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THE PURSUIT OF EXCELLENCE

SAFETY

THANKS TO ITS METICULOUS DESIGN CRITERIA, THE NEW INDYCAR IS CAPABLE OF REDUCING THE CONSEQUENCES OF ACCIDENTS. ENGINEER ANDREA TOSO EXPLAINS

GRAND-AM

MAX ANGELELLI DESCRIBES HIS THRILLING VICTORY WITH THE DALLARA IN THE PRESTIGIOUS AND DEMANDING AMERICAN SPORTS CAR CHAMPIONSHIP

UNIVERSITY

READ HOW PURDUE UNIVERSITY AND DALLARA ARE REVOLUTIONISING THE EDUCATION PROGRAMS THAT WILL PRODUCE THE NEXT GENERATION OF MOTORSPORTS ENGINEERS

GRAND-AM ITALIAN STYLE

Angelelli and Dallara wrapped up their victory in the prestigious American championship at Lime Rock, underlining once again the fantastic potential of Italian morotsports

Good Italy breaks the bank at the Grand-Am. Apart from being the last year before the merger into the United Sports Car Championship, 2013 will remembered as the year of the tricolore in both the drivers' and the constructors' championships. And the crowning moment came at Lime Rock, in Connecticut. Max Angelelli, in the Dallara Corvette, achieved his third consecutive victory, and fifth overall, to take the Rolex Series title for the second time, following his success back in 2005. Max might have been forgiven for thinking that he was destined never complete his double, in fact, had it not been for an impressive series of unfortunate incidents in recent years, ranging from detached aerials to his car catching fire, the driver from Bologna might well have won several more titles by now, but that's just the way things go, and in the end the nature of the victory made the wait worthwhile. Apart from the personal satisfaction, there was also the gratification of seeing his friend and partner Wayne Taylor, who has shared all Max's ups and downs since their last title 8 years ago, back in his rightful place. The owner's youngest son, Jordan Taylor, also had an important part to play, quick on the track and not prone to the type of errors that were so decisive last year when his brother Ricky was behind the wheel. But "Max the Axe's" was not the only victory made in Italy, his Corvette-powered Dallara Grand-Am also finally achieved the success it deserved. A winning team that has made its mark in the USA, the second home of the manufacturer from Varano de' Melegari, demonstrating that Dallara's talents are not limited to simply designing cars, but that they are capable of providing support, and achieving success, as though there were no ocean dividing Indianapolis and Varano.

Atlantic alleance

An interview with Max Angelelli, who recaptured his 2005 Grand-Am title, driving the Dallara Corvette for the Wayne Taylor Racing team. The driver from Bologna talks to us about his year and explains the importance of the close relationship between Varano and Indianapolis, which now boasts a GM championship. The names and regulations may be changing next year, but Max and Dallara's aims are still the same: another title

Max, let's talk about the championship: what does this win feel like?
«We won the title in 2013, just like 2005, but in effect it does feel different. This year's championship was a real roller coaster. We started of well, before almost losing our way, and then coming back even stronger than before, for a variety of reasons. However one thing remained constant throughout the year, a highly competitive car. Our Dallara Corvette was never outside the first two places, irrespective of the events and the final result. Yellow flags at inappropriate moments, a minor technical failure while we were in the lead, there were many factors that conspired against us and cost us important points. However, at the end the day we prevailed in a highly competitive championship involving 14-15 cars, 8 of which were absolutely phenomenal».

Which was the most important race?
«There were two main phases. During the first phase the most important race was in Daytona, which put us in the frame for the title; and the victory at Barber, which got the ball rolling. During the second and final phase, it was the three victories that made all the difference».

Looking ahead to 2014, what developments are you expecting to see
«I think the Dallara is the most widely misunderstood car in the history of Grand-Am, because it has enormous potential. After we changed our technical director we finally started to realise this potential. If you look at the results from this year, you'll see the Dallara Corvette is always in leading places, with the Riley and the Coyote jockeying for position behind it. In other words we were always in the mix, while the other teams had their ups and downs. This was not lost on General Motors, who stipulated that all the Corvettes must be Dallara. Now it's up to us to get everything organised. The new car is already ready, and we've had requests from numerous teams. Interest in Dallara is growing».

How does the collaboration with Dallara pan out over the year?
«It's something were proud of. We are an American team competing in America, and Dallara has a high profile in the United States. Our partnership functions as though we and Dallara were a single entity, overcoming the distance and the ocean that separate us. It's like having Dallara's Italian technical department here in America, there are numerous engineers working full time on our project. The project manager Luca Bergianti combines good engineering skills with astute business sense. Antonio Montanari, who is the son of a Dallara stalwart, designed and developed the car. He was responsible for all the calculations, and continues to work on the necessary upgrades. He can see things that escape us drivers».

So there are continuous developments over the course of the year?
«Yes, in fact we even modified the rear suspension before the last three races of the season. The suspension was designed by Ferdinando Concari, the same person who was involved in designing the Formula 3 when I was racing in it. It's also important not to forget our background staff, even if they do not work directly on the project. Stefano De Ponti is also an avid fan. We are based in Indianapolis and sometimes it is necessary to ship in a hurry; Stefano, who is Dallara's American manager, is always ready to lend a hand. Dallara covers all the bases, both technical and logistic».

Have you had the chance to test the Grand-Am car on the simulator yet?
«The simulator is a project that was implemented in a very short space of time,

Max Angelelli with Wayne and Jordan Taylor at Lime Rock

in collaboration with Engineer Tosi and his team, and I've already had numerous sessions on it. At the moment the available model needs to be updated, but I'm a great believer in the simulator. I'd like to finish developing the Dallara Corvette for the simulator next year, and then start working on developing aspects of the car using this extraordinary tool».

Do you ever carry out training sessions on other simulators in the USA?

«No, because I believe strongly in the Dallara simulator, and I don't want to "get my hands dirty" on any of the other alternatives here in America. I prefer to throw myself wholeheartedly into an idea and follow it through to its conclusion. Since it's quite a costly idea, Dallara has permitted me to start developing a model, now I hope they are prepared to let me finish the job and start working on the chassis and machine configuration using the simulator. That's my dream for 2014».

How do you view the birth of the new championship?

«It's taking far too long. I'm disappointed by the fact that it's December and we're still talking about the same things we were back in April: the Americans seem to have become Italianized! I think there's some kind of internal power struggle going on between the old and the new, there's a hard core faction, the old guard if you will, who are fighting against the new faction, represented by the ex-employees of America Les Mans who are now involved in Grand-Am. I can't see why it's necessary to engage in a sort of hidden war over two LMP2 cars, and all because two of the owners don't want to buy the Daytona Prototype. And the irony of it is that, in the end, they'll have to buy them anyway, because they represent the future of the new championship».

And what does the future hold for Max Angelelli? Do you see yourself more as a team manager or driver in the future?

«My responsibilities as a team manager mean that, over a typical race weekend, in addition to driving the car, I find myself having to meet with our technical partners, take technical decisions, discuss the regulations with the representatives from Grand-Am and spend time with the sponsors. The situation had become untenable, I used to turn up to meetings in smelly overalls, I would have to interrupt meetings with my track engineer because I didn't have enough time; and I was even having to pull out of dinner dates with sponsors. No one was happy, least of all me, because I wasn't able to dedicate 100 per cent of my time to my main job: driving the car. So I've decided to compete in just four more races as a driver, albeit memorable ones. It was a hard decision to take, but I can console myself with the fact that I managed to win the championship.»

What advice would you give to up and coming Italian drivers?

«Two things: First of all, don't be scared to take up offers that may appear on face value to be disappointing or a second choice. Secondly, identify someone who can act as a guide, someone they can trust and who is able to take car of their interests. There's no shortage of talent in Italy, but what worries me is that, without the right kind of advice, many young drivers might pass up on the opportunity to gain some experience in the hope of a better deal, and consequently end up being forgotten. Take Grosjean for example: he left Formula 1 for Fia Gt, where he was successful, despite the limitations of his team and car, before returning to Formula 1. The important thing is to stay on the scene, win if possible and make sure that people remember your name».

Stefano Semeraro

Enjoying the compe

The success in Grand-Am, together with team WTR and Max Angelelli, at the end of a fantastic season featuring 15 wins and 18 pole positions, demonstrated that Dallara has nothing to fear from its competitors, even in a highly competitive environment like the American Sport competitions. The secret, as always, is the ability to adapt to the nature of the challenge, while maintaining a passion for excellence. Luca Bergianti, manager of the calculations and statistical testing department, explains the motives and the aspirations behind an adventure that started back in 2008

Max Angelelli's victory in the 2013 Grand-Am represents another success for Dallara. What role did the factory play in this adventure? How many people were involved in the project and what kind of support did they provide?

«Dallara debuted in the series in 2008, in search of the type of competition that has become increasingly difficult to find in the other categories we're involved in. It offered us the chance to measure up against other chassis manufacturers - Lola, Riley, Multimatic, Coyote – and interface with various engine builders, such as Ford, GM, Porsche, and Lexus. The original idea was to use the series as a training gym where we could nurture the company's competitive spirit within the highly restrictive limits of the regulations that were in force at the time: the majority of the car components are "frozen" so it's very different to find the competitive edge. We designed a body that introduced new aerodynamic concepts and a chassis and suspension system with rigidity/lightness performance targets that were superior to our rivals' specifications. We also introduced a wide range of optional aerodynamic and mechanical adjustments that mean that the car is fully adaptable to various different types of track – slow and winding or superfast oval circuits - and race conditions: 2h 45' sprint races, 6h endurance events and the 24h of Daytona. The initial stages of the project involved a team of around 10 people, although this number decreased as the project moved on to the design and maintenance phases».

What were the greatest difficulties that you had to overcome?

«The car immediately proved to be very fast and competitive – we achieved our first pole position after just three races – but we had underestimated the "gladiatorial" nature of this championship, having lost the habit after years of competing in Formula categories. Dented doors, "side-swiping", ramming, and close combat are the order of the day in this kind of racing. There's no such thing as a "clean" overtaking manoeuvre, and you'd better be ready for frequent excursions onto the grass or into the sand! This meant that we paid heavily for our decision to reduce the weight of the car, in order to strengthen other areas such as the suspension arms, during the first few races: our cars always came off second best in the event of contact during the race, despite being faster. We corrected this by increasing the resistance, and hence the weight, in several areas. We also had problems keeping the cockpit temperature under control, which is obviously not a problem in Formula racing. But the greatest challenge was designing a car capable of running for 24 hours non-stop. This means that every component, no matter how insignificant, must be designed to last, and be easy to replace in the event of an accident, in order to avoid losing too much time. Just bear in mind that, after 24 hours on the track, the car weighs several kilograms less due to the material that has been consumed during the race: brakes, bodywork, paint, underside, wings, flaps, etc. This demonstrates just how difficult, but at the same time extraordinarily motivating, the challenge has been for us. Lastly I would say that, from a statistical point of view, competing against 15 adversaries with just 2 or 3 cars represents a significant handicap. And this means we can be even more proud of the 15 victories and 18 pole positions achieved this year».

How has the relationship with Chevrolet developed?

«To a large extent the relationship is handled by the team. WTR and Max Angelelli in particular have a long-standing and well-established relationship with them, and this means that we have enjoyed a completely open approach on both sides. At times we have even found ourselves working side by side, for example when it was necessary to modify the Dallara chassis so that it conformed to the new regulations and the new GM body. There's a mutual respect between the two organisations, and at times even a healthy rivalry which helps WTR to achieve even greater heights.

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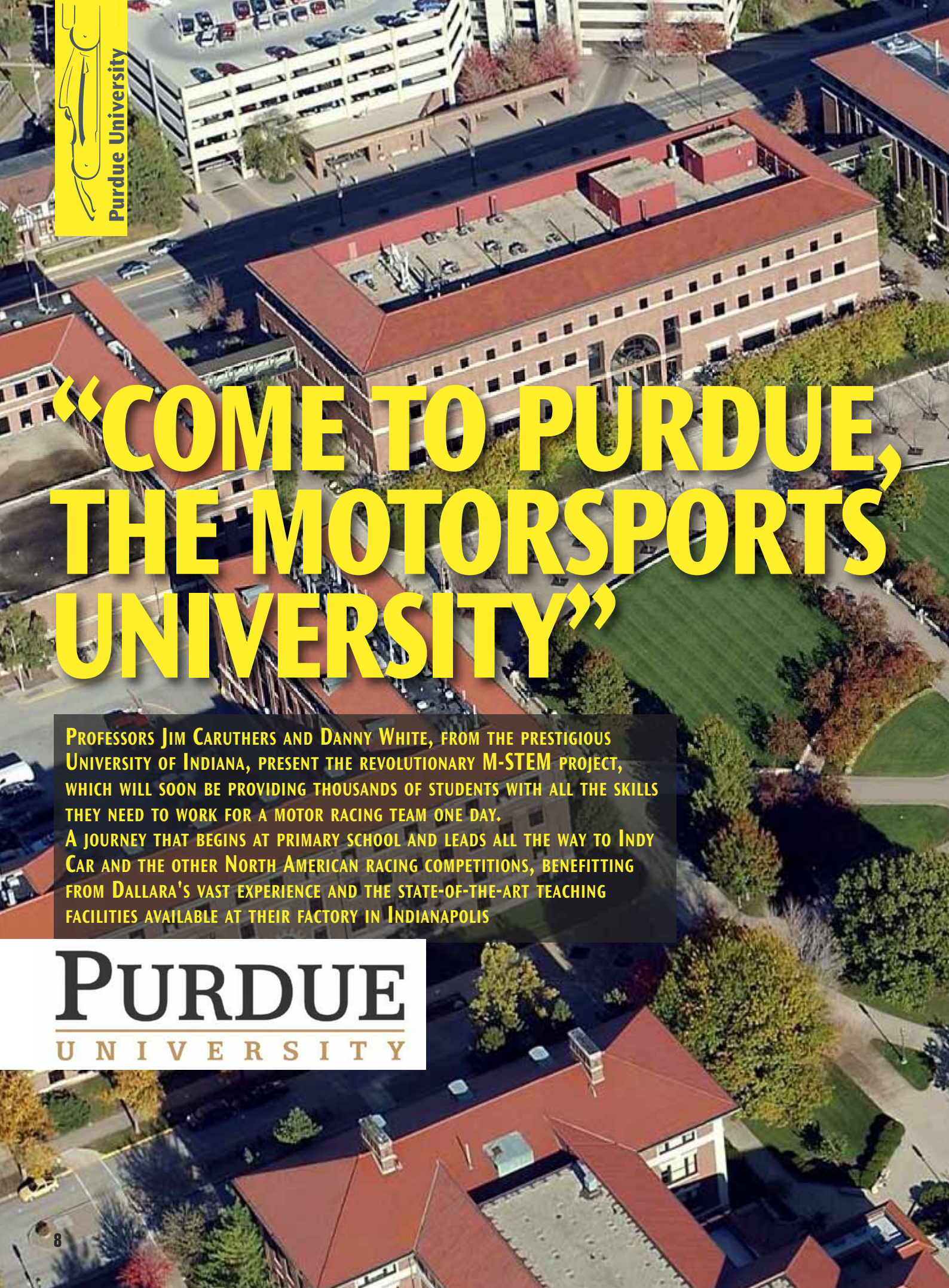
What are Dallara's plans in view of the forthcoming merger of Grand-Am and ALMS to form United SportsCar Racing in 2014?
«It's a complicated and delicate situation. Up till now we have adopted a conservative approach, concentrating our efforts on supporting long-standing partners such as WTR, but without investing in new cars or aerodynamics. 2014 will be a very critical year. The harmonisation of the performance specifications between DP and LMP2 looks to be a long way off, the rules have not yet been completed, and there are a number of other factors that have yet to be defined; it seems certain that one of the two models (DP and LMP2) will end up prevailing, either due to its superior performance on the track, or thanks to outside influence: it doesn't appear feasible to maintain both options open simultaneously for any length of time, either from a practical or an economic point of view. As things stand we, and the majority of the other constructors and teams, are content to wait until things have calmed down a little in order to get a clearer view of the future».

How important are Sport cars for the company?
«The Sport models are in the company's DNA at least as much as the Formula cars, and the fact that there have been less chances to compete in such categories recently does not mean that we've lost interest. Dallara is always ready to take up a new challenge, provided that the conditions are clear, there exists the opening for a competition and that there is a market of potential customers. Or a strong partner who is prepared to shoulder a part of the considerable costs involved in developing a car of that nature».

Tell us something about the calculation and statistical testing department, which you are in charge of at Dallara. What are the department's responsibilities, how many people work in the office, how is the work structured, what sort of skills and qualifications are required….?
«My department employs eight people. We are responsible for the vehicle dynamics, simulations, performance analysis, optimisation and initial dimensional calculations for the suspension components, and vehicle settings, as well as indoor testing (on individual components and fully assembled cars), and track trials where we support the teams and carry out field tests on our new cars and/or components».

What projects currently take up most of your time?
«Most recently we have been working on Super Formula, Formula Electric, the new Indy Light and a number of other projects that I can't reveal any details about in order to protect the confidentiality of our customers».

What are you academic and professional qualifications, and how did they lead you to your current position at Dallara?
«After obtaining my high school diploma in scientific studies, thanks to my passion for racing and motor vehicles in general I decided to read Mechanical Engineering at Pisa University, majoring in terrestrial vehicles. My first job was as a consultant engineer with a company involved in the military and aerospace industry, where I was responsible for design and structural analysis of components for missiles and satellites. Then the passion for racing reared its head again, so ten years ago, together with my wife and three children, I moved to Valceno. In the meantime I also worked for three years as a track engineer with a F.3 team. I'm extremely passionate about racing and it's safe to say that it has a hold over me. As I always tell my wife, while girls grow up to become women and mothers, boys remain boys, and never really grow out of their ball games or toy cars! And I'm definitely no exception to the rule».



"COME TO PURDUE, THE MOTORSPORTS UNIVERSITY"

Professors Jim Caruthers and Danny White, from the prestigious University of Indiana, present the revolutionary M-STEM project, which will soon be providing thousands of students with all the skills they need to work for a motor racing team one day.
A journey that begins at primary school and leads all the way to Indy Car and the other North American racing competitions, benefitting from Dallara's vast experience and the state-of-the-art teaching facilities available at their factory in Indianapolis

PURDUE
UNIVERSITY


Jim Caruthers

How and when did your collaboration come into being? What convinced you to team up with the Italian company?

"It all started in 2010, with a protocol of intentions that formed the basis of the agreement signed in 2012. The collaboration with Dallara was the natural consequence of a meeting of minds between the best Engineering University in the State of Indiana and the leading race car designer in the world. The collaboration developed thanks to the fact that Danny White, the director of Motorsports at Purdue University, was a member of Eddie Cheever's victorious team at the 1998 Indianapolis 500. That was Dallara's first time at the Indy 500, and it was the great friendship with Engineer Dallara that brought him to the campus and cemented the relationship between the two organisations. It was this meeting that gave rise to Purdue University's M-STEM project, an initiative designed to get young people interested in Motorsports by introducing the technology and excitement of motor racing into the K-12 curriculum, at the same level as our Science, Technology, Engineering and Mathematics (STEM) courses".

Can you tell us a little more about the aims and characteristics of the M-STEM project?

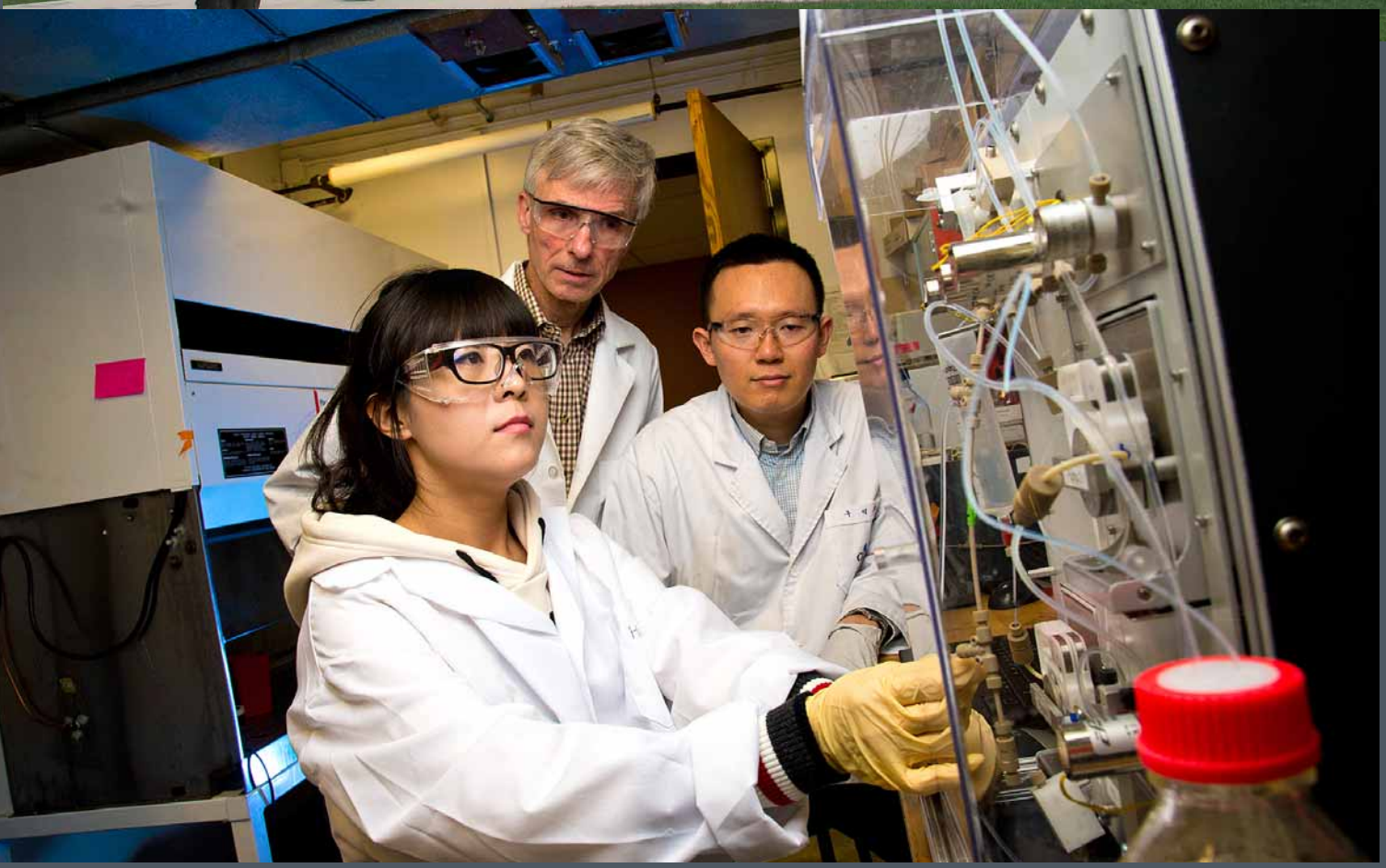
"The aim is attract young students towards the STEM subjects during a critical stage in their education (middle school) by using the "cool" appeal of exposed wheel racing. M-STEM has been designed to encourage them to take up two important challenges. First of all, since the baby boomers are now nearing pensionable age, it's time we got the younger generation involved in the fantastic world of motorsports. Secondly, the manufacturing and medical industries are going through a difficult period and are crying out for skilled young talent to take the place of the above mentioned baby boomers. M-STEM deals with these two challenges 1) by introducing exposed wheel racing into the K-12 curriculum through advanced educational and practical projects and 2) by making use of the high level interactive teaching facilities on offer at the Dallara factory, where the students can get a close look at the scientific procedures involved in a racing car. And hence 3) by permitting the students to design their own magnetic cars and electric go-karts, and race them on the Motor Speedway. These are activities that appeal to youngsters and help to get them interested in the STEM disciplines, while also teaching them how to producing things by hand - and all thanks to the "cool" effect of the IndyCar series. To quote Mitch Daniels, ex-governor of Indiana and current president of Purdue University, "combining Motorsports with STEM studies is a simple but highly effective idea".

Who decides the structure of the courses and what sort of qualifications the teachers should have?

"The teachers at the K-12 school form an integral part of the team that studies the curricula and decides on the courses, provided they are aware of which STEM subjects are covered and how to interact with students of differing age groups. The K-12 teachers are responsible for setting the targets for the various M-STEM projects. Purdue University and its industrial partners provide the support for the educational and technical development. The University also carries out objective evaluations of the M-STEM in order to establish which parts of the project are functioning as intended, and which require further development. It's fair to say that Purdue has staked a part of its reputation on this program, and it has been necessary to create a new role in the Human Resources department, with responsibility for the M-Stem project. As far as the training aspect is concerned, the teaching staff includes personnel from a variety of backgrounds, especially engineering and education».

What type of student are your courses designed for, and what opportunities do you offer them once they have completed their studies? Would you define it as a project that is capable of combining the business world with the primary and secondary education sectors?

«The M-STEM project is intended all types of students, both male and female, and irrespective of their studies: 1) students from the engneering/scientific sector, 2) young people who are studying to become technicians, and 3) students who are interested in the world of marketing and business. For example, we are currently working on the design for an electric go-kart that can be constructed by junior high schools.The project includes 1) the mathematics applied to the science and engineering areas that cover the various components of the go-kart, 2) the practical aspects of the technologies that go into the construction of the go-kart, 3) a business and marketing plan designed to raise part of the financial cost of the product from local businesses, 4) marketing strategies designed to make the go-kart built by the school into a viable commercial proposition; and lastly 5) a project management plan that will enable the students to complete the project on time and within the pre-established budget. A similar project has been designed for middle schools for a car running on magnetic energy. At the moment I can affirm that both vehicles will be participating in a race meeting next may at the Motor Speedway in Indianapolis, featuring teams from various different schools. There are various connections between all these elements: college students, "evGrandPrix" racing kart featuring high power batteries; rapid consumption electric go-karts for high schools; magnetic energy vehicles for middle schools and small, driverless magnetic vehicles in wood and plastic for primary schools.
The aim is that each group inspires and encourages the younger group. Finally, all these projects feature an important educational element, so that victory does not only depend on the performance during the race, but also on the technology and scientific know-how that have gone into project».




Danny White

What kind of relationship do you have with IndyCar and the Motor Speedway?
«We have an excellent relationship with the Speedway, which is one of the sponsors and financial backers of the M-STEM project. The International Motor Speedway also plays host to our "evGrandPrix Collegiate Go Kart Series" event in May, where students from all over the US and beyond meet to challenge each other on the drawing board and the track. The IMS also sponsors the magnetic vehicles and electric go-karts in which the middle and high schools challenge each other in the May event. As far as IndyCar is concerned, we support all their requirements. Danny White, director of Motorsports at Purdue University, attends various IndyCar events and two of the cars that compete in the IndyCar series include our logo in their livery. We have a formal agreement with the Brian Herta Autosport and Dreyer and Reinbold teams. We are also weighing up the possibility of entering into partnership with the American teams that participate in Formula E: we want to carry on developing. What we are looking for is a kind of experience that is continuously evolving for our students at Purdue, so that they start on go-karts before maybe moving on to Formula E and even taking a up a position in IndyCar, and all thanks to a degree from Purdue».

How many students do you aim to involve in this project? It is possible to involve students from other States too?
«There are two answers to that question. As far as M-STEM is concerned, we are currently developing the curriculum, in partnership with two educational establishments. Next year, the initial activity in the middle schools will involve around 300 students. As soon as we have finished developing and evaluating the courses in these two schools we intend to expand our activities to cover a wider range of schools. The first stage will be concentrated in the educational districts in Indianapolis around the Speedway. In May 2014, during the week before the 500 mile Pole Day, the Speedway will be hosting an educational fair, where mathematics teachers and education managers will be introduced to M-STEM course and learn how to integrate them into their school syllabus for the year 2014-15. Our aim is to involve tens of thousands of K-12 students, if not more, from all parts of the State of Indiana, and make M-STEM an integral part of the mathematics courses. On a wider scale the aim is to expand the M-STEM curricula to the whole of the United States. We are currently evaluating the kind of collaborations that will be necessary to achieve this. As far as Motorsport-at-Purdue (MAP), i.e. the organisation that unites the students who are interested in Motorsports, is concerned, the current membership stands at about 300. Given the strongly international character of our University, a good percentage of these come from abroad. Every year we place 3 or 4 students on work experience programs with Indycar teams, and last year we did the same thing with USAC. All our work experience candidates over the last 4 years subsequently obtained full time jobs with Motorsport teams after they graduated. The most recent was taken on by Pratt and Miller, and the one before that joined Andretti Autosports».

How important is Motorsport as a possible employment opening for your graduates?
«As I was saying, at Purdue we have an organisation called MAP, Motorsport-at-Purdue. MAP offers Purdue students the chance to learn all they need to know about the various aspects of the Motorsports industry. It's very difficult to find a job with an IndyCar team, but throughout its first four years our students have acted as excellent ambassadors for the MAP project. Several have been taken on by IndyCar teams, where they have got on well, and as a result we now receive frequent requests for our members. MAP offers a different prospect to traditional Motorsports projects. Many of these provide students with a generalised grounding, and introductory knowledge to a range of disciplines, whereas at Purdue the students all graduate in their own main subject (aeronautical engineering, mechanical engineering, communications, etc.), which means that when they graduate they are fully up to date with the latest developments in their chosen field. MAP also provides them with a broad overview of the Motorsports industry, explaining how the specific knowledge involved in their chosen subject is implemented. This means that when the students start work with their new teams they already have extensive knowledge, together with a complete vision of the Motorsports sector, while the teams know that they can count on an expert whose specialist skills and knowledge are tailored to the sector – in other words, exactly the type of preparation that an IndyCar team needs in order to compete at the highest level. We furnish the teams with excellent students who can be developed according to the specific needs of the team, without contaminating them with old techniques and bad habits».

In the future are there any plans for Purdue University and Dallara Automobili to establish a centre of excellence with branches in Italy and the States?
«We have a very open mind about this. We greatly appreciate our collaboration with Dallara and hope that it continues to develop in order to improve the quality of teaching in the Motorsports area all over the world. It all depends on two factors: the supply of and demand for students of that level, and the ability to secure the funds necessary to develop a program of that nature».

Are you in contact with any Italian universities with a view to creating a harmonised course that would lead to an international degree in Motosport?
«It has been suggested, and we are open to the idea, but there hasn't been any contact yet».

Stefano Semeraro

"All our work experience candidates over the last 4 years subsequently obtained full time jobs with Motorsport teams after they graduated. The most recent was taken on by Pratt and Miller, and the one before that joined Andretti Autosports"

«F.1 CUTS IT

TS TEETH HERE»

For a number of seasons now, World Series by Renault has become the ideal apprenticeship for all the drivers destined for the Circus, and Kevin Magnussen is the latest example. The merit goes to the "mission" of the French manufacturer, ably supported by Dallara who supplies the series with increasingly sophisticated cars that are capable of bringing talented drivers to the fore. Andrea Burzoni, the project manager for the Italian company, reveals the secrets of the T12, the state-of-the-art in the single-seater sector, and the philosophy behind its development

Kevin Magnussen

Sergej Sirotkin

After two complete seasons of the Dallara T12, which has altered the technical and sporting landscape of the World Series Renault, what measures and improvements have you got planned for the forthcoming seasons?

«The car that debuted in 2012 has already come a long way: with two seasons under its belt it you could say it has reached "maturity". A number of its components are a good deal older too, in fact many parts that are still mounted on the car today are carry-overs, and have been in use since back in 2002, when Jaime Alguersuari first contacted Dallara with the proposal for the Super Nissan series. So, what needs to change? Very little: we'll be concentrating our efforts on certain areas in order improve reliability, thus reducing the impact on running costs».

The T12 represents an important improvement for World Series by Renault in terms of quality. Drivers such as Magnussen and Da Costa, who have driven McLaren and Red Bull in F.1 rookie tests at Silverstone, have both stated that the T12 is the vehicle that comes closest to the driving style required to compete in the world championship. How did you manage to get to this point?

«Motorsport is a metaphor for life: one of the most important aspects is balance. If a car is not balanced correctly then it will certainly be a non-starter, and in the same way, when organising and managing a competitive series, without the correct balance between the cost and the product on offer, the enterprise is bound to be a short-lived one. Imagine a young driver with a million (virtual) Euros to spend on his career: what will he be looking for? I think he'll be looking for a formative category that allows him to gain some experience, because the only way he's going to learn and progress is by getting kilometres under his belt, and a series where the organisers make every effort to ensure that everyone is treated and judged according to the same criteria; he'll also be hoping to be able to compete in a car where safety is the most important factor, and which has been designed and built by a company that is a byword for reliability and performance. And how did he arrive at his final decision? It's a question of choices: one small step after another. It's the Renault philosophy that has led to this result: Dallara is one of the partners that the French manufacturer has selected for this venture, but let's not forget that there nerve centre of the organisation is located in Les Ulis, at the headquarters of Renault Sport Technologies. For example, they were the ones who were behind the drive to produce a DRS for the T12 car. Renault had already realised that the time was ripe for this type of technology. But what was required was a simple, effective system, at a reasonable cost: the idea for the small, mobile "gurney" was born in Dallara, during a short meeting attended by four people who decided what they wanted to develop, the objectives and the timescale, all in just half an hour: and three days later they already had the results of various different CFD case studies, which demonstrated the potential of this solution. Within a month the whole thing had been designed and built».

What other developments are you planning in this context?

«It's difficult to predict the future... but easy to build it! Renault's mission is to "Drive the change": innovation has always been extremely important and the Renault Sport technicians and managers take it very seriously. And Dallara plays a supporting role in generating and realising ideas. For example, at Dallara, we are currently working

Andrea Burzoni

hard on "virtual reality": the driving simulator enables us to define many aspects of the car at a very early stage, and at significantly reduced costs. One of our aims is to integrate the simulator into the development process for new products, in the same way as structural analysis, numerical aerodynamics (CFD) and experimental aerodynamics carried out in the wind tunnel».

Since it was launched two years ago, the T12 has received widespread praise, including for its looks, which are reminiscent of the old F.1 cars. Is it true that, unlike with past models, Renault asked you not to reproduce the current F.1 lines this time?

«Exactly: at Renault they look towards the future, in terms of innovation, but they also learn from the past. In 2008 the instructions were to replicate the style of that season's Renault F.1 model: this was achievable, but only by compromising on performance and costs. The review process that resulted in the T12 was based on identifying the essential elements: maximum aerodynamic efficiency, clean lines, keeping the number of necessary appendages to a minimum, and a great deal of time spent on getting the very best out of the engine-transmission-electronics package. When you invest resources in the right direction, sooner or later you get the desired results».

The T12 tyres are supplied by another top-notch partner in Michelin. Do the French-made tyres represent a valid starting point for the Zytek engine-chassis package and the excellent grip that distinguishes the T12?

«The Michelin tyres are definitely a factor in the success of the championship: they provide good grip over a number of laps and last long enough to complete the selection process, but they also have enough leeway to pardon mistakes if you don't nail your fastest lap at the first try. The partnership between Michelin and Renault is a long-standing one and goes beyond mere appearances: the two constructors invest heavily in improvements; for example, in order to ensure they are prepared for future production lines, they hold tyre development sessions almost every year. The repeatability and predictability and reliability of the tyres produced in the factory in Clermont Ferrand are all factors that contribute to the balance we were talking about earlier, and which is vital to the life and success of the championship».

From an engineer's point of view, what do you think about the format of the World Series by Renault, which is based on two hours of free testing, two qualifying sessions and two races. Is this the best way of organising a race weekend for the teams and the drivers?

«Personally I can't think of a better way, and I wish competitions were always organised along these lines. I used to be a race-engineer: you prepare meticulously for the weekend, dedicating time to make sure that you present the car in the best possible condition, you weigh up all the possibilities and strategies, then… A mistake, a red flag at the wrong moment, a puncture, another car in the way and everything goes to waste. There's nothing more frustrating than seeing all your preparations go up in smoke in the only qualifying session or during the race when you know that starting positions for the second race depend on the outcome of the first. Two qualifying sessions and two races guarantee the same conditions for everyone, and, especially in the case of the less experienced drivers, a second chance».

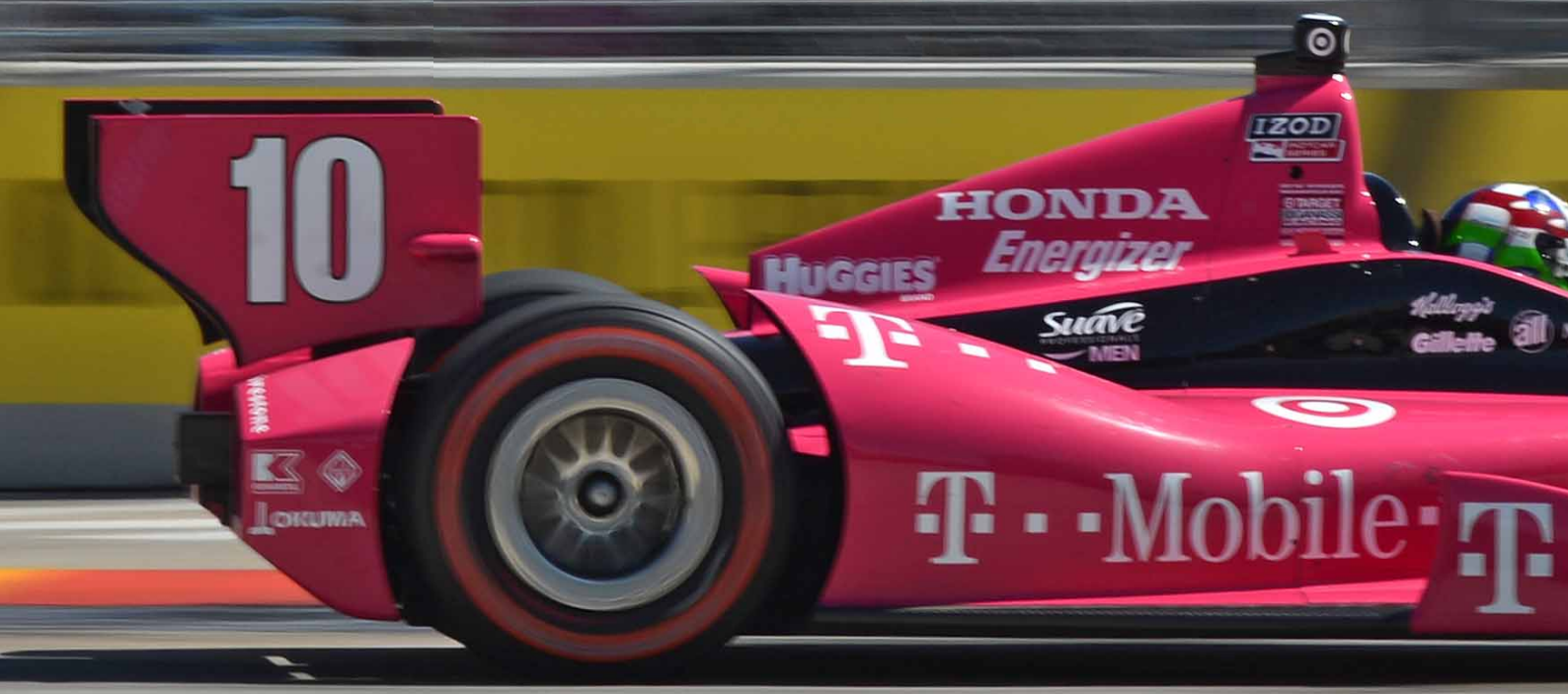
Renault insisted on "over-designing" both the chassis and the engines, in order accentuate the differences between the drivers, and draw a line as it were. They seem to have achieved that aim.

«In ten years of designing a car like the Formula Renault 3.5, some times more investment is spent on the chassis and the aerodynamics, while other times more attention is concentrated on the engine or the transmission, depending on the requirements and the available budget. The evolution of the 2008 had produced a car with considerable download, this was handled very well by the Michelin tyres and resulted in very good grip and hence speeds on the faster curves that approached F.1 performance levels. High levels of grip frequently equate to a flattening out in performance levels: numerous drivers separated by a few tenths of a second, so that everything has to be absolutely perfect to stay at the top. But the opposite is also true: an imperfection, a tiny error, the loss of a few hundredths of a second, and suddenly you're back in twelfth place! Increasing engine power and torque means shifting the point of equilibrium, making things harder for the drivers. Driving becomes more difficult because it requires more skill: before, all the drivers had to do was exploit the grip to the maximum, but now they have to remember that they have an instrument capable of applying a great deal of force on the adherence ellipse in their hands, or rather beneath their feet. When you put your foot on the gas the rear of the car is much more "excitable" and you have to learn how to gauge the way you apply thrust. The ability to handle an unstable rear axle is an accurate indicator of a driver's talent, because anyone can learn to control the understeer that results from a front end with reduced grip; but only the very best are able to live with a neutral or oversteering car».

With the advent of the T12 the F.1 teams are becoming increasingly interested in WSR, and over the last two years practically all the drivers from the Junior programs (Red Bull, Ferrari, Mercedes, McLaren, Lotus, Caterham) have graduated to this category. Do you regard this as a success, an acknowledgement?

«To be able to contribute to the career of a young driver always makes us proud: in fact, 80% of the drivers who competed in the 2013 F.1 season cut their teeth in a Dallara. It's an acknowledgement, but also a great responsibility: as the Engineer frequently reminds us, we should always strive to ensure our cars are "the safest and the fastest". And while at first sight this may seem like an oxymoron, two apparently irreconcilable concepts, it continues to form the basis for great projects that that are destined to leave their mark».

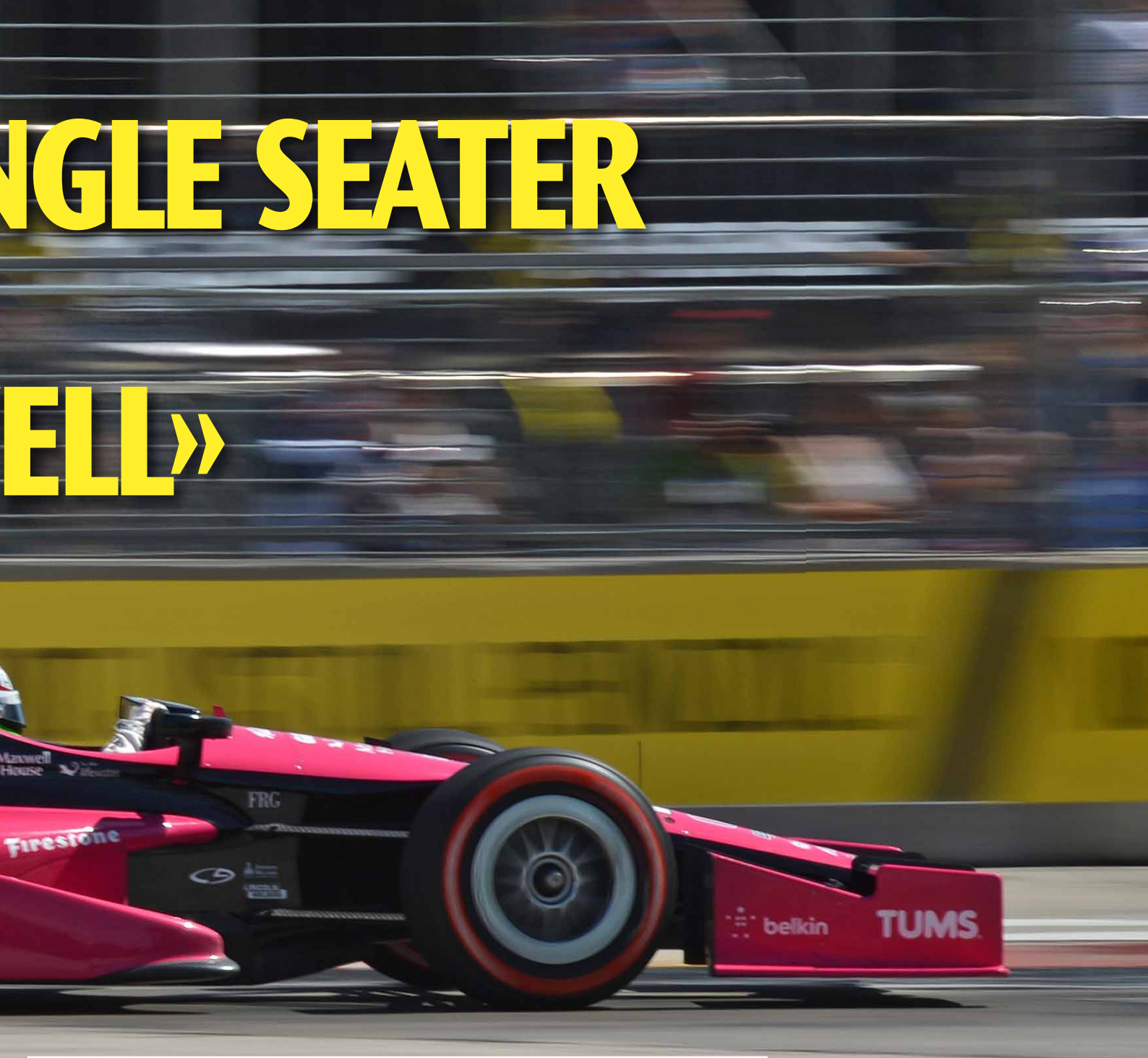
«NO OTHER SIN WOULD HAVE RESISTED AS W

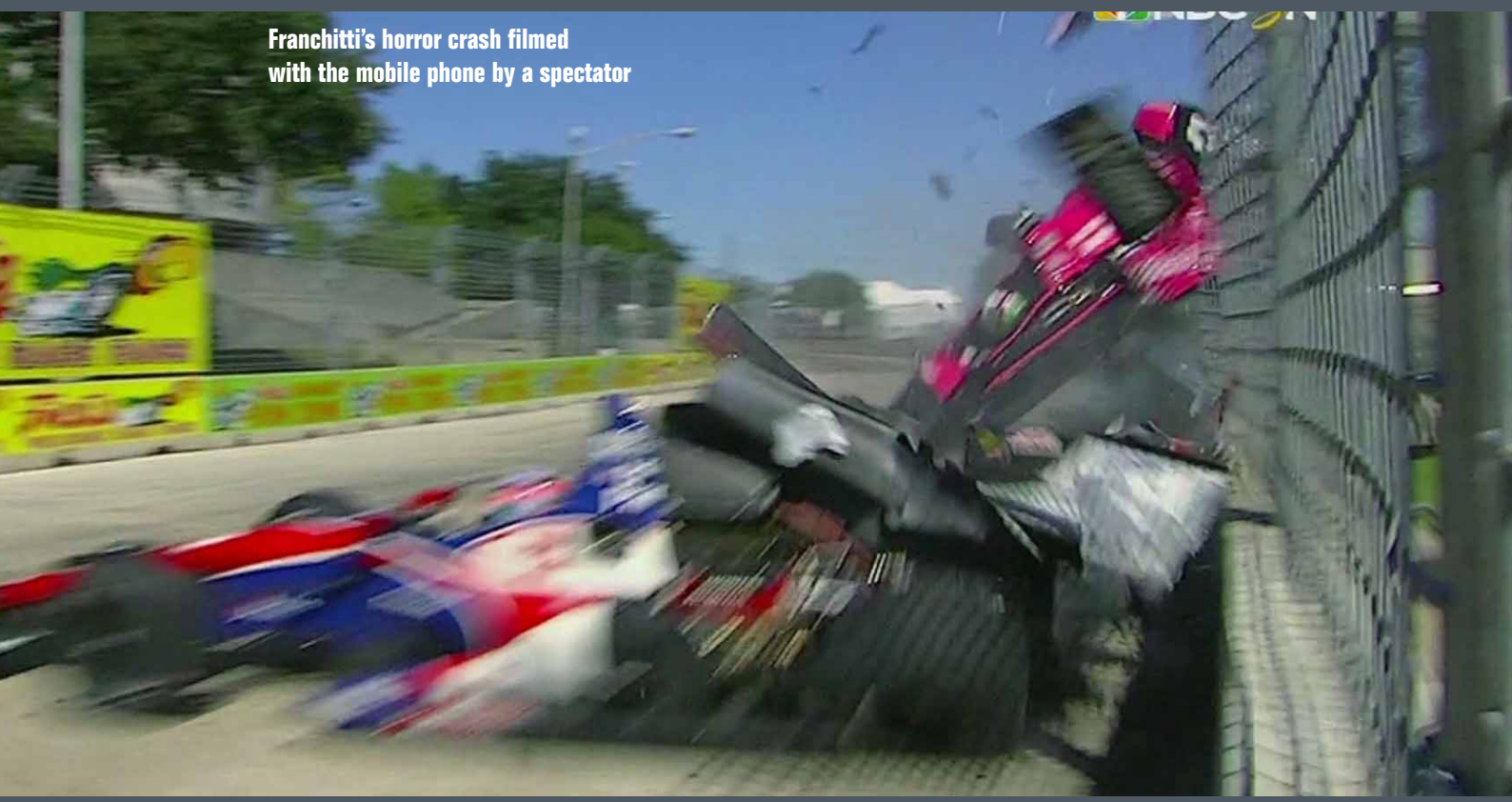


DARIO FRANCHITTI AND TAKUMA SATO WERE THE UNWILLING PROTAGONISTS OF THE ACCIDENT THAT TOOK PLACE DURING THE INDYCAR RACE IN HOUSTON, WHICH ALSO INVOLVED MEMBERS OF THE PUBLIC AND GAVE RISE TO A GOOD DEAL OF CONCERN AND INTERROGATIVES. ENGINEER TOSO, WHO COORDINATES DALLARA'S INVOLVEMENT IN THE AMERICAN COMPETITION, DESCRIBES THE DYNAMICS OF THE INCIDENT AND EXPLAINS HOW THE CAR'S DESIGN CHARACTERISTICS PREVENTED FAR MORE SERIOUS CONSEQUENCES, WHILE NOTING THAT THERE WILL ALWAYS BE A CERTAIN DEGREE OF RISK ASSOCIATED WITH MOTORSPORTS EVENTS

NGLE SEATER

ELL»





Franchitti's horror crash filmed with the mobile phone by a spectator

Engineer Toso, what was the dynamic of the accident involving Dario Franchitti? Why did the car take off?

«Due to problems with vehicle trim, caused by worn tyres, Sato lost control of his car and decelerated suddenly. Franchitti was right behind, travelling at top speed, and made contact with him. The rear "wheel guard" absorbed part of the energy, deforming and shattering into a large number of fragments. The contact caused Sato to slew and slow down even further, widening his trajectory towards the outside of the curve and the outer wall; at this point Franchitti had nowhere to go, and could not avoid driving into him. The difference in speed between the two cars, estimated at approximately 20-30 km/h, is very significant indeed when one takes into account an absolute speed of 180 km/h and the mass of the car. It is worth remembering that, in the two years since it has been introduced, the "wheel guard" has always fulfilled its function perfectly in the event of light contacts between two cars with a similar relative speed, i.e. during hazardous wheel-to-wheel overtaking manoeuvres. Franchitti's single-seater was catapulted against the safety fence: one of the old generation of cars, either a Champ Car or an Indycar, would probably have reared up and taken off at this point. In this case, however, the car lifted off the ground due to the impact, but did not take flight and, following an extremely violent impact with the fence at over 180 km/h, in which it dissipated approximately 1 million Joules of energy, it touched down again, without turning over. This "stable" behaviour is the consequence of the shape of the bottom, which was designed by Dallara to produce a stabilizing aerodynamic effect in the event of skewing, and to generate the majority of the ground effect at the rear, so that even in the event of a loss of load front end, the car does not lose all its down force».

Have you established whether there was any anomaly in the way the car reacted, or whether it was simply bad luck?

«The investigations were carried out immediately and in accordance with the American legislative process: all the data on the table, maximum collaboration and common search for the truth. After a few days we received Indycar's sincere compliments. No other covered wheel competition car could have performed better. I believe the Dallara IndyCar sets the benchmark for safety for all the covered wheel categories, both in Europe and in the United States».

What useful information have you gathered from the incident? Does it give you the chance to modify any aspects of the car?

«Our decision to impose a chassis construction with aluminum ribs and anti-intrusion panels that protect the entire space from the foot well to the fuel tanks compartment laterally is a fundamental factor in protecting the driver and the fuel. There's no going back on this decision».

It was the consequences for the spectators that had the greatest impact on public opinion: could the safety conditions at American circuits be improved? Some commentators have suggested that the safety fences were inadequate.

«I can't really comment on this. If there'd been a concrete wall or a pre-tensioned safety fence complete with steel cables, instead of those fences, the car would have been thrown back onto the track, without losing any of its speed, and the impact with other cars, bridges or fixed structures might have been fatal. The fences must deform in order absorb the car's kinetic energy and, in fact, the safety fence poles were badly deformed, but they didn't break. And the cars take that curve at top speed. The grandstand will probably be moved in the future so that it is positioned inside the curve. However, there will always be a very fine line between giving the spectators the thrills and spills that they pay to see, and protecting them from the very real and serious risks that are a consequence of those same thrills».

In general, what are the areas where it is possible to implement measures to improve safety, and what are the areas where it is inevitable that problems will arise in the event of an accident?

«One area where we are working together with Indycar is to reduce the risk of drivers breaking their wrists in the event of an accident: at the moment, the brake and clutch controls are positioned on the steering wheel, and the driver instinctively tries to keep his hands on the wheel; however, when an accident occurs and the car impacts the safety barriers, the steering wheel ma "goes haywire" and the driver cannot hold onto it. We may include a shock absorber in the steering column as earlier as 2014».

What was Franchitti able to tell you about the incident?

«Dario was very grateful, and offered his sincere thanks. I've known Dario Franchitti for over ten years, and we both sit on the same Campionato Indycar Championship technical commission. Over the years, Dario has grown increasingly shy and apparently withdrawn in his relationship with the media and journalists in general. I would stress the word "apparently". In private, Dario is a gentleman, and a gentleman never talks too much. Dario has had to deal with unexpected levels of popularity due to his marriage to the famous actress, Ashley Judd, and his success in the latter part of his professional career. Fame has hardened him, and left him with a healthy cynicism for the kind of personal success that is frequently little more than the product of circumstances. Dario will never forget the terrifying incidents he has been involved in over the years: Kentucky and Michigan in 2007 with the Indycar, Talladega in 2008 in Nascar, and now Houston in 2013. He's had to make more than his fair share of public statements about safety, the fragility of life and heroism, and on this occasion he preferred to make a private phone call to Engineer Dallara to express his thanks. At that point I was sure that, thanks to the prudence and sense of tranquility serenity that come as the result of a full and rewarding life, he would have called it a day».

Stefano Semeraro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HONDA
Energizer
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Scott Dixon
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2013

The 2013 IndyCar season lasted a marathon 19 races. As exciting as ever, the championship went right down to the wire and a night race on the oval track at Fontana. Scott Dixon managed to repeat his successes of 2003 and 2008. An impressive rhythm, with a title once every five years for the New Zealander, who has remained faithful to Chip Gamassi's team ever since his debut back in 2002; something a record for the world of motorsports.

But the 2013 season got off to an inauspicious start for the team that also featured Dario Franchitti and Charlie Kimball, in the Honda-powered Dallara car. In fact, at the halfway point, following the race in Iowa, who would have thought that Dixon, who was languishing down in seventh place in the championship, 192 points behind the leader, could have recovered from such a position? But Dixon began to put a series of wins and top three finishes together, gradually moving up the leader board, before finally extinguishing the hopes of Helio Castroneves and team Penske.

"*We showed everyone what a great team we are this year.* - said Dixon – *Thanks to our hard work and various elements that emerged from testing, we gradually overcame our initial difficulties. Once we'd identified the nature of the problem we soon got back to winning ways, and thanks also to a slice of luck I managed to make up the ground on Castroneves. Quite a recovery!*".

NEVER SAY NEVER

AT THE HALFWAY POINT OF THE INDYCAR CHAMPIONSHIP THERE DIDN'T APPEAR TO BE WAY THAT THE NEW ZEALANDER DIXON COULD HOPE TO WIN THE TITLE. BUT THEN, FOLLOWING AN AMAZING RECOVERY, HE WON THE CROWN FOR THE THIRD TIME

FROM WSR TO McLAR

Magnussen's amazing season saw him promoted directly to the Formula 1 championship by the team that recruited him for their junior program a few years ago

The World Series Renault 3.5 has produced another top quality driver. In fact, Robin Frijns' successor on the honour board is Kevin Magnussen who, at the age of 21, and in his second year in the championship, won the title for team Dams in the Dallara. Magnussen, a pupil of the Maclaren Academy, who will be partnering Jenson Button for the team in the coming season, finished in the points in 15 of the 17 races, winning five of them. But the title wasn't wrapped up until the last weekend, in Barcelona, when he was victorious in the first of the two races on the Catalonian track. Magnussen's main rivals were Stoffel Vandoorne, also from the Junior McLaren program, and Antonio Felix Da Costa, from the Red Bull Junior project.

"It was a very tough year, although maybe it doesn't look that way from the outside. In the end, the victory came thanks to the consistency of our results, and the great reliability of my Dallara, which was managed perfectly by team Dams. We had to be on our toes at all times, because Vandoorne and Da Costa are very capable rivals, but in the end we managed to keep our noses in front. As far as I'm concerned, I've come on a lot since 2012, concentrating a lot on the mental aspects. And it paid off, because I've managed to eliminate a number of errors. I'm now looking forward to the great challenge of F.1 with McLaren, one of the greatest teams in the history of the world championship. It was a bold move to select me as their new driver, and I intend to do my utmost not to disappoint them".

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LEIMER'S SEAL

The Swiss driver took home the 2013 GP2 title, together with his Racing Engineering team, in the last race of a long and gruelling season that only saw him emerge as a contender in the latter stages

A lot of ground to make up, a series of good finishes, three wins, and finally a dream come true. What appeared to be a mission impossible was transformed into reality for Fabio Leimer, the 2013 GP2 champion. In his fourth year in the category, the 24 year old Swiss driver from Rothirst helped Racing Engineering to repeat its success of 2008 with Giorgio Pantano. After a decent start to the year, Leimer's turn around came during the second half of a season that saw him overhaul Stefano Coletti and Felipe Nasr, the early leaders in the summer. Leimer had to wait until the last race of the year, in Abu Dhabi, to secure the title, when he overcame another star of the championship, Sam Bird of team Russian Time.

"I still can't believe that I've won GP2, the second best championship in the world after F.1", declared Fabio Leimer, after being crowned champion of series promoted by Bruno Michel. *"There aren't many people who can say that they've won this competition. After the qualification session in Abu Dhabi I wasn't very happy because there was a problem with the car, we weren't as fast as we hoped, and Bird was in second place… But as soon as the race started I saw that Sam had stalled and managed to get past him, although I have to say I felt a bit sorry for him. Bird's a great guy, one of the nicest I've met on the track, he's totally honest and drives hard but fair. I think he deserved the win as much as me"*.


PIRELLI
BAUTRO


DANIIL
P1
2013

KVYAT'S MOVE

After a poor start in GP3, Daniil Kvyat gradually made up lost ground, winning the title in the decisive race in Abu Dhabi. An imperious progress that opened the doors to a career in F.1 after he was selected by Toro Rosso for next year's championship

Daniil Kvyat is not only a new name in F.1, but also in GP3. In fact, the young Russian from the Junior Red Bull program took everyone by surprise with his extraordinary recovery in the GP3 championship, which was featuring the new Dallara for the first time. The 19 year old Kvyat, a native of Moscow, but in recent years a resident of Rome, won three races and put together a series of good finishes during the second half of the season that made all the difference. The way he overtook Facundo Regalia was nothing short of arrogant and during the last weekend in Abu Dhabi, Kvyat wrapped up the championship in commanding style, taking pole position and winning the first race. And at the same time the doors opened on a potentially glittering career in F.1, when Red Bull took the decision to promote Daniil to the world championship by signing him up for the Toro Rosso team in place of Daniel Ricciardo, who has moved up to the main team as Sebastian Vettel's partner. *"We got off to a slow start in the championship; I found it hard to get to grips with the Pirelli tyres and the various vehicle trims. Then, at the collective test sessions in Budapest during the early stages of the championship, we realised how to solve the problem, and everything started to click. I also participated in the FIA F.3 European Championship and this helped me to gain experience on the track and increase my self-assurance. We dragged ourselves back into contention with Regalia and the other drivers in the general classification race after race, one step at a time, right up till the final race. Now I feel ready for F.1, I'm not anxious or afraid, in fact I'm convinced I'll be able to handle everything it throws at me".*


HOCKENHEIMRING
BADEN-WÜRTTEMBERG

Talking with Raffaele Marciello the Italian driver who won the 2013 F.3 Euro Series

MARCIELLO: "THE DALLARA F.3: A GREAT WAY TO LEARN!"

"That was impressive too, especially when you realise that the Dallara simulator is the same as the one they use at F.1 the top of the range"

If you had to name one driver who has demonstrated a truly extraordinary affinity with Dallara single-seaters in recent years, it would have to be Raffaele Marciello. The Italian driver from the Ferrari Driver Academy took the European F.3 championship by storm, with 12 pole positions, 13 victories and a further six podium finishes, but that's not all: once the season was over he also took part in the World Series and GP2 championships, where he immediately made an impact, achieving a series of fastest times on his debut. In addition to confirming Marciello's talent, these results also demonstrate his special feeling for the cars designed and built in Varano de' Melegari. We asked him for his impressions of the various different Dallara models he has been entrusted with over the past few months.

I don't suppose that there can be any doubt that the F.3 is your favourite car at the moment. Three seasons, and a prestigious title. What's your opinion of this car?
"I think it's fantastic, but don't take it from me, just look at the way that it has imposed itself on the market. From a driver's point of view there isn't another preparatory level car that comes near it; it offers by far the best training experience, especially for the way it teaches you to exploit the aerodynamic load. Both the chassis and the aerodynamics are over-dimensioned with respect to the power, and as a result it's possible to reach really impressive speeds on the curves".

So it's no coincidence that you had no trouble handling the F.Renault 3.5, which is probably the fastest of the "junior" single-seaters on the curves...
"Exactly, the F.3 prepares you so well in this sense that, when you make the switch to more powerful cars like the World Series, you feel as though you're ready...and you are! This doesn't mean I wasn't impressed with the F.Renault 3.5 at the outset, thanks to the aerodynamics and the tyres it's amazing how much grip there is. Perhaps the most difficult part is coming to terms with just how far the car will allow you to go, because at the beginning it doesn't seem possible".

And how did GP2 go?
"I developed a very good feeling with the GP2 too. On new tyres it's not so different from the World Series, although you do notice the slightly reduced load at high speeds, so you need to be a bit more careful. Obviously things start to change as the number of laps increases, because the Pirelli tyres wear out completely differently to the Michelins. However, as I say, on new tyres there's very little to choose between the two".

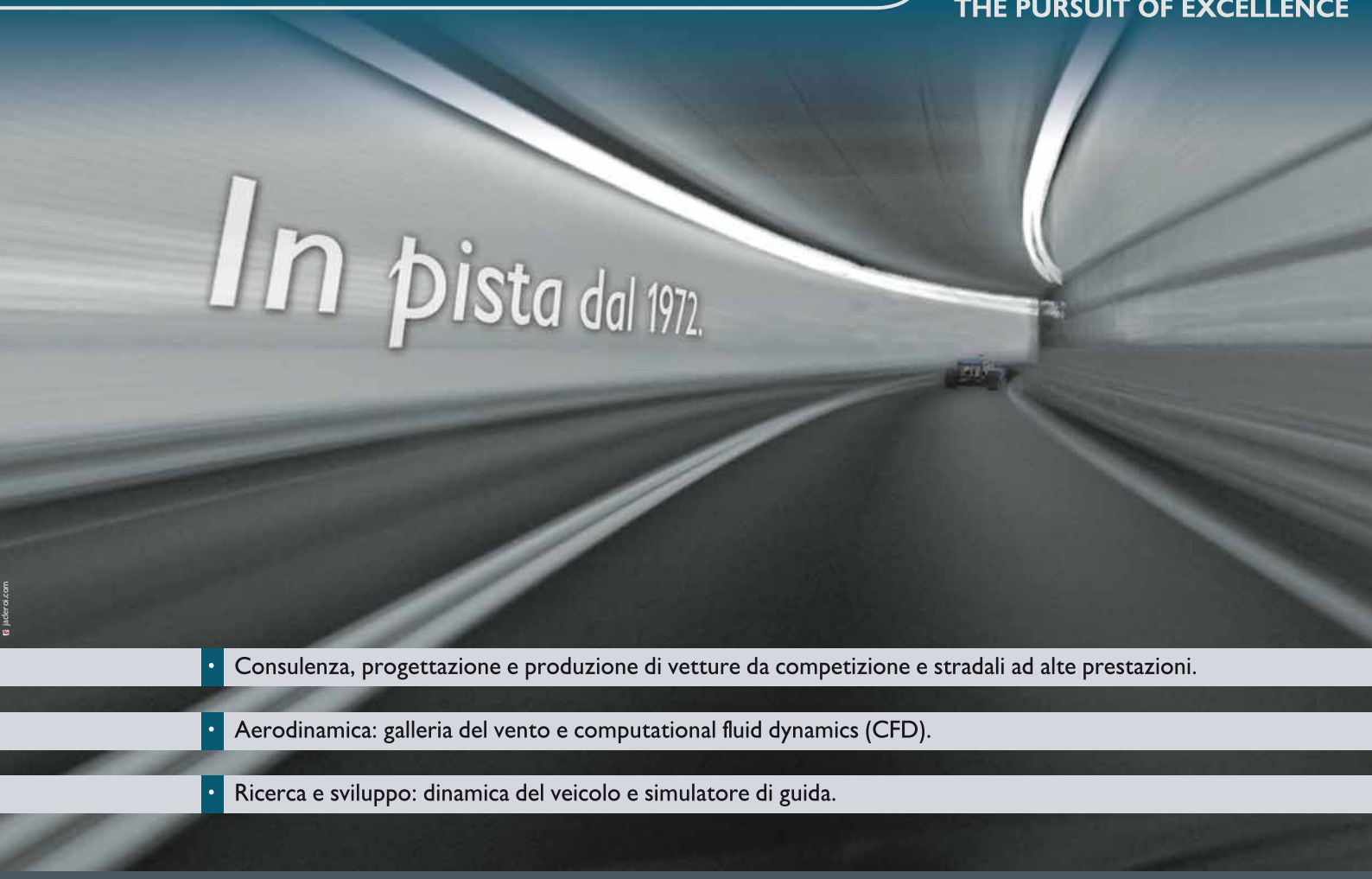
You've also been in the Dallara simulator, what was that like?
"That was impressive too, especially when you realise that the Dallara simulator is the same as the one they use at F.1 the top of the range. Unlike some other drivers, I don't suffer from 'seasickness' when I'm on board. Naturally, in order to reproduce the G forces of a single-seater, the hexapod has to move around a lot, and that takes a bit of getting used to, but after a coupe of days you don't notice it any more and you can concentrate on driving".

Massimo Costa

dallara

www.dallara.it

THE PURSUIT OF EXCELLENCE



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