

AUTOMOTIVE

HOW THE MOST
REFINED DREAM CARS
ARE CREATED AND
DEVELOPED AT VARANO



FORMULA 3

30 YEARS OF DALLARA WINNING EVERY
CHAMPIONSHIP IN THE WORLD:
WE FIND OUT THE STATS AND REASONS
BEHIND ALMOST 200 VICTORIES



THE FIRST BRICK WAS LAID FOR THE DALLARA FACTORY ON THE 16TH OF NOVEMBER, THIS IS WHERE THE NEW INDYCAR WILL BE CONSTRUCTED. A HISTORIC STEP IN THE EURO-AMERICAN COLLABORATION OF THE DESIGN AND PRODUCTION OF RACING CARS: 9000 CUBIC METRES, 80 WORK STATIONS, AND A CHANCE FOR THE PUBLIC TO LIVE THE THRILL OF THE RACE IN OUR NEW SIMULATOR

The first step has been taken. In Italy they say that the first stone has been laid, but in America they use the term “groundbreaking” for when a construction is started.

Tuesday 16th November at the Speedway, the area of Indianapolis that takes its name from the one hundred year old circuit. The entire IndyCar community celebrated the start of work on the construction of the new Dallara headquarters, where the 2012 IndyCar will be constructed. Drivers and ex-drivers, engineers, journalists, team managers, suppliers, local and national authorities, have all formally and warmly welcomed Dallara as the catalyst of the economic, technical and cultural renaissance that they have been waiting for.

The ceremony was simple and original, in real American style. A row of shovels available for about 30 important public figures: the Mayor of Indianapolis, the Vice Governor of the State of Indianapolis, the Hulman-George family and the managers of IndyCar Racing and the Indy Racing Experience and, in the dual role of guests and future hosts, the Dallara engineer and some of his close collaborators.

It is expected that there will be investment of around 7 million dollars to build an engineering centre that will be up and running within 12 months and will involve the recruitment of over 80 highly qualified engineers.

“It is a dream in the making”, said Stefano De Ponti, the director of Dallara business in the USA, talking about the achievements of the trans Atlantic collaboration in sports car



THE ADVENTURE HAS STARTED

design and production.

Dallara’s new headquarters is housed in a 9000 cubic metre space, with a grandstand view of the circuit and will be the centre of a large urban redevelopment project of the whole area, made possible by Scott Harris’s persistent work, he is director of the “Speedway Redevelopment Commission”. The circuit’s owners together with the whole of the local industry connected to motor racing, the State of Indiana and the City of Indianapolis, appointed this

commission which has put all its resources into revitalizing a highly technical, economic and cultural sector. The centre, complete with the very latest driving simulator, will be a catalyst for close collaborations with local universities and will include a zone dedicated to the construction of a new IndyCar and an area for the “Indy Racing Experience”, distributor of Dallara parts and promoter of initiatives relating to the IndyCar two-seater and “street legal”.



From left to right, **Andrea Toso**, Head of R&D and US Business Leader Dallara; **Stefano De Ponti**, US Director of Operations Dallara; **Paola Santini**, Italian honorary consul in Indianapolis; **Angelica Dallara**, President Dallara Engineering; **Andrea Pontremoli**, CEO and General Manager Dallara; **Gian Paolo Dallara**, President Dallara; **Joe Kennedy** and **Jeff Sinden**, Co-Owners of Indy Racing Experience (IRE), Dallara partner in the USA; **Sam Garrett**, U.S. Technical Liaison Dallara; **Father Phil**, Catholic chaplain of Indycar Series

Visitors to the centre will have: a permanent exhibition area, a theme restaurant, a gift shop, and there is an area reserved for business meetings. They will also be able to see how the cars are designed and assembled; they will be able to experiment with the driving simulator that the professional

drivers use, and travel at over 350 kmph around the curves of the nearby circuit. "Everyone can live the dream of driving an IndyCar" - Stefano De Ponti. A total experience, as Scott Jasek explained, one of the three members of Indy Racing Experience: "Anyone can bring their children, observe how the

IndyCar is assembled live, and even drive one, in a virtual environment that is very realistic, and then stop at the restaurant for a relaxing moment". A fundamental step in Dallara's 40 year history, driven by the discovery of new horizons and the development of innovative ideas.



200 TIMES

FERDINANDO CONCARI, FATHER OF F3, TALKS ABOUT A LIFETIME OF SUCCESSES



DALLARA

HISTORY,
ANECDOTES,
THE DIFFICULT
COMPETITION WITH
BRITISH MARQUES,
FUTURE
CHALLENGES



He loves skiing and more recently he has come to love the two wheeled method of transportation after he cycled from his home town, Fontanellato, near Parma, to Prague and then on to Kisslegg, the German village that is twinned with his town. Born in 1959, he has been with Dallara since 1984: almost a lifetime. He welcomes us into his work home, Dallara's technical office, where he is an icon to everybody and where everyone knows him as "Nando". Officially his name is Ferdinando Concari, mechanical engineer, who in his twenty-five years at Dallara has seen and worked on many cars together with his colleagues: from the chassis for the IRL, to his first F1 car in 1988; from the Ferrari SP333 to that which became his great love, Formula 3, for which he has been the head of design for many years now. Considered to be the driving school par excellence by the drivers, with a large number of today's F1 drivers passing through F3, it has almost become an obligatory step in order to be competitive on the big stage: someone perhaps exaggerated by saying that missing Formula 3 is like going to university without ever attending secondary school. For Dallara it was a starting point, their key to success and perhaps their quintessential car, together with IRL. With the engineer Concari we attempted to count up the championships won by the Italian single-seater, and including the 2010 championship we counted 142, amongst which are 26 Italian titles, 18 British, 18 German, 16 Japanese and 13 French. Not including the international races such as Macao and Monaco, the Zandvoort masters and the Korean GP, that total 54. If we include those too we are approaching 200 victories for Dallara. Thanks to these results the business from Parma has been able to conquer 90% of the world market, almost becoming a monopoly.



Engineer Concari, almost 200 successes achieved throughout the world. An important and impressive milestone. Can you remember the first and who was involved?

"It started in Italy, entering in the 1978 championship. In 1980 there was the first victory with the Tuscan driver, Guido Pardini in a Dallara car with a Toyota engine".

When did Dallara begin to take the lead with respect to the competition?

"Probably with the planning and

construction of the first carbon car in 1985, it was one of the first cars to be completely developed using a wind tunnel. That car, driven by the swiss driver, won the Italian championship. A championship that we have won ever since, from 1985 until today, with the "break" that we took in 1990".

Historically, which is the most prestigious championship?

"Definitely the British one, it is also one of the most difficult to win. The Euro Series was born in 2004, for a time it had the



“STILL TODAY, EVERYBODY CONSIDERS F3 TO BE THE BEST DRIVING SCHOOL AND ALSO A GREAT TEST BENCH FOR THE TEAM AND RACE ENGINEERS. IT HAS BEEN SAID THAT THE FIA IS THINKING ABOUT AN F3 INTERNATIONAL, A SMALL WORLD CHAMPIONSHIP THAT IS MADE UP FROM THE GREAT CLASSICS. IT SEEMS UNLIKELY THAT THE SUN WILL SET ON THIS SERIES”



strength to overtake the British, in terms of profile, competition and competitiveness”.

Was it difficult to “conquer” Great Britain, the home of racing, fighting marques such as Reynard, Ralt, Lola and perhaps with a bit of skepticism towards an Italian brand?

“Yes, honestly it was not easy. In the Italian championship, up until 1985 there was Ralt and Reynard. After our Italian victory in 1985, we began to “conquer” abroad. In 1986 we sold the first cars in France and Germany. In 1987 we won the championships both in France and Germany. From there, the rest of the world. Despite our successes, no British team wanted to buy an Italian car. Until 1993, when the driver Warren Hughes bought a Dallara F393, which had the highest levels in aerodynamics, and started to win races. The other teams were “forced” to buy Dallaras in order to remain competitive and from that moment the British stronghold was broken”.

Who is the most highly respected competitor for Dallara?

“All the competitors must be respected. First there was Ralt and Reynard, then Martini, Lola, Tom’s and the Dome. In more recent years the competitive element has been represented by the French constructor, Mygale. There is always someone to keep your eye on, and so we try to always stay one step ahead of the field, in terms of innovation and customer care”.

Was it difficult to enter the F3 Japan market?

“It wasn’t easy. We sold our first car to a team with a Nissan engine in 1988. Then in 1989 there was another team with a Honda engine. Up until 1994 we fought against the Tom’s team, with a Toyota engine, which gave us a hard time. With the change in regulations in 1995, the Tom’s team decided not to continue and invest in the car and they bought a Dallara. Dome then became the main competitor between 2000 and



2005, before they too chose a Dallara”.

What is the future of F3, as seen by Dallara?

“Everyone still thinks of it as the best driving school and a great test bench for teams and race engineers; in setting up the car, many modifications are made possible, and many parts are available (wings, nose cones, etc.) Despite the crisis in the Euro Series, there are no signs that it is in decline. It has been said that the FIA is thinking about an F3 international series, a small world championship that would encompass the classic series. It is hard to imagine the sun setting on the series”.

It is also difficult to believe that Ferdinando Concari’s work and professionalism will come to an end at Dallara, as he is up to his neck with the work for the design of the new 2012 F3, no details of which have yet been unveiled. We bid farewell to Concari, known to everyone at Dallara as “the Nando”, a great engineer in the history of F3, with 25 years of experience and a knowledge of the car that very few others are able to claim. For Dallara, more victories are expected, and the 200th win is not very far way.

Alessandro Santini



Il palmares

142 NATIONAL CHAMPIONSHIPS

- 26 ITALY**
- 13 FRENCH**
- 18 GERMANY**
- 18 GREAT BRITAIN**
- 12 SUISSE**
- 16 JAPAN**
- 17 SOUTH AMERICA**
- 8 CZECH REPUBLIC**
- 6 RUSSIA**
- 8 EURO SERIES**

54 INTERNATIONAL RACES

- 8 MONACO GP**
- 19 MACAO GP**
- 20 MASTERS**
- 7 KOREAN GP**



BETWEEN VIA EMILIA

DALLARA HAS NOT ONLY TRIUMPHED IN EUROPE BUT ALSO IN SOME OF THE MORE “EXOTIC” CHAMPIONSHIPS, FROM THE AUSTRALIA TO JAPAN, NOT TO MENTION SOUTH AMERICA

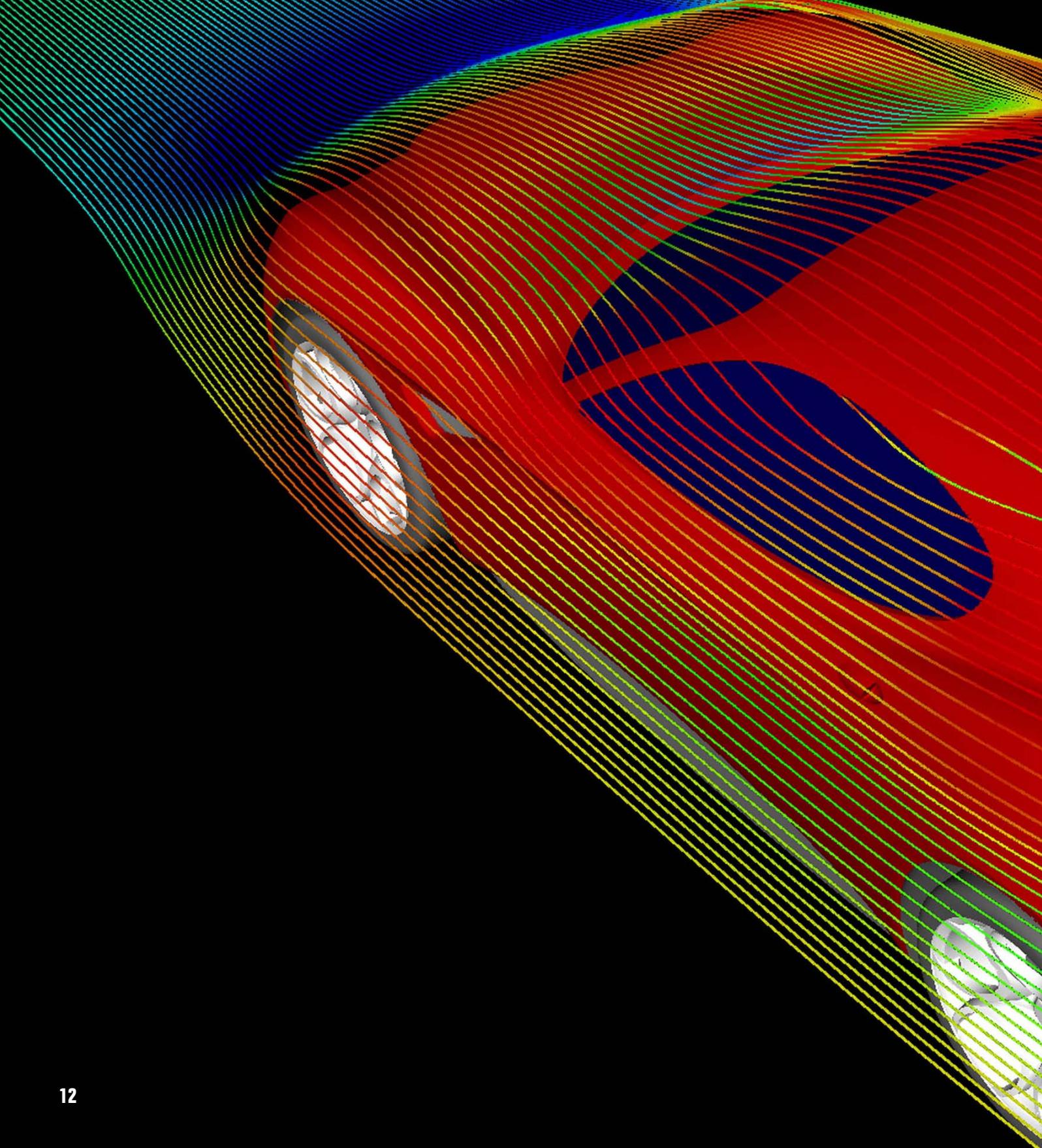
It is not only in Europe that Dallara has monopolised the various F3 championships. The training category single-seaters, which are made in an Italian factory, are filling starting grids the world over: Asia, Australasia and South America. F3 disappeared from Asia at the end of 2008, where all the cars were Dallara anyway, only the most important remains, the Japanese F3 championship. An important championship, created in 1979 out of a semi official partnership between Honda and Toyota, with Nissan appearing in a private role. On the track the Dallara 309 and 306 joined together in the National Class for a total of twenty drivers. The 2010 title went to Yuji Kunimoto, the brother of Keisuke who was already a fixture in the category and at Macau two years ago. Moving south we come to the Australian Championship. It was started in 2006, and has always included the Dallara, models 307

and 304, powered by many different engines such as, Mercedes, Mugen, Renault, Renault- Sodemo and Opel-Spiess. The championship has seen a drop in the number of competitors, it now has less than ten. The championship final was an emotional affair, the title being won at the very last race at Sandown Park, Melbourne by Ben Barker who only beat his closest rival Mitch Evans by half a second. Since 1987 we have had the F3 Sudamerica that includes Brazil, Argentina and Uruguay and has always had Dallara as its main point of reference. The championship has the unique Berta-Ford for an engine, giving 255 horsepower to the cars, the most powerful engine in F3. The 2010 championship (15 drivers on the grid) has been won by Yann Cunha, but the honor roll is full of names that graduated to F1, such as Cristian Fittipaldi, Ricardo Zonta and Nelson Piquet junior.



ALIA AND THE WEST







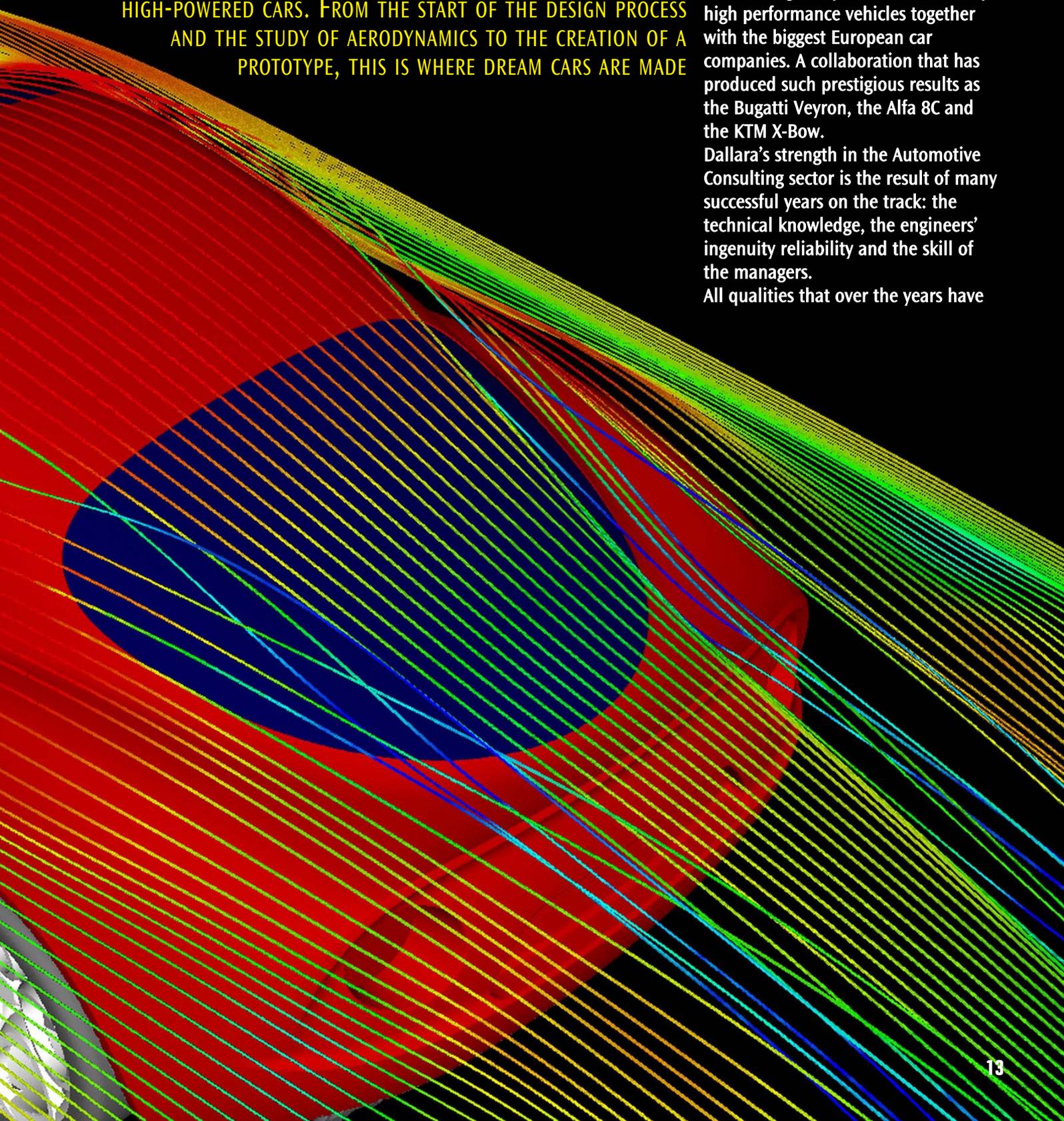
REVOLUTIONARY ROAD

FOR TEN YEARS DALLARA'S GREAT EXPERIENCE AND REFINED KNOW-HOW HAS ALSO BEEN AT THE SERVICE OF EUROPE'S BIG CAR BRANDS WHO ENTRUST THE ITALIAN FACTORY WITH THE DEVELOPMENT OF THEIR HIGH-POWERED CARS. FROM THE START OF THE DESIGN PROCESS AND THE STUDY OF AERODYNAMICS TO THE CREATION OF A PROTOTYPE, THIS IS WHERE DREAM CARS ARE MADE

Dallara appeared on the road car sector ten years ago, bringing its experience from the world of track racing. They decided to develop high performance vehicles together with the biggest European car companies. A collaboration that has produced such prestigious results as the Bugatti Veyron, the Alfa 8C and the KTM X-Bow.

Dallara's strength in the Automotive Consulting sector is the result of many successful years on the track: the technical knowledge, the engineers' ingenuity reliability and the skill of the managers.

All qualities that over the years have





made it possible to have close and strong ties with the brands of absolute excellence.

Every one of Dallara's clients in the Automotive Consulting sector benefits from a specific programme that is set up and planned through a series of meetings. At the beginning you can choose if you want to be involved in every step of the decision making process or simply pick up the final product at a prearranged deadline. According to Dallara's proven philosophy, only a constant and confidential relationship can produce the results of complete satisfaction and absolute quality, results that are always the aim of the Italian company. It is for this reason that Dallara made a big leap forward, earning itself the System of Business Management certificate ISO 9001.

The "plot development" of every single project starts with study of style, then the definition of technical content and performance, and finishes with the production of a working prototype. All of this in an environment of absolute confidentiality that includes planning offices and assembly areas with controlled access.

Dallara is able to provide project management services tailor-made to the needs of the client. This starts with the management of internal business but can be extended to global planning coordination of the project and management of the technical partners and all the problems associated with suppliers.

Thanks to the large and detailed database the business has at its disposal, the planning team is able to quickly find the best components and materials for the nature of the product. Thanks to the availability of

the best possible software on the market, the Dallara engineers are able to work through the various phases of the project with FEM structural analysis (Finite Element Method). In recent years the use of full scale models in carbon have allowed for the simulation of the crash, the value of which has been confirmed in track testing, both in Europe and America. As for the aerodynamic development of road cars, the starting point is a study of the style that must combine characteristics of the brand and considerations of the market. The next step is looking at the comfort and performance. Thanks to our experience in experimenting, the availability of the wind tunnel and the CFD technology, the Dallara engineers are able to provide low cost packages of aerodynamics development in a short amount of time, finding the best solutions for testing and production. The analysis and simulation of vehicle performance is one of Dallara's strong points. Help comes from the "multi body" codes: a vast archive of load spectra, geometry, suspension yield, tyre characteristics, inertial and aerodynamic parameters that for over fifteen years has allowed the engineers to design a complete car at the computer. It is even possible to analyse the dynamics and safety of the vehicle in emergency situations, or simulate every detail of a maneuver such as changing lanes, breaking, releasing the accelerator on the curve; extending the performance analysis over an entire lap or particular piece of road.

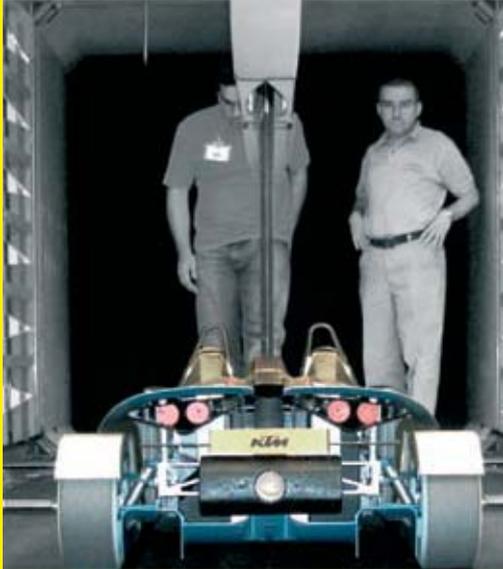
Thanks to the technology park that has features ranging from carpentry to the latest numerical control machines, Dallara is finally able to quickly create

working prototypes. The natural complement to planning and simulation is the vehicle development both in the laboratory and on the road. There is no simulator that can exactly match reality; therefore Dallara constantly compares the data obtained by the analysis with that coming from the track or road; or on the road with highly professional and sophisticated sensory equipment.

The quality of production is constantly verified, through an accurate process of control of the pieces produced, thanks to the latest measurement systems. Over the years Dallara has developed the elastomeric characteristics of the vehicles with this laboratory measuring process, which is both quick and precise. Thanks to a special "seven post" bank for carrying out fatigue tests on single components or wheel groups, tests for resistance and rigidity can be conducted; whilst the relationship with the most important European test centres allows Dallara to choose the best test solution in relation to the demands for development, organising and managing (on request) the whole experimentation session.



Dallara Automotive Services



Project Management

- *Setting up the project and definition of technical details*
- *Concept design and finalization*
- *Suspension, chassis and body*
- *Energy absorbing structure*
- *Packaging of systems (brakes, fuel)*
- *Power unit installation*
- *Base specifications and manuals*

Structural Analyses

- *Static and moving crash test study*
- *Simulation of misuse test*
- *Component dimension and fatigue levels*
- *Reaching the rigidity parameters and preset values of frequency*



Aerodynamic Development

- *Study of style*
- *Aerodynamic development packages at low cost with test in wind tunnel and CFD (Computational Fluid Dynamics) technology*
- *Thermal Analysis, acoustics and comfort aerodynamics*
- *Reverse Engineering*



Vehicle dynamics

- *Use of the Multi-body codes*
- *Methodology of elasto-dynamics*
- *Simulation of complex maneuvers*
- *Simulation of a full circuit of track or a prefixed piece of road*

Making Prototypes

- *Making working prototypes in brief time periods*
- *Dimensional and qualitative control of the pieces produced*

Vehicle development in the laboratory and on the track

- *Elasto-dynamics measurements of the vehicle*
- *Rigidity and resistance tests on the "seven post" bank*
- *Comparison of laboratory data with that from the track and road*
- *Management and organisation of the experimental session*





AND THE WINNER

“And the winner is... Dallara!”

No, we are not at the Oscars but instead at SMAU business fair in Milan. From the 20th to the 22nd of October it has hosted the 47th event, which is the main Italian fair dedicated to Information & Communication Technology (ICT). As always, there was a full house this year, with around 50,000 visitors flooding the hall for the three days of meetings between suppliers of technological solutions, the world of business and public administration, with a calendar of educational and informative events (over 300 workshops and 600 speakers). A platform that is also a continuous showroom, where the visitor can touch over 100 new products, representing the best in ICT solutions and innovations, with companies as important as Adobe, Canon, Cisco, Dell, Epson, Fastweb, Fujitsu, Google Enterprise, HP, IBM, Intel, Intesa Sanpaolo, Microsoft, Olivetti, Oracle,

Samsung, Sap, Sony, Toshiba, Unicredit and many more. SMAUA, in collaboration with Milan Polytechnic, decided to put the “ICT Prize for Innovation” at the heart of its inaugural event. In this way the spotlights have been turned on the real innovators, that is the Italian companies and public bodies who, thanks to their investment, have won the challenge and the market, innovating a successful business with digital technology and generating a virtuous mechanism for sharing the experience of excellence. There were over 200 finalists selected, subdivided into 16 categories, from IT architecture to business intelligence, from buying to human resources, from retail to marketing. Presented by Sergio Terzi from Milan Polytechnic’s School of Management and handed over by the president of the fair, Ferruccio Macola, the prize for ICT innovation in planning and

design went to Dallara, together with the electrical appliance manufacturer, Indesit. The official explanation went like this: *“For the technological excellence in the service of continual innovation, ready to push the boundaries of virtual technology, to radically modify its own operating processes and open new lines of business”*. We went to find Dallara’s CEO, and the ex-CEO of IBM, the engineer Andrea Pontremoli, who has almost made innovation and technology his reasons for living.

Engineer, in your opinion what are the reasons that made SMAU choose Dallara?

“We have grown and are growing a lot in the ICT field. We have invested, innovating, in many directions. In the car’s construction, we work around four virtual models: the vehicle dynamics, the aerodynamics with



RIS...

AT THE SMAU BUSINESS FAIR IN MILAN,

DALLARA IS JUDGING THE PRIZE FOR ICT INNOVATION

Working with competence and know-how we used conventional ICT equipment in an innovative manner, greatly limiting the cost whilst obtaining great results”.

In which other areas are you working?

“In the analysis of fluid dynamics (CFD) and the analysis of structural dynamics (FEM) through High Performance Computing (HPC) systems we have drastically reduced the calculation time. For example, we needed just five days and one night for the analysis of a non linear crash. For aerodynamics and the sessions in the wind tunnel, by using an Excel file we were able to utilize a system for analysing data and sharing information with a common database, completely developed around our needs. Finally, for the management of corporate knowledge as a whole, we have recently installed a platform that will allow for the reorganisation and management

of all our know-how and will be able to control data and product processes at every stage of the life cycle. The aim is to transform ‘scattered’ business data (numbers, dates, names) into information (texts, documents, images) and then through the technology and collaborations with people to extract meaningful knowledge (patterns, concepts) and finally produce competence and capacity for action”.

How do you think you will manage it, keeping these elements together?

“The project is called ‘Collaboration’ and the aim is to put together structures, strategies and instruments in order to promote communication and information sharing throughout the business. And to ‘trigger’ these virtuous circles we will start by working with the informatics, the technology and the Web 2.0 philosophy”.

CFD, structural analysis and design with CAD. Our latest “invention” is a driving simulator of the latest generation, an investment of around ten million Euros. Whilst the “traditional” car is driven by a pilot in the flesh, who will have the same sensations as on the track, driving the car before it has been constructed. The engineers will then modify the car’s design in accordance with the sensations the driver has in the simulator; it will be as if the car has already been tested. The platform has been implemented through the use of hardware that was developed together with an open source software partner, then developed and personalised internally by our young team of engineers.

Interesting. But what has it all got to do with racing cars?

“Our intentions are to use the virtual models I described and the innovations implemented in the ICT field to support the design and planning, and therefore allow our engineers to construct a complete and integrated virtual model of the car, to understand how the prototype will appear and perform, before any of the components are produced”. If, as John Maynard Keynes said, *“The difficulty lies, not in the new ideas, but in escaping from the old ones”*, here at Dallara the feeling is that there is very little of the old ideas.



Alessandro Santini

dallara

www.dallara.it

THE PURSUIT OF EXCELLENCE

On the road since 1972.

- Consultancies, design and production of racing cars and high performance road cars.
- Aerodynamics: wind tunnel and computational fluid dynamics (CFD).
- Research & development: vehicle dynamics and driving simulator.



www.dallara.it