulations," says Tailpied. "For Formula E it would send a positive signal that the teams are doing it themselves even before it's a regulation."

Formula E is proud of its green credentials, while the Mahindra Racing team will aim to be carbon neutral by next season.

So far, Circuit de Catalunya is the only F1 track with an FIA three-star environmental rating, but that is set to change soon.

'At Mahindra we work hard to improve our sustainability and fight pollution in our everyday lives'

MAXIMUM IMPACT

One of the key things the FIA Environment and Sustainability Commission is keen to do is get more F1 circuits involved with the accreditation programme, because of the number of events they encompass throughout a year which can achieve the FIA's 'maximum impact' targets.

Currently in F1 only the Circuit de Catalunya has a three-star accreditation, but there are plans to add more with French Grand Prix host Paul Ricard circuit due to submit a three-star application later this year, and other circuits including Zandvoort, which is returning to the F1 calendar in 2020, being in contact with the FIA's Sustainability Department.

"If you look at Circuit de Catalunya, which is the only F1 circuit to be accredited on the FIA programme, it doesn't only serve for F1 once a year," says Tailpied. "it serves for other major racing events, including non-FIA ones such as MotoGP, which means that the environmental management system in place for the F1 weekend actually runs through the entire year."

This is why it is important for the FIA to target these circuits as it brings in a much wider range of other events and activities, potentially not limited to motor sport.

This is perhaps the scope for the future of the FIA Environmental Accreditation Programme as the Federation looks to make it more recognised by governing bodies worldwide. This could potentially be something that gets implemented into other forms of motor sport including motorcycling, which is governed by the FIM.

"We have a very positive dialogue with the FIM on this topic, and it seems that the FIA and the FIM could achieve positive synergies by using a common set of guidelines," says Tailpied.

"They have MotoGP stars acting as ambassadors of their 'Ride Green' campaign, they are very strong in communications, they also send environmental 'stewards' to their events, but they don't have the specially tailored, three-level accreditation system that we have," adds Tailpied. "In that sense, the FIA is leading the way, not just in motor sport but among all sports governing bodies."

Improving performance is in the FIA's DNA. As motor sport becomes greener on the track, it is important that the message is translated off-track into a collective effort with the continuous aim to improve environmental performance. The FIA, through its Sustainability Programme, has laid the groundwork for an international standard that is already seeing an impact across motor sport, and which can only grow with more stakeholders looking to demonstrate their commitment to reducing their carbon footprint. ◂

THREE-STAR ACCREDITED STAKEHOLDERS

NAME	TYPE
AKK Motorsport (Finland)	ASN
Deutscher Motor Sport Bund E.V. (Germany)	ASN
Emirates Motorsports Organisation (UAE)	ACN
Norges Bilsportforbund (Norway)	ASN
Svenska Bilsportförbundet (Sweden)	ASN
Rally Argentina	WRC Event
Rally Australia	WRC Event
Rally Finland	WRC Event
Rally France – Tour de Corse	WRC Event
Rallye Deutschland	WRC Event
Rally Italia Sardegna	WRC Event
Rally México	WRC Event
Rally de Portugal	WRC Event
Rally de España	WRC Event
Rally Sweden	WRC Event
Wales Rally GB	WRC Event
McLaren F1	Team
Formula E Holdings	Promoter
British Automobile Racing Club	Promoter
Circuit de Barcelona-Catalunya	Circuit
Mugello Circuit	Circuit
Apex Circuit Design	Supplier

TWO-STAR ACCREDITED STAKEHOLDERS

NAME	TYPE
Confederation of Australian Motor Sport	ASN
MotorSport New Zealand	ASN
Rally Chile (accreditation pending)	WRC Event
Rally Turkey	WRC Event
Mahindra Racing (Formula E)	Team

ONE-STAR ACCREDITED STAKEHOLDERS

NAME	TYPE
Jordan Motorsport (RACJ)	ASN
Motorsport Ireland (RIAC)	ASN
Motorsport South Africa	ASN
Motor Sports Singapore	ASN
Saudi Arabian Motor Federation	ACN
Syrian Automobile Club	ACN

04

REDUCING THE IMPACT

Across the globe motor sport is reducing its impact on the world around it through the FIA Environmental Accreditation Programme – and it's also benefiting the FIA national sporting organisations and clubs involved

TEXT
/
JUSTIN HYNES

The drive to increase motor sport's sustainability encompasses a hugely diverse range of activity, from the largest scale by minimising the impact of world championship events attended by hundreds of thousands of spectators, to the smallest details of paper use within offices.

Shaping targets across such a broad spectrum of activity is no easy task but the FIA has crystallised the pursuit of sustainability goals through its Environmental Accreditation Programme.

The primary goal of the programme is to raise awareness of environmental management issues, and to provide guidance to facilitate adoption of environmental initiatives by organisations involved in motor sport, be they national sporting clubs, promoters, events or venues.

Centred on a star-rated system of achievement, the programme features three levels of accreditation that at their core target carbon neutrality, as FIA Environmental Delegate and World Motor Sport Council member Garry Connelly explains.

"The guiding principle behind the FIA's Environmental Accreditation Programme is that we should be preserving our planet and motor sport must aspire to being part of the attainment of that goal," he says. "Now, preserving the environment amounts to a lot more than just not burning fossil fuel," he adds. "It is about moving away from single-use plastics, managing waste, monitoring energy use. It encompasses the whole range of activity, and the Programme addresses all of these aspects with a set of very carefully designed standards based around the ISO 14001 protocol covering environmental management systems."

Accreditation levels are also aimed at different stakeholders, with the first level primarily focused on national championship promoters, national sporting organisations (ASNs) and venues. The second level is more specifically addressed towards regional levels of sporting activity, and the top tier is targeted at manufacturer teams, world championship organisers and promoters, major venues and larger ASNs.

At the one-star level of accreditation, organisations are required to set basic environmental objectives, with the aim of improving performance via a set of benchmarks, including identification of energy and water consumption within the organisation concerned, and detailing waste management strategies. Noise impact, air pollution sources and the chief causes of carbon emissions are also identified.

Proving that even the basic levels of sustainable activity can be achieved, the Syrian Automobile Club (SAC) has attained one-star accreditation, despite the supremely challenging environment in which the club operates.

"Our environmental project started not only because we all believe in protecting our planet, but also as a good solution for the electrical power difficulties we experience in Syria. We were one of the first entities in the country to have our offices rely on solar power for 70% of our needs," explains Hani Shaban, SAC Vice President and Director of Programmes.

"Additionally, the club circuit near Damascus needed a lighting system, so we focused on having a clean and cheap source of power which will be sustainable for the economical value of our karting project.

"Lately, we worked on reducing the use of plastic bottles at all our circuit events," he says. "Not many people believed in the initiative at the start but we insisted on having central coolers in the circuit and distributed reusable water bottles to all our marshals and officials, we also offered these bottles for sale to all our spectators and always promoted the idea during our events."

At the two-star level of accreditation the process becomes more detailed, as organisations are required to deliver measurable results within specified timescales according to a publicly available environmental policy complying with ISO 14001 standards.

MotorSport New Zealand (MSNZ) has reached the requirement and outgoing MSNZ CEO Brian Budd explains that while the process involved a strong commitment from the club, the outcome has been positive in many areas.

"We committed to ensuring that managers and staff take responsibility for environmental issues, that we comply with all relevant displacement requirements relating to environmental protection or management and that they are transparent in terms of environmental performance," he says.

The Abu Dhabi Desert Challenge now features a bivouac partially lit by solar power

'The FIA Environmental Accreditation Programme allows motor sport organisations to demonstrate they are using world's best practice'

GARRY CONNELLY,
FIA ENVIRONMENTAL DELEGATE

FIA Environmental Delegate Garry Connelly says motor sport must help to preserve the planet.

CALCULATING CARBON

"That clearly encourages employees, contractors and our volunteers to act sustainably and we've carried that message through to our competitors and to our member club, saying: 'We have put in place an environmental policy and we would like you to do what you can to meet the standards we set for ourselves.' And that is having a knock-on effect on how the sport runs here."

For MSNZ the next step involves improved waste management strategies and more significant carbon offsetting. "In the long-term, the objective is that by 2020 we improve waste separation by a further 15%. By 2021, we hope to calculate operational carbon footprint, and by 2022 we will have completed environmental training for all our member clubs and employees.

"In terms of carbon offsetting, the MSNZ board has recently discussed the possibility of getting involved in forestation – buying into a strategy that more radically offsets our carbon emissions. That might be a costly endeavour but the club is looking into something to make a contribution back to the environment."

Achievement of accreditation at any level brings an added bonus in the shape of environmental credibility, an asset Connelly believes should be a driving factor in motor sport stakeholders getting involved in the initiative. ▸

"For a long time we have been aware of a growing concern about motor sport and the environment and that motor sport represents what might be called 'low-hanging fruit' with regard to negative perceptions," says the FIA Environmental Delegate.

"To counter those perceptions, having a defined set of environmental credentials represents a major asset when approaching sponsors, regional bodies or state organisations, who always have at the front of their mind the question: 'Is this something we should really be involved with, is it sustainable, and does it fit with public acceptability?' The FIA Environmental Accreditation Programme allows motor sport organisations to quantifiably demonstrate that they are using world's best practice."

MSNZ's Budd agrees adding: "New Zealand has a very strong focus around environmental issues. We are a country that from a tourism point of view is very dependent on a clean and green image. So, at government level, motor sport doesn't engender particularly positive feelings.

"When we are dealing with government through Sport New Zealand, which is the government sport funding agency, it is certainly an advantage to be seen to be doing something concrete. Also, the fact that the FIA has a strong commitment to environmental issues means we are seen as being part of a world or global move towards environmental sustainability."

At the top level of accreditation clubs are asked to fulfil a far wider range of requirements. More stringent measurements are put in place, including comprehensive metering of energy and water use, enhanced waste management and the implementation of periodic waste audits. In a large list of targets, three-star organisations also need to show continual reduction in carbon emissions from energy efficiency measures.

However, for Mohammed Ben Sulayem, President of the Emirates Motorsports Organization (EMSO, formerly the Automobile and Touring Club of UAE) and FIA Vice President, Sport, it is less a case of meeting the demands but wishing to exceed them.

EMSO President Mohammed Ben Sulayem says the accredition process has been tough but "very satisfying".

'Sustainability is about being sensible and utilising the technology at your disposal'

MOHAMMED BEN SULYAEM, PRESIDENT EMSO, FIA VICE PRESIDENT, SPORT

SOCIAL RESPONSIBILITY

"For our club, getting involved in the FIA accreditation process was not about seeking a trophy to hang on the wall, it was about social responsibility and the desire to make a change," he insists. "It took us two years to incorporate and develop sustainable solutions to achieve three-star accreditation. It has been a major effort, but the results, which are all monitored, are very satisfying and definitely push us to do more."

EMSO's approach encompasses the whole spectrum of activity, from its office base through to the events it stages and sanctions.

"On the sporting side, at our events, such as the 2019 Abu Dhabi Desert Challenge, a six-day event, we have a desert facility, the bivouac, which is huge, with over 1000 people working there. The whole bivouac has been lit with LED lights. We had solar panels to provide power in some areas. We did have to use generators, as the amount of energy needed is substantial, but overall it was a successful step, and we saw a lot of improvement. So for 2020 we are aiming for greater levels of sustainability," he explains.

"On the mobility side, with our work on International Driving Licences, moving to a software solution for applications saved an enormous amount of paper. Last year alone we saved 7,500 tons of paper. It's documented and represents a measurable cost saving.

"In terms of our office, the biggest consumption for us is electricity, due to the weather and the need for air conditioning. In the UAE, air conditioning accounts to 75-80% of electricity bills. More modern units than those we currently have use inverters and provide variable power according to demand. With these you can save 35% of your electricity costs related to air conditioning. The cost saving is a function of less energy use. You are saving money and promoting sustainability. We are looking to make this change towards the end of the year.

"It is about consuming less, making savings and being responsible. And it is important to understand that this is not a complex adjustment. Sustainability is about being sensible and utilising the technology at your disposal."

And Ben Sulayem is looking for greater gains in the future. "We are the organising body for the FIA Formula One Abu Dhabi Grand Prix and one of the targets we have is to minimise plastic use. In the heat, people – particularly our volunteers and officials, who are often outside in very high temperatures for long periods of time – need to stay hydrated. That does lead to a significant use of single-use plastic bottles. We are trying to get rid of these bottles and move to more environmentally-friendly, reusable solutions."

For Connelly, the message is crystal clear – defined standards provide targets for motor sport organisations to meet that not only benefit the environment but also the organisations themselves.

"The FIA Environmental Accreditation Programme is win-win for motor sport and the organisations involved," he says. "The overall goal is to reduce an organisation's carbon footprint and then to offset what it can't eliminate. That is good for the world in which we live, it is good for the bottom line of the organisations involved, and it is good for the sustainability of our sport in the coming decades. It is a holistic approach to reducing impact and we would encourage all motor sport stakeholders to get involved." ◂

MotorSport New Zealand is investigating forestation schemes to offset carbon emissions from its events.

For more information about the FIA Environmental Accreditation Programme please visit: www.fia.com/environmental-accreditation-programme

TEXT / MATT YOUSON

Defining the direction of travel

04

For the McLaren Group, three-star FIA Environmental Accreditation is more than just adherence to a set of standards. It also provides compass points for future development and acts as calling card in the quest for new business

The futuristic-looking McLaren Technology Centre was planned with environmental protection very much in mind.

Horsell Common in Surrey, England, is famed as the place where, in one of the great works of science fiction, *War of the Worlds*, Martians landed. In the nearby market town of Woking, a statue of H G Wells' famous alien invader silently menaces shoppers – though were one to enter a discussion about the spaceship that landed on the edge of Horsell Common, there is every chance the conversation would not be about Wells' novel but rather would revolve around the somewhat otherworldly McLaren Technology Centre (MTC).

While the MTC and, latterly, the McLaren Technology Campus that surrounds it is an award-winning architectural achievement, that it exists at all as the headquarters of the Formula One race team and its parallel automotive and technology divisions is perhaps the more remarkable accomplishment. The idea of a new factory gaining the permission of planning authorities in what is a 'green belt' in the heavily built-up south east of England is a notion no less outlandish than invasion from outer space.

However, central to McLaren's planning was a commitment to environmental protection that went far beyond the conventional. The company set new standards for corporate responsibility and became a benchmark for best practice, putting forward a plan that, far from damaging the local ecology, would regenerate the landscape, repairing decades of damage caused by intensive farming.

This initial impetus has greatly influenced McLaren's corporate philosophy and, two decades after ground was broken on the 500,000 m² site, sustainability remains a central theme running through the McLaren Technology Group.

The Group has an ambitious internal environmental policy, committing it to, among other measurements, an ongoing 2.5 per cent reduction in CO2 emissions year-on-year and a zero-waste-to-landfill policy.

In 2010 the MTC earned Carbon Trust Standard certification and in 2011 McLaren Racing was unveiled as the first carbon-neutral F1 team. This was recognised by the FIA via the first environmental certification that the now-defunct FIA Institute awarded. This is not a small motor sports outfit but a company that employs thousands and last year built 4,800 sports cars.

SETTING NEW GOALS

Michael Shearer OBE, managing director of McLaren Applied Technologies Asia Pacific, also acts as McLaren's sustainability champion. He is a passionate and enthusiastic advocate of corporate environmental responsibility, viewing it not as a burden but as the philosophical underpinning of future growth: something to be welcomed, embraced and perceived as a tremendous opportunity.

"This business gets really interesting when we ask ourselves the big questions," he says. "Can our applied technologies that have come directly from the world of racing be applied to sustainability? Can we try to solve some of the big issues? The most obvious road map for us to use is the UN Sustainable Development Goals, more commonly known as the SDGs. These are 17 very aspirational, problem statements that UN member states agreed in 2015. They cover a whole range of issues from climate change through to inequality, poverty, more sustainable and greater mobility in cities and communities. ▸

McLaren Applied Technologies Asia Pacific MD Michael Shearer has spearheaded the company's work on sustainability matters.

"The audacious question we're asking ourselves is: 'well, we've come from a legacy, high-emissions industry. What if we can turn that on its head? What if we can use that legacy for a positive purpose and see whether we can use that technology to tackle some of the world's biggest sustainability issues? That's where we are at the moment, discovering how our business aligns with those sustainability goals; trying to see the ways in which our Formula One-devised technology can map directly onto them."

This begs the question: what does McLaren – a company with an excellent environmental record – gain from the FIA Environmental Accreditation? The process provides a framework to motor sport organisations: offering a road map to good environmental practice and encouraging the attainment of higher standards. McLaren manifestly understands the direction of travel but, according to Shearer, the group takes tremendous value from the process.

"The award was meant to help teams such as ours, the circuits, manufacturers and the event organisers reach the highest standards in environmental management," he says. "It provided data – and data is absolutely key in everything we do: data-driven design; data-driven decision-making. We had some of the data already, and it was a question of looking at the impact of that and making sure things were trending in the right direction. Something like this is an indicator of progress. It's not the end of the process but a signpost, or a quality checklist. In that regard, it's been extremely useful for us."

TRANSPORT SOLUTIONS

This is particularly applicable to MAT, the engineering and management consultancy that incorporates McLaren's business as a major electronics supplier to the world's top motor sports series, but also includes a variety of other business units.

"There is a unifying theme across our business units in health, public transport, automotive and motor sport," says Shearer. "Ultimately, we try to improve lives through technology. One of the ways in which we can achieve our aim is through better efficiency. We can measure it – but there is a wider impact, which is what we're attempting to understand. We are trying to map out all of the areas in which we work and come up with an ultimate sustainability impact of the work we're doing in the applied technologies arena. We don't have all the answers, but we are at a stage where we can look at each area and say how we think it could contribute to a particular sustainable development goal. There is the thread of a narrative now, asking does the technology work? Is there a market for it? And also, what is the wider impact of what it could do?"

Pressed for an example, Shearer selects SDG 11: Make cities and human settlements inclusive, safe, resilient and sustainable. It lies at the intersection of various different MAT business units, but transportation is a clear jumping-off point.

"Part of this is public transport," he explains. "We are playing very much in that space, in terms of better, safer and more reliable public transport systems. But another area, perhaps less obvious, is our work in autonomous mobility. This circles back to sustainability, because if we can facilitate things like greater ride-share as a result of electrification, or safer vehicle autonomy through safety-critical control systems, it's going to help create more inclusive, sustainable mobility in the cities of the future.

"Another example is our work in rail travel, where we're trying to adapt racing technology in things like high-speed connectivity and predictive maintenance modelling, literally taking the technology from the race track to the rail track to forecast when an asset might fail.

"The immediate benefit to the train operator is in more reliable public transport, but take a step back and think about the impact of more efficient public transport," he adds. "It encourages people to use transport solutions with lower emissions – and thus has a wider social impact. It's another example of where our thinking is going here: we think the technology can satisfy customer needs but also have a wider positive sustainability impact, both environmentally and socially."

MAT has applied its work in racing technology to the rail track, helping to improve efficiency.

There is a curious duality to a persistent and documented sustainability drive. It produces tangible results, countering the occasional accusation that it exists as a box-ticking exercise in public relations; on the other hand, it is a very effective exercise in public facing acceptability. Environmental credentials certified by independent assessment have become part of the tender process in the engineering sphere – though MAT see a subtle change in the perception of sustainability and what it offers a client.

"The discussion has moved on in a world where we are talking about climate crisis rather than climate change," says Shearer. "Years ago, the questions we were asked [by prospective clients] tended to focus very narrowly on our specific environmental impact: are we aware of what it is, and what are we doing about it? That's still important and still occupies our minds, but stakeholders including potential customers, and particularly on the MAT side of the business, are asking about how our solution can help: how it helps them achieve better energy efficiency or reduce their impact. We see this more and more."

The Martians haven't come to Woking, though McLaren has developed technology that's been to Mars. Most of the time, however, its focus remains firmly on Earth, which in the current climate – metaphorical and otherwise – could not be more important. ◂

'The discussion has moved on in a world where we are talking about climate crisis rather than climate change'

Leading the way: McLaren Racing was unveiled as the first carbon-neutral F1 team back in 2011.

05

The Spanish revolution

Once seen as an uninspiring, budget option, Spanish brand Seat has been reinvented as aspirational, exciting and tuned into a hugely varied future driving experience. And the man leading the charge is company President *Luca de Meo*

TEXT
/
EDOARDO NASTRI

Changing the image and perception of a marque is one of the most complicated missions for an automotive executive. And if that marque is one of the six largest and most important motor manufacturer groups in the world, it becomes even trickier. Despite the difficulty that's what 51-year-old Italian Luca de Meo is succeeding in doing at Seat.

In 2018, the Spanish arm of the Volkswagen group saw its profits rise by 4.6 per cent on the previous year from a turnover of almost €10 billion. "Our models are popular because they are packed with character and technology, and they are reliable," said de Meo during the annual accounts meeting. "We have sold 517,600 units in 2018, an increase of 10.5 per cent over the previous year."

The boost in sales is in large part down to investment in research and development, strong designs that have been penned by Alejandro Mesonero-Romanos and a comprehensive product range.

"Last year was a record year," de Meo told the meeting. "Our financial situation has never been this prosperous, with sales data reflecting the loyalty of our customers. We have completed the first cycle in terms of renewing our portfolio and we will soon start on the second phase. We aim to be a major player in the fields of electrification, connectivity and shared mobility."

After graduating from Milan's private Bocconi University, Luca de Meo began his career in the marketing department at Renault, moving to Toyota a few years later. In 2002, he joined Fiat and after two years began working alongside Sergio Marchionne, with whom he established a strong bond.

The years spent in Turin with Marchionne were probably the best training possible. De Meo was Head of Business for Fiat, Lancia and Alfa Romeo, Managing Director at Abarth in the period of its relaunch after a long spell of inactivity, and finally Chief Marketing Officer of the Fiat Group where he was responsible for several of its major successes, including the remodelled Fiat 500.

"I owe so much to Sergio Marchionne," de Meo admits. "He had the courage to have faith in a 37-year-old, promoting me to a senior level. I was put in charge of the Fiat brand, and the Fiat 500 was one of his gambles. So much of the company's future depended on it. I will never forget the night in Turin, when the car was launched, with happy people cheering and clapping: Fiat was back."

Seat has brightened up its range, introducing three SUVs including the Ateca. Right: The Spanish brand has enjoyed a boost in profits under Luca de Meo's leadership.

However, the big change came in 2009 when de Meo left Turin and moved to Volkswagen as Director of Marketing. After three years he moved to Audi AG and in the shake-up following the 'dieselgate' scandal he ended up in Barcelona as the boss of Seat.

RECIPE FOR SUCCESS

The Italian's recipe for a new image for the Spanish brand consists of a few simple ingredients: €3.3bn which the group assigned to promotion, new products in line with what the market wants – the launch of three SUVs, Ateca, Arona and Tarraco – and investment in technology that will take Seat into the future. It's clear that the current digital age will lead to diversification in this field, something of which de Meo is well aware.

"The challenges facing companies have changed, and today digitalisation is at the core and one has to know a little bit about all of this to steer a path for the future," he says. "There is no longer a horizontal strategic plan. One has to interact with the realities of our age, from Google to small but nice start-ups."

It's a necessary step to connect with younger generations and acquaint the buyers of tomorrow with the brand.

"The average age of our customers is around eight to 10 years younger than that of our rivals. When I arrived at Seat, I was told that the brand had a problem in the young age of its buyers. ▸

Seat's Cupra brand races in the TCR Championship and from next year the Cupra e-Racer will compete in a series for electric vehicles.

Left: De Meo with the Seat Minimo concept EV, which is scheduled for production in 2021. Below: Meanwhile the zero-emissions Mii city car will debut in 2020.

My response was that I'd spent my whole life working on PowerPoint presentations to understand how to rejuvenate the customer base of brands of which I'd been entrusted. Having young customers is not a problem as long as one can hang onto them when they have a higher disposable income and a family."

FUTURE FOCUS

It's a problem that de Meo wants to tackle with the biggest shake-up of the product range in Seat's history.

A good manager has to be passionate about the future if his company is to continue growing. Having got the accounts in order, de Meo can look to tomorrow, steering Seat towards the areas of electrification and new forms of mobility. It's a process that resulted in a €1.2bn investment in research and development in 2018 alone.

The investment was primarily targeted at the development of an electrification plan based around the launch of six new battery-powered models over the next two years, including 100 per cent electric and hybrid plug-in cars.

In 2020, the zero-emissions Mii city car will arrive, as well as the new el-Born, presented at the last Geneva Motor Show, and the new-generation Leon and Tarraco.

The move to electricity is fundamental for the brand in order to conform to the coming regulations on CO_2 emissions from the European Union and to combat the sharp drop in the sales of diesel cars, with a gradual move to other forms of power.

"The sale of electric vehicles offers an immediate way to reduce CO_2 emissions in the new car pool, says de Meo. "It's a benefit that is definitely greater for the entire range than that which one would get with partially-electrified cars, such as hybrids and hybrid plug-ins, which will nevertheless be part of our range."

'What is the sense in moving an object that weighs hundreds of kilos to transport a single person, maybe just a few kilometres?'

As with any new technology, de Meo wants to study and understand electric mobility, using the zero-emissions Mii, the smallest Seat, as a test bench to try to understand how to sell, distribute, maintain and assimilate a battery-powered car.

Then there is the matter of making it affordable. "That's a real must for our customers and, at the moment, an electric vehicle is more expensive than an internal combustion one."

Only the distribution and democratisation of the technology will lead to sales of this new mobility, and that can only be achieved by investment. "That's why, for the first time in our history, we will develop a platform for small cars and batteries based on Volkswagen's MEB," says de Meo. "The aim is to sell a city car for urban travel for under 20,000 Euros." This is a nod to what is going on in major Chinese cities and which will also be used by other brands within the Volkswagen group as from 2023.

But the Italian manager is looking further afield at new types of mobility that could attract young customers in the future.

"What is the sense in moving an object that weighs hundreds of kilos to transport a single person, maybe just a few kilometres?" he asked during a recent press conference. The question has given rise to the idea of investing in micro-mobility, a form of transport which will become increasingly important in cities, creating a whole new business for motor manufacturers and operators. It's a role that will fall to the Spanish brand within the Volkswagen group and which will develop alongside electrification and "the moment when technology and regulations will allow for vehicles to move about autonomously".

De Meo is also ramping up Seat's credentials as a producer of more performance-oriented vehicles, a sector he is familiar with from his time as MD at Abarth. At the start of 2018 the Italian spun off Seat's independent Cupra sporting brand, with de Meo launching the tag, 'Cupra is a dream' – a concept he defined as customers not "necessarily needing to go for luxury to find something unique". In the case of the Cupra that individuality means performance combined with the use of stylish elements and materials, as well as more individual powertrains. And at the last Geneva Motor Show, Cupra unveiled the Formentor, a sporty hybrid plug-in crossover.

Currently, the Cupra brand has just one model, the Ateca, and the Spanish constructor is racing it in the TCR Championship and, as from next year, the Cupra e-Racer will compete in a series for electric vehicles. The performance of these models says it all: from 0 to 100 km/h in 3.2 seconds and from 0-200 km/h in 8.2s, with motors that put out up to 680 horsepower. "In a few months Cupra became profitable in percentage terms within Seat, delivering the highest margins of the entire range," says de Meo.

It's been a period of rapid transition for a brand that in the past has been seen as a budget option for younger drivers. And with the brand revolution in full swing, de Meo's vision of a Seat that touches every sector of the future looks like being fulfilled. ◂

The FIA is involved in Esports through its Gran Turismo Championship, launched in 2018.

05

CHANGING THE GAME

Esports is one of the fastest-growing industries in the world, with studies claiming it will surpass $1 billion in revenue through 2019 with an audience of 454 million. And motor sport has not escaped its reach, with the FIA at the forefront of the digital racing revolution

TEXT
/
LUKE SMITH

While racing video games have been available for a long as there have been screens on which to play them, it is only in the last five years that digital motor sport has truly taken off in motor sport. As games become more realistic and far closer to simulations, the lines between the real and virtual worlds of racing continue to be blurred, powered by the formation of a number of high-profile championships.

After early steps were made to take gamers from their sofas to the race track by Nissan's GT Academy more than a decade ago, sim racers now have a increasingly wide-ranging and ever-more sophisticated number of races series available in which to compete. Formula One formed its own Esports Series in 2017, with its third season enjoying the participation of all 10 teams involved the FIA's top single-seater category and featuring a prize pool of $500,000; McLaren has established its own in-house digital racing programme, McLaren Shadow Project, to help uncover new talent that can support its simulator team; and as the global regulator of motor sport, the FIA has also embraced Esports as a increasingly valid motor sport activity through its FIA Certified Gran Turismo Sport Championships, launched in 2018.

Interest in these championships has been significant. Over half a million racers entered McLaren's Shadow Project in 2018. More than 66,000 gamers took part in the F1 Esports Series, which attracted a global audience of five million. And over 80 per cent of the series' viewers were aged under 35, proving the appeal of digital motor sport – especially to younger generations.

CLEAR CROSSOVER

For FIA Deputy President for Sport Graham Stoker, the close crossover between motor sport and digital racing has given the Federation a unique opportunity to further its involvement and help its development.

"The simulated games involving driving and motor sport are now so accurate that it starts to have a serious implication for us," says Stoker. "The skills, unusually, are directly transferable. That's not the case obviously with many of the other digital racing series. You think about the football game. The people who win it haven't got the skills to go on a pitch and kick a ball around. But with motor sport, it's really quite unusual: there is a very real crossover. And the FIA is uniquely placed to use this as a way of encouraging people into motor sport."

The FIA Certified Gran Turismo Sport Championships utilises the hugely popular Gran Turismo Sport game on PlayStation 4, and through the platform racers from all over the world are able to take part online and attempt to qualify for a series of live events, where they compete individually for the Nations Cup and in teams for the Manufacturers Series.

FIA Secretary General for Sport Peter Bayer – a gamer himself – feels the partnership with Gran Turismo has been a game-changer for the Federation, allowing it to not only widen participation in motor sport but also help discover new talent that may otherwise not get the opportunity on track in real life.

"When the Gran Turismo people approached the FIA and presented the idea of creating an FIA sports league within the game, I think that was a genuinely exciting piece of news for us," says Bayer. "We've been trying for a while to understand how we could engage within that whole side of digital motor sports and this was a wonderful access point.

"For us, it's a huge opportunity to grow the sport, to find new talent, and all of it in a safe and quite cost-efficient environment. Once you have your console, a driving seat and other accessories at home, the cost for the game is not really high."

'There are famous examples of kids driving on simulators, and then you put them in a real car and they start winning races'

PETER BAYER, FIA SECRETARY GENERAL FOR SPORT

The cost-efficient nature of digital motor sport has been particularly effective in countries without a long-standing racing culture that are looking for ways to grow motor sport.

"It's opening new markets to us," explains Bayer. "We've had huge interest from countries where motor sport is not as developed as it might be in European, North American or Asian countries. And for those people, it offers a real opportunity to engage with a young audience, to get new potential drivers on board.

"There are famous examples of kids driving on simulators and coming up through the gaming world, and then you put them into a real car and, after a couple of days, they start winning races. It's a tremendous opportunity." ▸

Former kitchen porter Brendon Leigh has become the face of F1 Esports after taking back-to-back titles.

FIA Deputy President for Sport Graham Stoker says there is a great opportunity to develop digital motor sport within the Federation.

A keen gamer himself, FIA Secretary General for Sport Peter Bayer credits digital motor sport series such as Gran Turismo for helping to discover new talent.

Two racers making the transition from the virtual to the real world are Igor Fraga and Brendon Leigh. Fraga was crowned the first FIA Gran Turismo Nations Cup champion in Monaco last year and won the McLaren Shadow Project competition to become part of its F1 set-up, while Leigh is a two-time F1 Esports Series champion and part of Mercedes' Esports team.

After seeing his on-track motor sport career stall due to funding struggles – a challenge faced by many young drivers – Fraga saw digital motor sport as a way to further his career.

"I realised that this actually could give me a chance to step up my real-life racing career," the Brazilian says, with his success in 2018 allowing him to secure a drive in the Formula European Regional Championship this season, where he has scored two podiums from five races.

Leigh, a former kitchen porter, has become the face of F1 Esports with back-to-back title wins, leading to his entry in the Race of Champions and the Formula Ford 1600 Series in the UK in 2019. "It's proving that things are getting more accurate and it's becoming a transfer window for simulator drivers going to the real world," says Leigh. "If you don't have the budget to go karting, maybe you work your way up the ranks and do F1 Esports, and build your baseline race craft and knowledge of driving the car. Then you can go and test a car and see if you've got it in the real world as well."

DIGITAL DRIVE

As well as giving sim racers the chance to move into real-world racing, digital motor sport is also becoming a motor sport activity in its own right, offering some thrilling action that has captured the interest of viewers across the globe.

"Any racing enthusiast can tune in to an Esports race and follow what's going on," says Julian Tan, Head of Esports and Growth at Formula One. "All our cars are equalised, which creates closer racing. Our races are 25 per cent of the normal race, so they're quick with lots of action. And the drivers themselves are more willing to take risks, which creates an exciting Esports product from a viewer's perspective."

The FIA is eager to further digital motor sport as a parallel activity to its on-track championships and a Digital Motorsport Working Group has been formed to explore its interests in the discipline.

Digital motor sport will also be one of the disciplines contested at the inaugural FIA Motorsport Games in Rome later this year, alongside GT racing, touring cars, Formula 4, drifting and karting.

"When we had the opportunity to select the disciplines that would go into the Motorsport Games, it quickly became clear we needed to include digital motor sport in the line-up, as it demonstrates our commitment and our conviction to this big opportunity for motor sport," explains Bayer.

"Our ASNs have been asking us for support in this area. There is huge interest among our Member Clubs and it was probably a logical step really to say that we have established the FIA Certified Gran Turismo Sport Championships to put it next to our traditional racing disciplines."

Germany's ADAC (Allgemeine Deutsche Automobil-Club e V) is Europe's biggest automobile club and has seen how digital motor sport can help bring through a new generation of fans, as well as giving huge numbers of people the chance to race competitively via the virtual championships it has been setting up.

"We brought the old motor sport world and the clubs in the villages into the digital world through sim racing," says ADAC's Marc Hennerici. "We have approximately 6,000 clubs in Germany and all of these clubs are starting to compete against each other in high-end simulators.

"This has been a real success," he adds. "The clubs are telling me they are gaining lots of new members, and all those new members are between 14 and 23 years old. This is something they have not experienced since the days of Michael Schumacher's success in the 1990s, having new and young members."

For FIA Deputy President Stoker, it is this kind of accessibility that makes digital motor sport so important for the FIA in the future. "Anything that gives a richer experience to the fans and encourages people to get involved in racing in some way or another is a great thing," he says. "When I go to events such as FIA Girls on Track or Dare to be Different, you see eight-year-olds through to 18-year-olds queuing up to have a go on these simulators.

"No matter where in motor sport they end up in the future, as long as they do stay in motor sport, I'm happy," he concludes. "They may be engineers, they might be volunteers, they might be drivers or they might be working in teams, but whatever their ultimate destination, the idea of getting exciting, hands-on experience through a simulator that fires your imagination is a great thing. It's a genuinely exciting prospect." ◂

Gamers competing in a live event as part of the FIA-certified Gran Turismo Championship.

'Anything that gives a richer experience to the fans and encourages people to get involved in racing is a great thing'

GRAHAM STOKER, FIA DEPUTY PRESIDENT FOR SPORT

Gran Turismo Nations Cup champion Igor Fraga now competes in F3. Right: Polyphony Digital and Gran Turismo boss Kazunori Yamauchi.

Getting connected to the virtual grid

Digital motor sport has become a vehicle for the FIA to help grow motor sport in countries lacking a developed racing culture, with a number of grants being issued under the Motor Sport Development programme

Over the past two years the FIA's Motor Sport Development programme has helped fund projects in Rwanda, South Africa, Bangladesh and Sri Lanka that are helping to grow participation in motor sport through digital racing.

The Rwandan Automobile Club has worked with schools to establish a Gran Turismo Online championship, encouraging participation and trying to convert racers from virtual driving to gaining real-life licences.

A similar scheme has been launched by the MSA in South Africa, which is looking to not only draw new participants to motor sport but identify new talent at a grassroots level. The project aims to attract 200 participants at each of the 12 locations and issue 50 digital licences in its first year.

In Bangladesh, a talent search programme has been launched to bring more young people into racing and help develop motor sport in the country, not only through driving but also officiating and engineering. Events are taking place across the country, leading to a finale in the capital, Dhaka.

Finally, Sri Lanka's Ceylon Motor Sports Club was awarded a grant for Playseats, allowing it to develop an online championship in schools using the rigs. An inter-school final will take place at the end of the programme with the goal of transitioning the winners into real motor sport.

"There are parts of the world where there is huge latent talent," says FIA Deputy President for Sport Graham Stoker. "Think of Africa, of all the talent there – but we've got big issues about getting people into racing. Are there circuits? Are there vehicles available?

"If we were in a position where we could get people into these modern advanced simulators, then we could get involved in some very exciting talent detection around the world."

'You have to be responsible not only towards yourself, but also towards the people around you. Being safe on the road is an essential part of how we interact with our surroundings'

Walking tall

05 One of the hottest properties in Formula One, *Charles Leclerc* has lit up the world championship in his first season with Ferrari. Now the 21-year-old racer from Monaco is putting his talents to use in the fight for road safety, joining HSH Princess Charlene of Monaco as an ambassador for the FIA's #3500LIVES campaign. Here, he talks about delivering the message of keeping pedestrians safe on the world's roads

You have joined the #3500LIVES campaign in tandem with a member of the royal family of your home state of Monaco, Her Serene Highness Princess Charlene. What prompted you to support the campaign?

I think it's important for all of us to support causes that can improve or even save lives. This applies especially to anyone who is fortunate enough to have a voice in the media and is able to spread important messages on a global scale. Road safety is a serious issue that unfortunately causes a lot of despair in the world. The #3500LIVES campaign can make a great impact at an international level and works towards saving the lives of innocent people. It is a cause that I am very happy and proud to have the opportunity to support.

Why do you believe a campaign such as this, which seeks to bring simple road safety messages to a global audience via available advertising space, is important?

Creating awareness is always the first step to start making a change. The use of billboard space is a great way to communicate important messages because such a broad audience can be reached. I also think that it is great to see so many people come together and become ambassadors for this campaign, as several people involved in Formula One and motor sport in general have already done. This is a first step on a long and important journey towards providing a safer environment on our roads across the globe.

The message you promote is 'Watch out for pedestrians'. Why do you feel it's important to slow down in urban areas?

It is important to respect the regulations designed to ensure road safety in urban areas. Unfortunately, innocent bystanders can sometimes become involved in accidents that can change or even take their lives. It is important to be responsible behind the wheel and one of the campaign's key messages is to 'Watch out for pedestrians'. It is a way in which each of us can make a positive impact on road safety.

How much do you think the involvement of celebrities as role models can help spread the message of road safety, especially one that is global in nature? Do you believe in the power of role models?

Participating in public events and having frequent contact with the media is not just part of our jobs. It also gives us the opportunity to discuss important topics with opinion leaders, journalists and fans. It is a way in which we can use our platforms to make changes and I think that it is important to seize each opportunity we have to leave a positive impact on our society.

Have you had personal experience of the other safety issues outlined by the campaign?

Fortunately, I haven't had any personal experiences with road safety. Nevertheless, all of the safety issues that the #3500LIVES campaign focuses on are important ones and should be regarded as such.

What do you hope the campaign can achieve in the coming years in terms of altering the behaviour of this generation of drivers and, more importantly, the next?

By making sure that children grow up with a good understanding of responsible behaviour on our roads – whether it is behind the wheel, as passengers, or as pedestrians – we can ensure that they have a safer environment to live in. Passing on important values to the next generation is very important, which naturally also applies to road safety.

You are the youngest ambassador for this campaign, so what advice would you give to young drivers who have just obtained their road licence?

An important thing to remember is that you have to be responsible not only towards yourself, but also towards the people around you. Being safe on the road is an essential part of how we interact with our surroundings and respecting the safety of others is a key element of that.

Do you think junior motor sport in disciplines such as karting can have a positive effect on the driving habits of people as they transition to road cars in their later teens?

There are certainly things that children can learn from karting, such as respecting rules which are designed to ensure that driving is safe for all participants. It is a good way for them to learn how to drive responsibly on the road too and teaches them that they must respect those around them, whether they are fellow drivers or pedestrians.

HSH Princess Charlene and Charles Leclerc with their #3500LIVES campaign message.

SCAN AND DISCOVER
Download the free Unitag app at unitag.io/app and scan the code to discover more about #3500LIVES

Commuters and couriers are increasingly relying on clean pedal power to complete their inner city journeys.

05

Going the Distance

Increased connectivity may be leading to a reduction in urban journeys, but it's also resulting in surging numbers of goods deliveries. With the number set to double in the next decade, the issue of 'final mile' transport is becoming a hot topic, as AUTO discovers

TEXT
/
BEN BARRY

How best to transport goods and people the 'final mile' through crowded city centres is an increasingly urgent issue. It might be the distance between warehouses and inner-city addresses for parcel deliveries, which are expected to double in Europe over the next decade. Or perhaps it's bridging the gap between the closest public transport stop and an office block. Make that final mile more efficient and not only do delivery times and commutes speed up, but air quality improves because fewer vehicles become clogged in traffic.

Now connectivity, electrification and sometimes old-fashioned foot and pedal power are combining to ease the strain on congested city spaces.

Ford of Europe recently announced plans to make city centre deliveries cleaner with the Transit Custom Plug-in Hybrid. It is the first PHEV in the one-tonne van class and was developed in conjunction with Prodrive, the motorsport outfit behind Aston Martin's World Endurance Championship programme.

Zero-emissions capability is key to the highly specialised Transit's appeal, especially as businesses look to future-proof delivery fleets. Diesel vehicles registered as recently as 2014 are now subject to London's Ultra-Low Emission Zone charge, after all, and other European cities are increasingly looking to limit the access of older diesel vehicles, which emit less CO_2 than petrol equivalents but more NOx, a cause of respiratory problems.

So instead of the four-cylinder turbodiesel engine typically fitted to Transit vans, the Plug-in Hybrid combines a 1.0-litre turbocharged Ecoboost petrol engine with a 13.6kWh lithium-ion battery pack and electric motor. ▸

Only the electric motor drives the wheels, leaving the combustion engine to act purely as a range extender once the electric charge in the battery is depleted – it burns fuel to convert into energy for the battery.

Ford expects an electric-only driving range of 31 miles after a full charge, but up to 310 miles is possible with the internal-combustion engine. Official fuel efficiency is predicted to be 75g/km CO2 and 85.6mpg. That's comparable CO2 emissions and better fuel efficiency than the latest Toyota Prius. Despite the large battery, the payload remains identical to non-hybrid Transit models.

Rather radically, instead of being developed behind closed doors as per the industry norm, 20 prototype Transit PHEVs took part in live trials within London with 16 partners. These included the Post Office, police and private hire taxi firm Addison Lee. Drivers could choose which drive mode best suited their current driving situation, and Ford was able to monitor usage during trials, suggesting improvements.

Of the 113,000 test miles covered, 35 per cent is said to have been on electric power alone, rising to 69 per cent inside the congestion charge zone – helping to improve air quality and cut costs.

However, clean motoring alone won't speed up the delivery of multiple parcels in highly-congested areas. That's why Ford has teamed up with delivery company Gnewt, which will use Ford's Cloud-based logistics software MoDe:Link. It helps delivery vans connect with multiple couriers in one place, handing parcels to foot couriers, scooter riders or specially-adapted pushbikes, whatever the most efficient delivery method.

"Our goal is to keep larger vehicles like delivery vans operating in the high-load, less-congested environments in which they perform best," explains Tom Thompson, project leader of Ford Mobility. "However, for the last mile of a journey into an urban area, where congestion and lack of parking can be a challenge, it makes sense to offload deliveries to more nimble, efficient and cost-effective modes of transport."

Rival Mercedes-Benz has also showed a more radical delivery solution, although one that's far from production-ready – the Vision Van is fully electric and connected to make the most efficient deliveries. It plans to crack the final mile conundrum by automatically handing off parcels to drones mounted on its roof – though regulatory hurdles mean a production version is unlikely to be on our streets any time soon.

Mercedes' Vision Van (below) would slide open to allow drones on its roof to collect the parcels within (left) and complete final mile deliveries.

But changes are already coming thick and fast. Both Ford, Mercedes and numerous rivals are experimenting with how best to move people across city spaces, taking these OEMs beyond the traditional car-manufacturing sphere and into the provision of 'mobility solutions'.

WORKING TOGETHER

Mercedes, for instance, has introduced the Moovel app, soon to become Reach Now, as a mobility joint venture between BMW Group and Daimler AG. The app enables travellers to compare the travel time and cost of various transportation methods, including public transport, car sharing, mytaxi, rented bikes and Deutsche Bahn, the German train system. Once users identify the most suitable solution, Moovel allows them to book and pay directly via the app.

"The decisive factor is what the customers want. And they have different preferences," explains Mercedes-Benz boss Dr Dieter Zetsche. "For some people in the city, having their own car does not really make sense. They prefer to make use of Daimler offers such as Moovel. The app offers access to many different mobility options."

Similarly, PSA – long-standing owners of Peugeot and Citroën, and more recently Opel/Vauxhall – has introduced the Free2Move app. PSA predicts users of car-sharing services will increase from eight million in 2015 to 36 million in 2025, and Free2Move offers shared access to 65,000 bikes, scooters and cars. Testament to its popularity, it's been downloaded 1.6 million times.

Ford's alternatives to passenger-car journeys in city centres range from the traditional – rows of Ford bikes line US city streets– to the innovative – a fold-up e-bike dubbed MoDe:Flex that stows easily in a commuter's car boot – to the downright radical. The latter includes a patent for 'a self-propelled unicycle engageable with vehicle'. It's a less spectacular version of Batman's batbike disengaging from the batcar, where the car's rear wheel can double as a self-balancing unicycle.

In theory, a driver parks up, presses a button and an automated jack lifts a rear corner of the front-wheel-drive car up, much like changing a wheel. The rear wheel then drops down to reveal a seat, mudguard, footrests and fold-out handlebars, all cleverly integrated into the design if previously concealed in the rear wheel arch. The unicycle includes self-balancing technology and is powered by an electric motor in the wheel – presumably charged while the car is on the move.

OEM solutions face intense competition from start-up rivals moving into this space, however, sometimes at such pace that regulators struggle to keep up. When e-scooters first appeared apparently randomly all over San Francisco – a city with chronic congestion and relatively poor public transportation – the authorities were caught off-guard.

Looking much like a scaled-up child's micro scooter, these electric scooters could be located and 'unlocked' by scanning their QR codes on an app, at which point the user would simultaneously be charged for the service. Problems arose when scooters were haphazardly discarded, ridden quickly along pavements and also roads, with riders frequently not wearing helmets. Thanks to incentives to re-charge the scooters, a black market even sprang up, with trucks collecting them, plugging them in later, then depositing them back around the city.

San Francisco has since limited the number of companies licensed to operate – with a current maximum of 625 scooters – and asked each provider for detailed business plans, including how it intends to maintain its fleet and if any infrastructure would be created, such as parking racks.

But this simple idea seems to be a recipe for success: Lime was only created in 2017 and already its e-scooters can be found in more than 100 European and US cities, with the firm valued at an astonishing £2.4 billion. Such was the threat to Uber – itself valued at $60bn – that the ride-hailing firm invested in Lime.

Meanwhile, there's still plenty of life in public transport yet to take commuters cleanly to their final destination. The 'closed-loop' journeys repeated by inner city transport, where vehicles typically operate on set routes or within a relatively small radius, make them perfect for alternative fuels sometimes handicapped by a lack of nationwide infrastructure.

Hydrogen, for instance, has largely failed to get a foothold in personal transportation due to the limited infrastructure, but its advantages include zero emissions, re-fuelling times comparable to petrol or diesel, long-distance ranges and greatly reduced noise pollution. Hydrogen buses already operate in San Francisco and Aberdeen, with the Scottish oil city's ten-strong fleet hitting the million-mile mark in early 2019 and emitting nothing but water vapour along the way. Replacing fleets of diesel taxis – currently exempt from London's ULEZ charge, despite accounting for 20 per cent of emissions – with hydrogen power would yield huge benefits in reducing air pollution (and Transport for London is investing an extra £24 million to help cab drivers switch to electric vehicles).

Even motorsport has helped clean up some public transport networks, including Williams Flybrid technology developed for F1's first KERS era. Williams Advanced Engineering later adapted the technology to give buses hybrid capability – the bus route between the Croydon and Elephant and Castle areas of London became 30 per cent more fuel-efficient thanks to Williams flywheel technology. Since then, fleet operator the Go-Ahead Group has introduced more than 50 pure electric buses, meaning 45 per cent of its fleet is now hybrid or pure electric.

Challenges will continue as urban populations swell and demand for both personal transportation and deliveries increase, but thanks to a combination of apps, electrification and innovative thinking, there's hope that all our final miles will become cleaner and faster in the near future. ◂

'For the last mile of a journey into an urban area, it makes sense to offload deliveries to more efficient modes of transport'

E-scooters have proved a popular transport mode in city centres. Top: Ford's fold-up MoDe:Flex e-bike and, right, MoDe:Link app, which connects delivery drivers with couriers.

05

Crisis economics

Since 2009, the Global Fuel Economy Initiative has helped focus attention on the pressing need for worldwide gains in fuel efficiency. However, a decade on, and amid a deepening climate crisis, the initiative has re-framed its goals to target even greater gains – starting with the rapid adoption of electric mobility across the global vehicle fleet

TEXT
/
KATE TURNER

The climate crisis is an undeniable reality that threatens not just our future, but the lives of people across the world right now. Carbon dioxide emissions are responsible for rapid changes to global weather systems, which are already displacing 22 million people a year who are, fleeing crises such as flooding, drought and wildfires. There is however, hope. With the right focus and technical adaptionnew technology, combined with behavioural change, we can limit the impact and protect our planet.

Governments, initially slow to address concerns, have begun to rally to action, especially over the past decade. Multilateral deals such as the Paris Agreement are seen as critical to limiting the impact of climate change, and curbing future changes, by holding global warming to below two degrees centigrade and establishing a framework of national commitments to reduce emissions.

Road-based transport is a major contributor to the climate problem because the dominant technology – the internal combustion engine (ICE) – relies on burning fossil fuels that result in carbon dioxide emissions as well as a wide range of noxious gases.

Currently, a quarter of all energy-related carbon emissions come from road transport – and the global vehicle fleet keeps growing. There are now around 1.5 billion vehicles in use, an increase of 50% since 2009, and the number continues to rise: between 2000 and 2015, passenger vehicle transport emissions increased by 36%.

"The current trajectory is disastrous, and will have major impacts on the health of billions of people around the world," says Rob de Yong, Head of UN Environment's Mobility Unit, "We need to do more on the efficiency side, making vehicles even more efficient, more rapidly."

The Global Fuel Economy Initiative (GFEI) was established in 2009 to ensure that the world's vehicle fleet is as clean and efficient as possible. A partnership of the leading experts in energy, transport and policy, the Initiative is coordinated by the FIA Foundation and is made up of the Institute of Transportation Studies at the University of California, Davis (UC Davis), the International Transport Council (ICCT), the International Energy Agency (IEA) and the UN Environment.

"Through research, in-country support and global advocacy, GFEI has worked hard to support individual countries as they seek to address this crucial issue," says Sheila Watson, Deputy Director of the FIA Foundation and Executive Secretary of GFEI. "There are economic, energy security and environmental benefits of more fuel-efficient vehicles and now there is a real sense of the key multilateral processes focusing on the considerable impact of transport as a key sector for swift decarbonisation. That is a conversation in which we can play a key role."

GFEI set its original targets to address the fuel use of light-duty vehicles (LDVs), challenging governments to improve new vehicle regulations to double fuel efficiency by 2030 (from 2005 figures) and to rebalance the global fleet to improve by 50 per cent by 2050 – the 50by50 challenge. These improvements can be achieved by a range of means, from fuel regulation to labelling vehicles, minimum standards and tax incentives. GFEI has worked with over 70 countries to help them understand their own energy mix, as well as using a range of resources to select policy options that could work best for their situation.

Pierpaolo Cazzola speaking at the re-launch of the Global Fuel Economy Initiative at this year's International Transport Forum.

'The current trajectory is disastrous and will have major impacts on the health of billions of people'

FRESH TARGETS

It is clear that GFEI's impact is being felt across the world. Most significantly, the adoption of the 50by50 challenge in the United Nations' 2015 Sustainable Development Goals Seven (SDG7) provided a targeted, multilateral commitment.

Despite these encouraging steps, improvements to LDVs fuel economy have slowed in recent years. The global fleet efficiency has sat at an average of 1.7% a year for over a decade, but in the past two years has slowed to 1.4%. This slowdown was particularly pronounced in advanced economies – 27 countries saw an increase or stagnation in average vehicle CO2 emissions.

In contrast, emerging economy improvements accelerated to 2.3 per cent, but are offset by huge increases in vehicles on the road: LDV sales in these economies have tripled since 2005. To achieve the GFEI targets now, the global fleet would need to improve efficiency by 3.7 per cent a year, more than triple the improvement rate between 2016 and 2017. ‣

The problem with SUVs

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A significant barrier to global fuel economy improvements has been the growing market share of increasingly large sport-utility vehicles (SUVs) and pick-ups, especially in developed markets with low fuel prices.

Their market share has increased by 11 percentage points over the past three years – SUVs now represent nearly 40 per cent of the global light-duty vehicles (LDV) market. North America and Australia have a particularly high market share of SUVs, reaching almost 60 per cent in 2017. While all vehicles types saw improvements in their fuel efficiency, the shift in market shares to these larger, less efficient vehicles have pulled down average vehicle fuel economy improvements across the world.

"The popularity of SUVs is really limiting overall fleet improvements," says Sheila Watson. "Much of their popularity comes from a misconception that a larger car is a safer car, which is simply untrue. While parents might think they are buying larger cars to give additional protection to their children, in reality they are contributing to a more uncertain and less secure future."

The increase in SUVs is affecting global fuel economy efforts.

At the same time, freight transport emissions rose by 75% between 2000-2015, more than double that of LDVs, while modes like two- and three-wheelers make up significant chunks of the vehicle mix – 21 million new motorbike and scooters were sold in India in the past year alone.

Ten years after the GFEI launch, and in light of the rapidly changing vehicle market, the Initiative was re-launched at this year's International Transport Forum with a fuller agenda for road transport decarbonisation. The targets include the full sweep of vehicles, from light- and heavy-duty (HDVs) to two- and three-wheelers as well as transit buses, to reflect how far ICE improvements can carry the targets but also alternative energy sources which have become part of the mainstream fleet in the past decade.

In line with these improvements, GFEI set new targets (all relative to 2005 figures) for CO_2 emissions per kilometre. HDVs should reduce by 70 per cent by 2050, with the first targets for two- and three-wheelers at an 80% reduction by 2035 and 95% by 2050, and urban buses to cut emissions by 65% by 2035 and 95% by 2050.

"It's very important to go beyond light-duty vehicles and think about the electrification across all the different vehicle types," explains Lew Fulton, of the Institute of Transportation at UC Davis. "Electrification will assist both in terms of hitting vehicle fuel economy targets and CO_2 targets."

New GFEI targets include a reduction in heavy-duty vehicle emissions of 70 per cent by 2050.

These are ambitious but realisable targets. They require continued improvements in vehicle efficiency as well as the introduction of electric vehicles (EVs) in line with current policy trajectory, combined with decarbonisation of the electric grid.

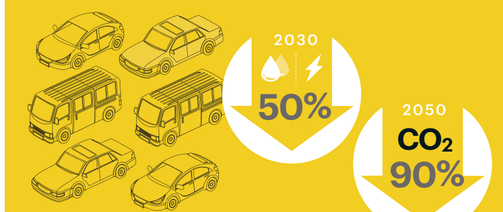
But achieving these new targets will only deliver a 30 per cent reduction by 2050 (from a 2005 baseline) compared to the 65 per cent required to comply with the Paris climate agreement.

This is not sufficient to achieve compliance with the Paris Agreement. That is dependent on a faster transition to electric vehicles, a faster decarbonisation of the electricity grid and a move away from motorised mobility – starting now.

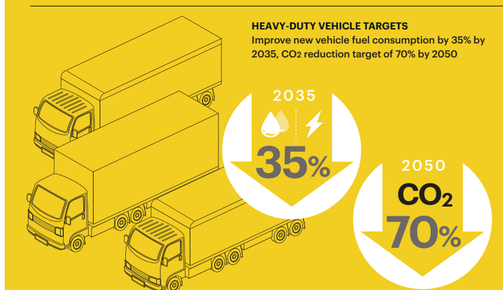
"Too many people seem to believe we are now on track to solve all of our problems by electrifying the fleet," added Sheila Watson. "This GFEI analysis shows that this is not the case. We must do more to improve existing vehicle efficiency; we must move to promote more non-motorised modes; and we must improve our ambition in promoting new technologies to get the climate savings we need. GFEI is committed to supporting those efforts.".

'Electrification will assist both in terms of hitting vehicle fuel economy targets and CO_2 targets'

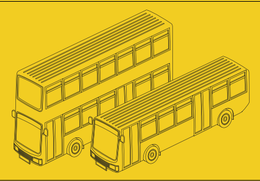
GFEI's new targets for global vehicle fleet /



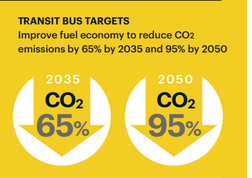
PASSENGER LIGHT-DUTY VEHICLE TARGETS
Double global fuel economy of new vehicles by 2030, reduce CO_2 emissions by 90% by 2050

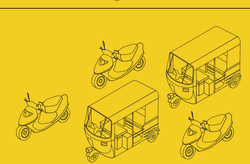


HEAVY-DUTY VEHICLE TARGETS
Improve new vehicle fuel consumption by 35% by 2035, CO_2 reduction target of 70% by 2050

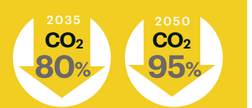


TRANSIT BUS TARGETS
Improve fuel economy to reduce CO_2 emissions by 65% by 2035 and 95% by 2050





TWO- & THREE-WHEEL VEHICLE TARGETS
Improve fuel economy to reduce CO_2 emissions by 80% by 2035 and 95% by 2050



DECARBONISING ROAD TRANSPORT TO TACKLE CLIMATE CHANGE
A new fleetwide CO_2 reduction target of 65% by 2050 compared with 2005. To comply with the Paris Agreement's less than two degree scenario, better fuel efficiency of conventional vehicle technologies; a faster transition to electric vehicles; a faster decarbonisation of the electricity grid; and additional 'avoid' and 'shift' measures e.g. more non-motorised mobility, are all needed.

To achieve these targets, the carbon intensity of the global electricity grid will need to decrease by at least 90% between 2020 and 2050

Source: GFEI Working Paper 20 - Data based upon 2005 baseline

Mansell became the last driver signed by Enzo Ferrari himself when he joined the Scuderia for 1989...

LIONHEART

TEXT
/
TONY THOMAS

In an era of extreme machinery, exceptional talents and superlative racing *Nigel Mansell* stood tall as one of Formula One's boldest, bravest and most ferociously competitive racers. Here, he reflects on battling for recognition, going up against the sport's biggest stars and coming out on top...

06

When the Great Book of Formula One is written, a gilded chapter will be reserved for the drivers of one singularly mesmerising era. It will be dedicated to the turbo heroes: a fearless band who competed at the sharp end of grand prix racing as it flamed through a decade of rampant technical development founded on the astonishing power gains to be had from turbocharging small-capacity, internal-combustion engines.

What began with Renault's rulebook curio – the turbocharged RS01 that whistled onto the 1977 British GP grid in 21st place – spooled up almost as fast as those very turbos' compressor blades into an all-out F1 arms race contested by BMW, Honda, Ferrari, Porsche, Alfa Romeo and Renault themselves, alongside one or two lesser lights. Together, they pushed turbo technology beyond all known limits to manufacture explosive, short-life 1.5-litre motors that spat out up to 1,500 brake horsepower.

The chassis onto which these simmering-lava units were bolted carried little development from predecessors designed to accommodate compact, 3.0-litre, non-turbocharged engines, whose outputs peaked at around 570bhp. So, almost three times the power, without commensurate advances in aerodynamic, safety or electronic technologies to help rein it in.

These boost-engined machines, particularly when equipped with ultra-soft qualifying tyres designed to slice two or more seconds from lap times, were extreme. The men who manhandled them perhaps even more so, given their speed-seeking but fear-crazed heroics as they struggled to tame the rocketships on wheels that F1 cars had become.

Senna, Prost, Piquet, Rosberg... Their names tripped off the commentators' tongues as they blurred across Sunday afternoon TV screens in riots of colour for Lotus, McLaren, Brabham and Williams, creating a global sporting theatre of a kind never seen before (or, perhaps, since). ▸

'Our Nige' won for Ferrari at the first time of asking in Brazil, but the F1 title still eluded him that season.

Mentor Colin Chapman gave Mansell his F1 break in 1980 at the wheel of the Lotus 81B.

'Racers – pure racers – make things happen. I've never been accused of not being a racer – I don't wait for things to happen, I try and make things happen'

And in the midst of them, in the very thick of it, was Nigel Mansell – moustachioed and wearing a cap as flat as his accent, hurling himself into the mêlée with seemingly scant regard for personal safety.

'Our Nige', as Mansell would later become for a generation of adoring British fans, was the most dramatic of these luminous *dramatis personae* and for a man of his sporting stripe – burly, uncompromising, crazy-quick and sometimes just plain crazy – F1's turbo era was perfect.

"Formula One will never get back to that," he reflects, these days, at 65, a more genteel, golf-playing, charity-working soul. "Driving those turbo cars was the most exhilarating, frightening thing that you could do in your life.

"The Williams FW11B [Mansell's mighty Honda-powered 1987 car]... Nothing comes close to that car, nothing in the world. And Formula One will never get back to that. Really, today's drivers will never know what a proper F1 car feels like. In qualifying you literally had up to 1,500 horsepower – it's reputed that BMW had more. And to have wheelspin in sixth gear down the straight, at 175 or 180mph... You cannot put that into words as a driver. At every single corner you came to, the car was literally trying to kill you."

It's little wonder that the drivers who flourished in a grand prix era of such brash excess were those of the highest daring, greatest skill and least fear. Nelson Piquet, Niki Lauda, Alain Prost, Ayrton Senna (each a multi-champ) all won 'turbo' titles; Mansell didn't, despite heroic efforts and 13 Williams-Honda wins between 1985-87.

But his failure to prevail merely burnished the 'underdog' legend. In 1986, Mansell quelled team leader Piquet, only to be thwarted by a tyre blow-out that – unforgettably – allowed Prost to snatch away the crown at the Adelaide finale. Guns blazed again in '87 – Mansell's six wins doubled any rival's tally – but unreliability and a back-injuring practice shunt at the penultimate round in Japan relegated him to the runner-up slot.

The thousands who'd thrilled to the swashbuckling Mansell style (that pass on Piquet at Silverstone '87...) felt achingly short-changed at the scant return for effort expended.

The man himself sees it differently, however: "You know, at that time, if we were racing at the old Silverstone, for example... You're going down Hangar Straight with qualifying boost, well in excess of 200mph. You're turning into Stowe corner flat, without a lift – and this is on the old circuit, with six-inch-wide poles and wire across them on the outside of the corner as catch-fencing – and you're running wide and almost hitting these poles. Then you're into Club corner flat again and you don't lift... You'd come out of the corner and literally breathe a sigh of relief: one, because you could breathe after the extraordinary the G-forces pulling you around; and secondly, and most importantly, because when you came out of the corner, you'd think 'I made it'."

Glad, then, simply to be alive and "sort of in one piece if you discount a broken neck, three broken backs [perhaps only Mansell could have "three broken backs"], a broken arm, smashed toes, 148 stitches for another back injury and all the rest of it.

"Things were moving in the right direction in the 1980s and '90s in terms of safety," Mansell continues, "but the technology wasn't really there to make it better. It was still pretty grim." He lists without pause the deaths of Gilles Villeneuve, Riccardo Paletti and Elio De Angelis, then the career-ending accidents of Didier Pironi and Jacques Lafitte, all during his F1 career.

AN ELITE CLUB

Mansell's ultimately fruitless first efforts to snatch the crown marked the peak of the turbo era and in 1988 he found himself at the wheel of an emasculated Judd-powered Williams, while the Prost-Senna McLaren-Honda juggernaut swept all before it.

It was a year of thin returns – just two second places – for the Mansell faithful and a moment, perhaps, for the lion laid low to reflect on how far he had come and how fast.

He'd snatched his F1 chance with Lotus in 1980, blessed by team founder and mentor Colin Chapman. And for an un-starry Brit, mortgaged up and married, arriving in turn-of-the-decade grand prix racing had been quite the eye-opener: "It was an extraordinary time," Mansell says. "When I started there was Alan Jones, Niki Lauda, Keke Rosberg, Nelson Piquet, Mario Andretti, Alain Prost – all champions or future champions. Then there were other exceptional drivers who weren't world champions like Patrick Tambay, Gilles Villeneuve, Didier Pironi, Jacques Laffite, Carlos Reutemann... All grand prix winners who had been runners-up in championships. Ayrton was coming through, too, so the pressure of going up against that standard of driver was immense. But even to be part of a field of such extraordinary talent was exceptional in itself – to be part of that incredible elite club."

Senna, Prost, Mansell and Piquet at Estoril '86 – all won titles, but at the time Nigel was the only 'number two' driver among them.

Four seasons of speedy promise in black-and-gold were to follow before the career-defining chance with Williams for '85. Yet for all the success that followed with Williams, Mansell was left without the full validation accorded to a true F1 grandee and he still had to accept number two status to Piquet, Williams' two-time-champ team leader.

It would be the snub that spurred: "When you see that picture of Ayrton, Alain, me and Nelson taken at Estoril in '86," he says, "what you're looking at is three outright number ones and me as a number two driver, sitting in the middle of them competing with world champions and multiple world champions, thinking, 'well, you know, it's a bit of a tall order but we'll give it a go!'

"To this day people don't realise that the moderate success I had was against not only the best of the best, but under the conditions that number two drivers are not really there to beat number one drivers," he adds. "So it was, in one word, the most phenomenal, unreal, beautiful experience a sportsman could have. To be at the top of your game competing against multiple world champions, who only wanted to protect their position and win more world championships and annihilate the field."

Some would capitulate under that kind of pressure, but it proved to be the making of the Mansell: "I was always under the cosh," he says. "I was always second from the point of view of information within the team, the second choice of engine, the second choice of gearboxes, the second choice of engineer, mechanics and so on. Sometimes you get the data second, sometimes you don't get any data at all.

"That's all to be expected and that's what you signed up for," he continues. "So to compete on anywhere near the same level, you make sure that in those areas where you can do things better, you always do. You dig deep. You have to do a lot of soul-searching and say that although this is bothering you, you mustn't let it interfere with the productivity of what you are doing yourself. Because you can so easily go down the wrong route of looking over your shoulder and then not concentrating on what you're doing. It was challenging, extremely difficult and tremendously frustrating at times."

Little wonder there was always an edge, a hunger, maybe even a desperation to Mansell's driving as he sought the success his ability clearly merited. "People ask 'what type of drivers are there?'" he says. "There are racers and there are drivers. Drivers drive a car and wait for things to happen. Racers – pure racers – make things happen. I've never been accused of not being a racer – I don't wait for things to happen, I try and make things happen. And that's what the thoroughbred racer does. And anyway, if you look at all the drivers I was competing against, they weren't going to give me any crumbs. ▸

Mansell scored three wins and eight podiums for Ferrari, including second at Mexico in 1990 (above), but lost his team leader status to Prost that year, prompting a brief 'retirement'.

Everything that I achieved I had to earn. I had to take it away from the best of the best in the world. When you start, you're down the pecking order, so that sharpens your focus on trying to achieve."

Mansell's labours would bring unexpected dividends as he emerged as one of F1's leading '80s 'gang of four' and in the gaze of Enzo Ferrari he sharpened into focus as a driver suited to the Scuderia's way. Thus, the legend of '*Il Leone*' was born.

It's at this point – 1988 into '89 – that Mansell's already theatrical F1 career took a distinctly Hollywood turn. He'd be the last driver signed to the Scuderia by Enzo Ferrari himself, he'd win at the first time of asking (in Rio) in the fabled, radical 640 that would retire for the next five races, and he'd quit F1 in 1990 at his home race – only to un-retire when Williams came begging soon after... Was Steven Spielberg writing the Mansell script?

"Those two Ferrari years were just 'money can't buy'," he says. "You only join a team once, then to win your first race for them... It can't get better than that. They're beautiful memories even though Ferrari was a very political team and gave me some tough times. They're still dear to my heart."

Victory on home ground at Silverstone in '92 – the year Mansell finally became champion – would lead to a track invasion.

'To have wheelspin in sixth gear down the straight, at 175 or 180 mph, in sixth gear... you cannot put that into words as a driver'

Mansell had gone to Ferrari as a team leader for the first time in his Formula One career, but what he describes as "shenanigans" resulted in Prost being installed alongside him as team leader for 1990, after a lucrative trade of his coveted 'number one' contract.

"Ferrari were honourable and so was I," he says, "and by the middle of the season I'd had enough. I'd won a whole number of races, I was still alive in sort of one piece, mentally sort of halfway there, and I knew that unless I got the backing properly, I'd never actually achieve the final goal of winning a world championship."

COMEBACK KING

It seemed so unlikely, though, that this whimper-not-a-bang exit should be the end of Mansell's F1 career, for above all else he'd been the sport's great entertainer. But a call from Williams roped him back in the ring – and this time Mansell was dictating terms.

His demands were described as "impossible" by Frank Williams, though as Mansell would find out three weeks later "the impossible just takes a little longer".

Mansell in the Williams FW14, a sophisticated non-turbo 3.5-litre car, with aerodynamics by a young Adrian Newey (who would later describe Mansell as "an attack dog") was mighty (five wins), but undone by the car's early-season unreliability. Senna would take that year's title, his third.

In 1992, however, Mansell and the active suspension Williams FW14B simply crushed the field. He took eight wins from the first 10 races, was champion by round 11 in Hungary, won once more in Portugal and scored a points total (108) almost double that of runner-up team-mate Riccardo Patrese.

Mansell spent four promising seasons with Lotus in the early '80s before Williams came calling.

Along the way 'Mansell Mania' reached infeasible levels. A track invasion more reminiscent of a cup final celebration greeted his '92 British GP win, as Mansell recalls: "It was humbling because it was so spontaneous. Sometimes there are no words to explain how the British public can actually make you feel. It can't be bought or sold or traded. It was overwhelming and because health and safety then was nothing like what it is today, you'll probably never see a crowd like that again."

Consummate though Mansell's 1992 season was, Williams being Williams, it earned him the sack. As Mansell tells it, Williams had already signed Prost for '93 leaving no room for an incumbent world champion, so Mansell, with a rather fabulous flourish, took himself to the States for two giddy years of Indycar racing with the Newman-Haas team.

The first season delivered a still-remarkable title and, though 1994 brought markedly less US success, a cameo Formula One return with Williams, in the wake of Senna's death, earned a final grand prix victory at the season-closing Australian GP. Mansell's abortive two-race '95 coda with McLaren was so ludicrously bad as to be merely comical: when a man who once raced in fuel-soaked overalls after a mechanic's pouring error quits a race on account of 'handling' difficulties, the game's up.

A quarter-century on, a mellower Mansell still competes, though as a scratch golfer rather than on track, and he busies himself with charity work as president of Youth UK. As a member of the Magic Circle he is also still quite capable of conjuring the seemingly impossible, on demand.

No F1 hanger-on ("how can you get to a circuit and not want to compete?"), Mansell seems content to have seen what he saw, done what he did: "In the 1980s and early '90s," he says, "it was euphoria to compete in F1 and be a part of what was happening. The abundance of talent, the abundance of carnage, the most incredible things that made you go, 'how did that just happen?' You had team managers being shot, we raced round car parks in Las Vegas... Formula One did things that you couldn't even think of doing today, so it was an exciting time and I was grateful to be part of it. These days, though, I'm happy to smell the roses a little bit."

Uncompromising and crazy-quick, Mansell was well-suited to the equally crazy turbo era of F1.

'Everything I achieved I had to earn. I had to take it away from the best of the best in the world'

06

TALES OF ULTIMATE ENDURANCE

Fifty years ago one of motor sport's greatest machines made its competitive debut at the 1969 Spa 1000km race. Over the following few years the mighty Porsche 917 would come to dominate sports car racing like few others. AUTO looks back at the life of an enduring legend...

TEXT
/
IAN WAGSTAFF

Hans Herrmann and Richard Attwood powered this 4.5-litre Porsche Salzburg 917 to a maiden win at the race it was designed for, Le Mans.

Left: Second at Le Mans 1970 was Martini's psychedelic 917LH 'hippie car', driven by Larousse/Kauhsen. Below: Production of the 25 Porsche 917s required to pass CSI inspection.

'Vic Elford reckons they did not have to race anyone but just wait until they were on the Mulsanne and blast past'

Something had to be done. By the mid-1960s, speeds at the Le Mans 24 Hours were felt to have become excessive, particularly along the unrelenting six-kilometre (3.7-mile) Mulsanne Straight. The Commission Sportive Internationale decided the answer would be to restrict the front-running prototypes to an engine capacity of three litres. The surely slower production sports cars would have a limit of five litres. For Porsche, with its nimble, three-litre 908, this seemed ideal. But what constituted a production sports car? The CSI decided to reduce the number a manufacturer had to build from 50 to 25, thereby creating a loophole that would make way for one of the greatest endurance racing cars.

Rumours began to filter through to Porsche's Zuffenhausen headquarters that Ferrari was planning to make a run of 25 out-and-out sports racers that could legally masquerade as production cars and take advantage of their five-litre maximum. Ferdinand Porsche's grandson, the company's technical director Ferdinand Piëch, instructed a small design team under Hans Mezger to create a response. The answer was a 908 on steroids; a 4.7-litre, flat 12-engined Wagnerian giant known as the 917. Twenty-five were hastily made and, in June 1969, all were lined up for CSI inspection. Rumour would later say not all were complete but the inspectors were satisfied.

The factory's drivers were not, though, and the car's engineers were filled with apprehension. Two 917s had already turned up at the Le Mans test day but had proved to be almost uncontrollable. One of the pilots, Hans Herrmann, described them as a "catastrophe". Another, Gerhard Mitter, described the 917 as a "*geschwür*" – an ulcer. The CSI's attempt to control top speeds had also become a joke. Rolf Stommelen's 917 had reached 348km/h (216mph) down the Mulsanne.

Undeveloped or not, a 917 was entered for the Spa-Francorchamps 1000km. It was raining that morning but, perhaps thankfully for the drivers, the engine lasted just one lap. Engineer Peter Falk reckoned Mitter might have over-revved it deliberately. The next round of the International Championship for Makes was at the Nürburgring, hardly the place for an over-powered car with unpredictable handling. The factory drivers refused to race it. "It was hardly a strike, but it veered towards one," recalls Richard Attwood. Freelancers Frank Gardner and David Piper were offered "a few marks" just to get one home to the finish. According to Gardner, it "drove like a grand piano with the top up".

Then came the race the 917 was designed to win, Le Mans. Three were entered, two by the factory. Building the 25 917s had stretched Porsche finances to the limit making it essential that it sold some of them.

The first customer was gentleman racer John Woolfe, who also brought his to Le Mans. The main problem was that the cars' aerodynamic shortcomings were causing them to 'lift' at various points on the circuit. However, what the 917s did have was undoubted speed, being 48km/h (30mph) faster than their competitors.

Vic Elford reckons they did not have to race anyone but just wait until they were on the Mulsanne and then blast past. Accordingly, the two factory entries ran away from the rest of the field. Behind them Woolfe lost control fatally on the first lap at Maison Blanche, bringing into question whether he should have been sold such a car. Both works 917s eventually retired, the Elford/Attwood car just three hours before the end when well in the lead. Perhaps it says something about the 917 at Le Mans in 1970 that Richard admits he felt nothing but relief when the car was pushed away despite being so far ahead. One race remained that year, the Österreichring 1000km. A concerned factory entered two cars under the names of potential customers with Kurt Ahrens and Jo Siffert driving one to the 917's first victory.

DISASTER TO ICON

The entry for the Austrian race had been relatively lacklustre and it was obvious that massive improvements needed to be made to the car. The transformation from disaster to icon seems to have taken place at a test session on the Österreichring at the end of 1969. Porsche had appointed John Wyer, whose JW Engineering had won two consecutive Le Mans with a Ford GT40, to run the factory cars the following season and a number of its personnel were present. JWE's chief engineer John Horsman says he noticed there were no dead gnats on the car's rear flaps despite swarms of insects in the air. "I knew immediately that we had to raise the rear deck and then attach small adjustable spoilers to the trailing edge. ‣

It was obvious to me that if the whole rear body surface was in the airstream, it would be able to exert some downforce."

A rear deck that extended the line of the tail at a slight upward angle from above the rear wheel arch to the top of the spoilers was fabricated overnight and Brian Redman lapped four seconds faster the following day. Ahrens, the main driver at the test, remembers it differently and states that it was he who asked Porsche engineers Falk and Herbert Flegl to acquire some aluminium plate and attach it to the rear of the car. Piëch, despite being wedded to the clean lines of the original car, was persuaded that the design had to change, the result being the legendary *kurzheck* 917K.

The 1970 season began with two JWE-run 917Ks, resplendent in the blue and orange colours of sponsor Gulf with which the 917 would be forever associated, entered for the Daytona 24 Hours. To Wyer's displeasure there was another 'works' car. Piëch had been unable to let go of his 'baby' and had appointed Porsche Salzburg, a team owned by his mother Louise, as a second, factory-backed team. The Gulf cars finished first and second but then, at the Sebring 12 Hours, one of the new, five-litre Ferraris was victorious. A *mano a mano* season seemed to be in the offing. The worth of a truly great racing car is judged not by its domination of lesser machinery but by its trouncing of a worthy opponent and that was precisely what the 917 did for the rest of the season. The Ferrari 512 was never again to win at this level.

This was a dramatic age with some of the most memorable motor races. The 917s returned to Europe and, at Brands Hatch, JW's Pedro Rodríguez gave one of the gutsiest performances of all time. The rain was torrential and the little Mexican was black-flagged early in the race for ignoring yellow flags. A lecture from the clerk of the course over, Pedro gunned back into the fray and, often sideways in the atrocious conditions, won by five laps. His co-driver Leo Kinnunen was allowed in the car only for the shortest stint. "On that day and in those conditions [Rodríguez] was completely unbeatable," observed Wyer.

Rodríguez and Kinnunen won again in Monza before another display of strength, this time at Spa-Francorchamps, with Rodríguez and fellow Gulf driver Jo Siffert displaying their rivalry by leaning on each other as they powered through the first bend, the fearsome Eau Rouge.

A new, long-tailed version, the 917LH (*langheck*), was developed for Le Mans. Wyer refused to run one but two were entered alongside the 917Ks, one for Porsche Salzburg, another for Hans-Dieter Dechent's Martini team. ▸

Above: JWE Porsches ruled the 1971 Spa 1000km, with Rodríguez/Oliver leading home Siffert/Bell. Right: Porsche's Le Mans swansong came with the Martini 917K piloted by Marko/Van Lennep in 1971.

'It was obvious that if the whole rear body surface was in the airstream, the car would be able to exert some downforce'

The 917's speed was never in question – when introduced it was some 48km/h faster than its competitors.

'Herrmann and Attwood braved the heavy rain of 1970 with 023 outlasting the favourites to score Porsche's maiden victory at Le Mans'

Above: The Porsche 917 blazed a trail through the sportscar world in the early 1970s. Right: The long-tailed 'Pink Pig' caught the eye at that year's Le Mans but failed to finish.

The front-running 917s now had 4.9-litre engines but wily veteran Herrmann had chosen the least favoured 917, Salzburg's short tailed, 4.5-litre '023'. Partnered by Attwood, who was suffering from mumps, he braved the heavy rain of that year with 023 outlasting the favourites to score Porsche's maiden victory at Le Mans. One other 917 survived, the Martini team's psychedelic-liveried LH, which would be forever remembered as 'the hippie car'.

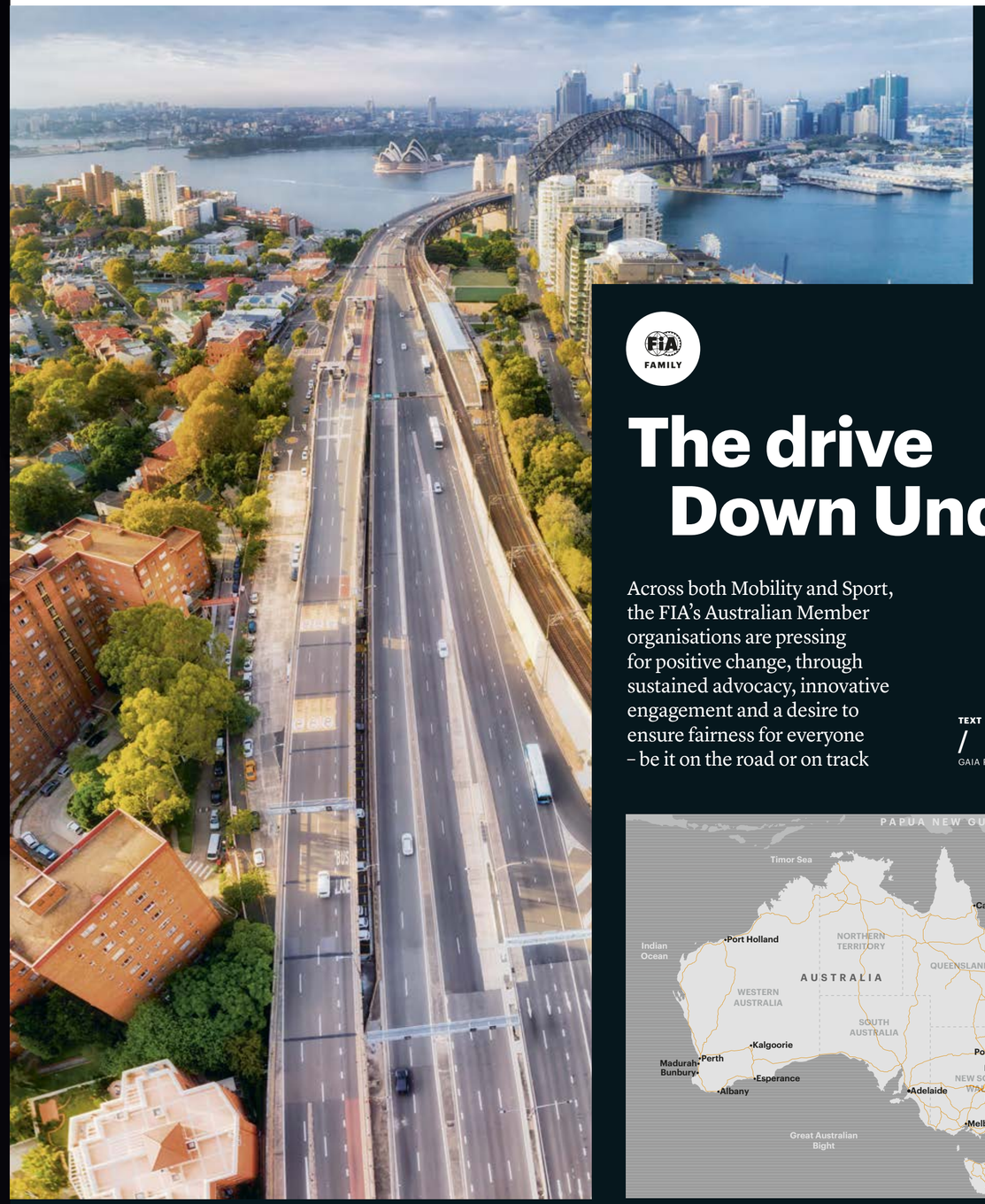
The 917 achieved its cult status that year at Le Mans and not just because of the race. Steve McQueen used scenes from the event for his splendidly indulgent film, *Le Mans*. Initially poorly received, it stood the test of time, perhaps giving the false impression that a Gulf-livered 917 came first at Le Mans. They did, though, take the final two races of the season and then the first two of 1971.

JWE had a new rival that final year. Ferrari had given up on the 512 and was now developing three-litre cars for the future. Dechent, though, had taken over from Porsche Salzburg as the second factory-backed team, one of his cars then winning at Sebring. The previous season, the three-litre prototypes had only come first when the 917s were absent, on the winding Nürburgring and Targa Florio courses. However, at Brands Hatch they were defeated for the first time in over a year, beaten by a smaller Alfa Romeo. The 917s, though, won seven endurance races that year, retaining the International Championship for Makes. Le Mans was almost a foregone conclusion. Long-tailed cars were available for both the Gulf and Martini teams, one of these being a slippery bodied, one-off known as the Pink Pig because of its garish colour scheme.

Three of the LHs dominated the early proceedings but all retired leaving the race to the Martini team's consistent, magnesium-bodied 917K driven by Helmut Marko and Gijs van Lennep.

The CSI, though, decided that enough was enough. From 1972 onwards, the three-litre prototypes really would be the front-runners and the five-litre Group 5 cars, as they were officially known, would be banned. It had been a brief but glorious period. As for curtailing speeds at Le Mans, during the 1971 Le Mans test weekend Jackie Oliver, in a Porsche 917LH, scorched along the Mulsanne Straight at 386km/h (239.849mph). Oliver would go on to record a lap time during the race of 3min 17.475sec, a record that would stand until 2015. True, the Mulsanne would be emaciated by a pair of chicanes, but that was not until 1990. There is surely a case to be made that the Porsche 917 was the paramount endurance racer of all. ◂

Ian Wagstaff is the author of *Porsche 917: The Autobiography of 917-023*, published by Porter Press.



FIA FAMILY

The drive Down Under

07

Across both Mobility and Sport, the FIA's Australian Member organisations are pressing for positive change, through sustained advocacy, innovative engagement and a desire to ensure fairness for everyone – be it on the road or on track

TEXT
/
GAIA PELLICCIOLI

Advocacy by example

With eight million members across seven clubs, the Australian Automobile Association is driving innovation in access to mobility, affordability and sustainability

According to the motor vehicle census, the number of registered passenger vehicles in Australia has increased by 43 per cent since the turn of the century.

If smaller countries are excluded, Australia has the second highest car ownership in the world with 747 vehicles per 1,000 people in 2018. This compares with an increase of just 27 per cent in the population worldwide.

The needs of Australian motorists differ greatly, depending on whether they live in major cities or the Outback, above.

Helping to protect the rights of this high number of vehicle owners is the Australian Automobile Association (AAA), established in 1924 as a group of seven state and territory-based motoring clubs – the National Roads and Motorists' Association (NRMA), the Royal Automobile Club of Victoria (RACV), the Royal Automobile Club of Queensland (RACQ), the Royal Automobile Association of South Australia (RAA), the Royal Automobile Club of Western Australia (RAC WA), the Royal Automobile Club of Tasmania (RACT) and the Automobile Association of Northern Territory (AANT) – representing eight million members across the country.

"With a population density of only three people for every square kilometre, Australians drive vast distances," explains AAA President Elizabeth Perry, who is also Chairman of the Royal Automobile Association of South Australia and member of the FIA World Council for Automobile Mobility and Tourism.

"The 'family car' is central to most households," she adds. "Australia has one of the world's largest highway networks per head of population. The distances travelled make tiredness and speed leading road safety issues, and transport is a major cost in most household budgets."

To advance transport policy nationwide, the AAA has made lobbying its main weapon, focusing on research and advocacy to build evidence and influence government policy decisions.

"The AAA regularly commissions research and develops in-depth analysis of issues affecting transport systems including affordability, road safety, vehicle emissions and traffic congestion indicators," explains Perry.

For example, in a bid to build a strong case for the ever-growing issue of distracted driving the AAA, in collaboration with the FIA, is carrying out a study to understand whether mobile devices are actually contributing to road crashes.

"Many experts have suggested that the rise of smart phones and social media have increased distracted driving," says the AAA President. "That seems plausible, but we can't be certain without research.

"The AAA is also in the early stages of planning research into whether the human-machine-interface (HMI) in vehicles can be distracting and if the design of the HMI can be improved to reduce distraction and the risk of crashes. These projects are important not just for Australia, but for motoring clubs, governments and regulators all over."

AAA President Elizabeth Perry's role is made more complex by Australia's unique motoring challenges.

The 2017 AAA report on road trauma is another significant tool used by the Australian association to inform government policy and investment decisions.

The report estimates that the annual economic cost of road trauma in Australia is almost $30 billion (using 2015 as the reference year) and the direct cost of just one year's trauma to government budgets is more than $3.7bn. For Perry, these figures represent a call to take much greater action.

"In Australia, about 100 people die in road crashes every month. Another 100 are seriously injured every day," she says. "The National Road Safety Strategy, which will conclude in late 2020, is not on track. Both major political parties have agreed to set up a national Office of Road Safety, have committed to a road safety governance review and offered new funding for road safety initiatives – but neither has yet responded in full to the findings. The AAA will continue to lobby for more action in this area."

HOW TO RE-INVEST

In the lead-up to Australia's 2019 federal elections, the AAA launched a successful advocacy initiative entitled 'My Money, My Transport'.

Through online forms and social media, voters were able to express their concerns on transport and road safety issues directly to candidates and political parties.

As a result, two significant policy demands – federal leadership on road safety and investment in new transport projects – were adopted by the two main parties.

Another major challenge for the AAA is addressing congestion and the affordability of transportation.

Over the next four years, Australian motorists will contribute in the region of AUD$60bn in federal transport-specific taxes, paying 41.6 cents in fuel excise for every litre of petrol.

"Australia urgently needs investment to reduce congestion, to curb the road toll and to renew its land transport system," Perry explains. "We feel it is reasonable for Australian motorists to expect that at least 50 per cent of the money collected via fuel excise, sometimes called a fuel tax, is reinvested into our transport system."

"Our own voter surveys show there is a difference in priorities between people who live in the major cities and those who live in rural and regional areas," she adds.

> **'The distances travelled in Australia make tiredness and speed leading road safety issues'**

"In the cities people rate traffic congestion as their major issue and want to see investment not only in better infrastructure for motorists but also greater public transport options to alleviate traffic on the roads. These are the sorts of areas that motorists want to see the government reinvest fuel excise."

At a business level, the major area of activity for the Australian association is the sale of International Driving Permits (IDPs). Other revenues come from more traditional roadside assistance and insurance services, but some clubs are expanding into other areas of business, such as tourism ventures, ferry services, banking, electric vehicle charging infrastructure and the retirement industry in order to adapt to a rapidly evolving marketplace.

As the industry is evolving, the AAA looks to the future, not only of the association but also to transportation for the benefit of society as a whole.

On the consumer side, the AAA has initiated real-world emission testing to provide motorists with accurate information about fuel consumption and environmental performance when buying a new car – an initiative that is of huge benefit in long-term sustainability.

"AAA vehicle testing and analysis revealed that misleading fuel consumption labels – based on lab tests that don't reflect real-world driving conditions – are costing new car buyers more than $600 per annum in additional fuel costs," says the AAA President.

"The AAA is calling on the newly-elected Australian Government to commit to introducing a real driving emissions (RDE) testing regime that would give car buyers much more accurate emissions and fuel consumption information, so both motorists and governments can plan effectively."

When it comes to fuel consumption, Perry highlights the need to tailor emission policies so that they are effective for the unique motoring challenges that exist in Australia.

"Australia has different fuel standards to Europe, for example, which creates challenges around the adoption of vehicle technology and the types of cars that can be imported, given Australia essentially no longer has its own domestic vehicle manufacturing industry," she explains

"Over time, a transition to new vehicle technologies means the government has to plan now on how it will transition from such a heavy reliance on fuel revenue. The AAA has provided models for government to assess as a part of that response."

Given the AAA's track record, Australian motorists can be confident their voice will be heard at the highest levels of government. ▸

FIA President Jean Todt with AAA President Elizabeth Perry and RAA's Ian Stone at the Association's 2019 conference in Tasmania.

Pushing the sporting envelope

Through a combination of high-level lobbying, innovative youth policies and technological advancement, the Confederation of Australian Motorsport (CAMS) has become a prime mover in the growth of motor sport across the Asia-Pacific region

Australia's Molly Taylor is blazing a trail for young female competitors as she tackles world rallying.

PHOTO: WISHART MEDIA

In Australia, motor sport is a big deal. According to a study commissioned to Ernst & Young by the Confederation of Australian Motorsport (CAMS), it is the country's fourth most followed sport, with more than 150,000 participants (including competitors, officials, clubs, events, teams, governing bodies, industries and other participants). Motor sport in Australia generates AUD$2.7 billion in direct industry output, AUD$1.2bn in direct added value and 16,181 direct jobs.

Making lobbying and funding its key areas of focus, CAMS – the National Sporting Authority appointed by the FIA and officially recognised by the Australian Government – has since 1953 been able to successfully adapt to the unique nature of Australia's sporting landscape, even becoming a model for other ASNs affiliated with the FIA.

"In recent times, governments have favoured temporary street circuits in major population areas in order to ensure a direct economic impact in the city centre," explains CAMS President Andrew Papadopoulos, highlighting that as a general rule permanent motor sport venues in Australia tend to be located outside city centres.

"CAMS has made a concerted effort to lobby for new, permanent facilities to be built. There are definitely greater economic benefits to this, with most permanent tracks regularly booked out months in advance, highlighting the demand for access to circuits in Australia."

A continual focus on lobbying governments at all levels, strong strategic planning, having the 'right people in the right place' and an excellent media team have enabled the confederation to overcome business challenges and, recently, have led to promising results.

"We are delighted to have more than 27,000 active competitor licence holders as well as 10,000-plus licenced officials," says Papadopoulos.

"If you look back to 2012, at that time we had less than 20,000 licence holders and only 7,000 officials, so there has been significant growth which we have worked hard to achieve through strong, strategic planning."

The new Bend Motorsport Park in South Australia, regarded as one of the best in the country, and the new state-of-the-art Motor Sport Centre of Excellence at the existing Sydney Motorsport Park in New South Wales are further examples of CAMS' ability to ensure motor sport remains on the government agenda.

"The Centre of Excellence will be utilised to host training for those involved in motor sport in the Asia-Pacific region, which will bring with it significant economic activity locally," insists Papadopoulos.

"Through our links with the FIA the centre can expect to see many international visitors, who will utilise the talents of our local motor sport officials, regarded as some of the best in the world."

SUPPORTING PROGRESS

The Centre of Excellence, which received financial support from the New South Wales Government of Premier Gladys Berejiklian, will also host a number of community and grassroots programmes as well as the innovative Dare to Be Different (D2BD) programme, created by Susie Wolff to encourage young females to consider a career in motor sport, not just as a driver but as mechanics, engineers and as part of the motor sport media.

In a bid to encourage young people to get involved in motor sport, CAMS is running a number of key programmes.

To follow on from a young competitor's karting career, the CAMS PAYCE Australian Formula 4 Championship, supported by the FIA Sport Grant Programme, has proven to be a successful next step for many young racers.

"Our 2017 runner-up, Liam Lawson, is competing in the FIA Formula 3 Championship on Formula One grand prix weekends and has just been named as the latest Red Bull junior driver," says the CAMS President. "There are many other success stories and we know that these drivers would have found progression harder had they not been given the opportunity in Australian Formula 4."

In the past 12 months, CAMS has also taken a strong interest in Esports. "We have partnered with Motum Simulation, which builds innovative VR motion simulators, to host an officially-sanctioned Esports Championship. The winners have also been lucky enough to test a real Formula 4 car locally alongside our F4 Championship drivers and have shown another potential pathway for young racers."

At the other end of the sporting pyramid, prestigious events such as the FIA Formula One World Championship race at Melbourne's Albert Park circuit or the FIA World Rally Championship event at Coffs Harbour on the eastern coast have kept Australian motor sport on the world map and have given junior drivers something tangible to aspire to. And at national level, the Australian Rally Championship has showcased some young and exciting talent, such as 2016 champion Molly Taylor.

A new state-of-the-art Motor Sport Centre of Excellence in Sydney is being used by CAMS to help train motor sport officials.

CAMS President Andrew Papadopoulos is passionate about his country's influence in global motor sport.

"Molly is now a key player in the world rally scene having just joined the FIA Rally Commission," says Papadopoulos. "Molly has shown young girls around Australia that motor sport is for all genders and that women can achieve success at the highest level."

Another popular initiative aimed at encouraging junior participation in motor sport is the Ricciardo's Racers programme.

"Using Daniel Ricciardo's name and image, the programme allows those keen to get a taste of the sport access to the tools they need to help further their career," says Papadopoulos. "Using their own car, or in many cases their parents' car, these juniors get a basic understanding of car handling and an introduction to motor sport, as well as advice on how to continue their involvement in the sport."

As well as boosting the careers of young hopefuls such as Molly Taylor or other drivers on the global stage such as Porsche Mobil1 Supercup driver Joey Mawson, another of Papadopoulos' roles is to help develop other member associations within the FIA family.

"As President of the FIA's ASN Development Taskforce I am proud to work with all our taskforce members to upskill leaders of ASNs to assist in developing motor sport in their country in a safe and sustainable manner," he explains.

To help ASNs in need of capacity-building know-how, in 2014 the FIA ASN Development Taskforce launched the Sport Club Development Programme with the goal of helping ASNs to build a good foundation before they receive grant funding.

"As part of the programme, strategic advice has been provided," he explains. "That includes conducting a needs analysis for each ASN to assist them in their development needs and the provision of a road map for their development, whether that be with a Strategic or Sporting Plan, as well as accessing support from FIA and neighbouring ASNs in their region."

In 2015, CAMS also established its own Club Development Fund. "With more than $100,000 to CAMS-Affiliated Sporting Car Clubs, the fund has been a terrific initiative for grassroots clubs to help develop their events and build a member base," says Papadopoulos.

The confederation is also the Asia-Pacific Regional Training Provider and for several years has led training programmes in the region on topics such as the use of the FIA's entry-level off-road Cross Car concept and training officials to work in grassroots motor sport disciplines.

"We believe we have some of the best officials in the world and we are proud of their achievements," says Papadopoulos. "This is not just based on 'gut feel' either. Our officials are in demand worldwide and have been influential in training other officials for key events, such as the Russian and Singapore GPs. We've also recently announced that Australian officials will play a key role in training the officials for the first-ever Formula One Grand Prix in Vietnam in 2020.

'There has been significant growth which we have worked hard to achieve through strong, strategic planning'

"CAMS is targeting junior officials through a new Young Officials Programme that we've been running since late 2018. This programme gives those aged between 16 and 25 a chance to get involved in officiating across a range of roles. We've seen some terrific success with this already, with a number of those involved with the programme gaining enough experience to now be involved at the Australian Grand Prix."

The other challenge for CAMS is to ensure motor sport sustainability. "We understand the importance of the sport being environmentally responsible. We work closely with event organisers and local authorities to ensure the environmental impact of any event is limited and in line with the policies we have in place."

And Papadopoulos firmly believes that, to be sustainable, above all the sport must be safe.

"Without extensive rules and regulations to protect participants, the sport would be at risk of government intervention or, even worse, restrictive and cost-prohibitive measures.

"We are very proud of our safety record; this not only allows our participants to enjoy the sport with minimal risk but also means that government regulators are prepared to allow CAMS to manage the sport."

Papadopoulos has great ambitions for the future. He is focused on advancing and growing motor sport at all levels, with the help of technology where needed.

"Not only will technology make it easier for our participants to enjoy the sport, it will also play a key role in how we go racing. These changes will no doubt make the sport even safer and ensure competitive motor sport across a range of disciplines.

"As part of our future planning, CAMS will continue to look at the costs involved in motor sport as we know the expense can sometimes be seen as a road block to participation. As technology improves, we hope these costs can be reduced. Wherever CAMS can play a part in making the sport easier to participate in, we will of course step up.

"Motor sport by its nature is fast and on the edge. We will continue to push the envelope and develop tools and regulations to ensure the sport remains enjoyable for everyone involved."

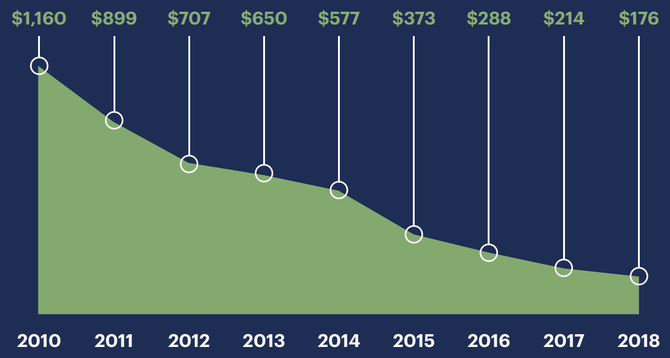
08

RISE OF THE ELECTRIC MACHINES

Sales of electric cars have increased 1,000 per cent over the past eight years and are set to continue rising at an accelerated rate. This increase is due to a number of factors such as a reduction in battery prices, an increase in the number of public charging outlets and the switch in focus to electric from most of the main car manufacturers.

BATTERY PRICES

Battery prices are dropping, making it less expensive to use and develop battery-powered electric engines, with current prices at 15.17% of the cost just eight years ago *

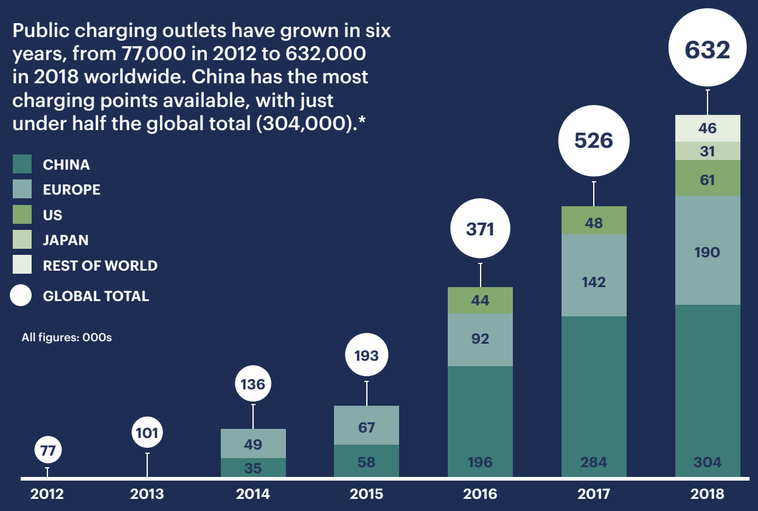


PUBLIC CHARGING OUTLETS

77,000 | 2012

632,000 | 2018

Public charging outlets have grown in six years, from 77,000 in 2012 to 632,000 in 2018 worldwide. China has the most charging points available, with just under half the global total (304,000).*



54

different road-legal electric cars are currently available worldwide from **38 different manufacturers.****

*Source: Bloomberg Electric Vehicle Outlook 2019
**Source: Wikipedia

ELECTRIC VEHICLE SALES

Electric Vehicle sales have hugely increased and will continue to do so as manufacturers bring out more electric models.

2,000
2010

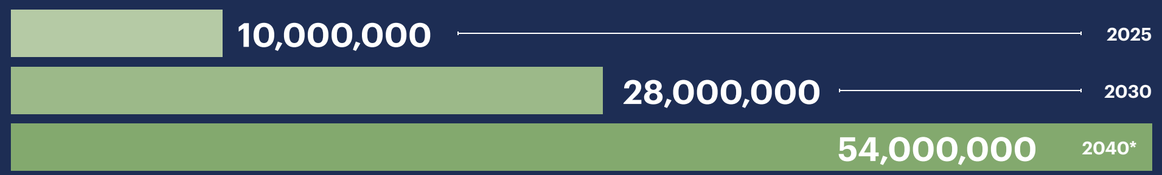
2,000,000
2018

1,000%

INCREASE ON SALES IN 8 YEARS

PREDICTED ELECTRIC CAR SALES OVER THE NEXT 20 YEARS

Current calculations predict that there will be 54 million electric cars on the road by 2040.



Unsung hero 09

Responsible for developing, testing and racing some of the world's most iconic cars – and one of the automotive world's great unsung heroes – *Norman Dewis* recently passed away at the age of 98

Born in Coventry, England in 1920, Norman Dewis' most famous contributions to road and track cars came as a test engineer and driver with Jaguar.

His first job at the manufacturer was to evaluate whether disc brakes, already well established on aircraft, could be adapted to suit a car. Dewis tested a range of variants, enduring numerous high-speed failures before he deemed a final system good enough for use. Alongside Sir Stirling Moss he entered the 1952 Mille Miglia in a C-Type fitted with disc brakes. They were lying third near the finish when they had to retire.

Over the course of 33 years with Jaguar Dewis developed the multiple Le Mans-winning C- and D-Type racing cars, and raced a D-Type at Le Mans in 1955 – as well as the classic XK 140 and 150 cars, the Mk2, legendary E-Type and right up to the XJ-S sports model introduced in 1975.

Such was the regard in which Dewis was held that upon arriving at a test only to discover that Dewis was already driving, Formula One legend Mike Hawthorn famously asked the team manager: "Why am I here? If Norman's satisfied with it, I'm satisfied."

Beyond racing car development, Dewis is also famous for his legendary night-time dash from Coventry to the Geneva Motor Show in 1961 for the launch of the Jaguar E-Type. In a time before motorways Dewis covered some 700 miles in another E-type sourced from the factory for press demonstration runs in just 15 hours, not stopping once (aside from fuel).

Following his retirement, Dewis acted as an ambassador for the Jaguar brand, a role he held until his death.

Commenting on Dewis' passing Dr Ralf Speth, Jaguar Land Rover Chief Executive Officer, said: "Putting Norman's hugely decorated career aside, his friendly nature, captivating storytelling and unbridled enthusiasm made him exactly the kind of man you couldn't help but want to spend time with – he will be sorely missed."

Throughout his life, Dewis remained resolutely phlegmatic about the dangers of the role he had chosen to pursue.

"You need to know what happens when a tyre blows at a car's top speed," he told *MotorSport* magazine in 2000. "So the tyre blows and you just hold onto the car, hope it stays on the road. This is the job of a test driver. You have to do these things."

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