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BMW AG Presse

24-Hours of Le Mans

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The 1999 BMW Motorsport Programme

Concentration on Formula 1 and sportscars

Munich. The new BMW V12 LMR sportscar and the test programme for the BMW Formula 1 engine are the main focal points of the BMW Motorsport Programme in 1999. The highlight of the sportscar programme is the legendary 24-Hour Race in Le Mans on 12/13 June.

The Le Mans roadster, which was developed and built by BMW Motorsport Limited in England, saw a successful racing debut, winning the 12-Hours of Sebring. This race in Florida marked the start of the new American Le Mans Series. The ALMS offers further deployment possibilities for the BMW V12 LMR in the USA, the most important foreign market for BMW.

"Our programme has become leaner and at the same time more ambitious," says BMW Motorsport Director Gerhard Berger. "We are concentrating on top international sport, whilst the return to Formula 1 with the BMW Williams has top priority in this respect."

The test programme for the Formula 1 engine for the year 2000, developed under the direction of Paul Rosche, is underway in 1999. The team from Munich is undertaking test drives in a '98 Williams chassis. The BMW Formula 1 test pilot is Jörg Müller (D).

Müller is at the same time BMW sportscar driver. Yannick Dalmas (F), Pierluigi Martini (I), Tom Kristensen (DK), JJ Lehto (FIN) and Joachim Winkelhock (D) will also race in Le Mans with the newly built BMW V12 LMR.

The BMW works drivers Bill Auberlen (USA) and Steve Soper (GB), together with Thomas Bscher in the Price+Bscher team, will be at the wheel of a modified 1998 BMW V12 Le Mans.

BMW Works driver Hans-Joachim Stuck has extensive commitments in the USA. He will race in the ALMS for BMW Team PTG as well as selected rounds of the United States Road Racing Championship in a BMW M3 in the GT category.

BMW will continue encouraging new talent in Germany, notably in the 'BMW ADAC Formula Junior Cup' and the 'BMW Formula ADAC Championship'. The new BMW 320i DTC was developed for client touring car sport at home and abroad. The car is based on the extended Group N regulations for the German Touring Car Challenge (DTC).

The 1999 BMW Engagement in Le Mans (resumé)

Our car, our team, our drivers

Munich. BMW will be deploying a works team for the third time in a row in the world's most famous and toughest endurance race, the Le Mans 24-Hours. BMW will be entering two new open sportscars.

The BMW V12 LMR (Le Mans Roadster) was developed by BMW Motorsport Limited in Grove in England. The V12, which produces about 580 hp, is based on the engine that had already powered a McLaren BMW to a Le Mans victory in 1995. The engine was further developed in Munich.

BMW Motorsport Director Gerhard Berger remains respectful with regards to the race: "We have a strong driver pack and an excellent team. The BMW V12 LMR has fulfilled an extensive test programme and won the 12-Hours of Sebring in America in March. The competition however, will be turned out in full strength in Le Mans. A car which wins in Le Mans has to be the quickest amongst this elite group and must be reliable down to the very last nut and bolt."

BMW Motorsport will be taking part in Le Mans under the direction of Charly Lamm. The 44 year-old has earned fame as race strategist with BMW Team Schnitzer. The team has won the 24-Hours of Spa-Francorchamps (B) five times under his leadership. The first time was in 1985, when Gerhard Berger took the flag in a BMW 635 CSi.

The drivers of the international BMW driver crew share a total of 21 Le Mans starts and five victories between them. The most experienced and most successful amongst them is the Frenchman Yannick Dalmas, who has taken part eight times, with three wins, one second and one third place to his name. He will be sharing the cockpit of the new roadster with the Italian Pierluigi Martini (four starts) and Joachim Winkelhock (D). The German came to Le Mans for the first time as a driver in 1998, but failed to start due to the early BMW withdrawal.

JJ Lehto boasts the greatest number of starts in Le Mans amongst the trio which share the second BMW V12 LMR. He has taken part five times to date, winning the event in 1995 in a McLaren BMW, which he shared with Dalmas by the way. Lehto's partners this year, Tom Kristensen (DK) and the German Jörg Müller, both raced in Le Mans in 1997 and '98. Kristensen celebrated an overall victory at his very first attempt in 1997, with Müller taking second place last year.

Fascination Le Mans

A race of singular dimensions

Le Mans - a race of singular dimensions. Everything is a little different in Le Mans compared to other sportscar races. The straights are longer, the velocities higher, the night shorter, the light warmer. Emotions shoot to extremes - ecstatic joy, deep sadness. Hopes, which a second ago were still being upheld, are dashed in an instant.

The bliss of success is not only reserved for the victor who sees the chequered flag. Le Mans is a marathon and the same rules apply here: each person who gets through this ordeal is a winner. Those whose vehicle gives up the ghost just before flagfall are hailed as martyrs.

The schedule is of course also special: The event lasts a whole week. Monday and Tuesday is scrutineering; Wednesday and Thursday is free practice which also takes place at night. Friday is a day of rest - for the cars at least. The mechanics in the garages work intensively on the vehicles, whilst the driver parade through the city takes place in the evening.

Some things in Le Mans are just plain different, scrutineering for example. Elsewhere, this is a seriously sober undertaking in secluded buildings. In Le Mans however, it is a public event which takes place at the centre of the city. The only persons who seem totally unimpressed by this street party atmosphere are the technical stewards, who inspect the racing cars for conformity of regulations thoroughly and with obvious seriousness.

The long awaited start and the short night

The spectators have all arrived by Saturday. Last year, about 185,000 people experienced the race on the track-side, whilst viewers in 156 countries followed the event on television.

The start is at 16:00 hours - a long awaited moment for the drivers and the teams. They are finally off! The tension peaks for the first time - the first two hours are observed with the attention of those watching a sprint. Then, after about two hours and after the second pit-stop, when a Formula 1 race would normally already be over, everyone becomes conscious of the effort this race is going to cost.

Many cars have already retired by the time dusk falls. Disappointed mechanics pack up behind closed garage doors. When dusk turns to night,

the time has come for the best drivers to show their metal. It is then that the race cars are transformed eerily into cones of light that fly, ghostlike, along the darkened track. Sleep is a matter of grabbing a nap for a minute or two - everywhere on the circuit. The critical phase however, is the hour when dawn threatens to break. There is not enough daylight to rouse tired souls; concentration is at its lowest.

A Sunday morning in Le Mans is special: the cars are filthy, the bodywork scarred, people wander around, faces unshaven, wrecked hairstyles and creased clothing.

The long way from dawn to the chequered flag

The time from seven o'clock in the morning till flagfall at 4:00 p.m. seems like a small eternity. One has survived the night - but not even two-thirds of the race yet. Even at noon on Sunday, the cars still face a longer race distance than two Formula 1 Grand Prix.

The computer readings in the pits are checked over and over again. Even the best engineers begin to mistrust their own eyes. The drivers listen attentively to their cars, trying to make out the slightest unusual sound - concerned about a possible defect at this stage in the race. Their teammates are just as anxious; after all it is also their car which their colleague is thrashing round the track.

Just before 16:00 hours: the final lap has begun. It is rare for a 24-hour race to end in a photo-finish. In 1966 however, the two Ford-Teams of Amon/ Mc-Laren and Miles/Hulme were only separated by a quarter of a second as they crossed the finish line. A fight for position, let alone first place, right up to the chequered flag is however the exception.

The ritual at the end of the race, which is the rule, is heart-warming: the pilots slow down, waiting for each other - a great gesture which is also a part of Le Mans. Those who have a door, now open it, the drivers wave to the crowd, which is obviously moved by this spectacle. Thousands flood the track, cheering the winners and hunting for trophies. The traffic jam leaving the circuit is an opportunity to meet one last time. Au revoir, see you next year.

Facts Worth Knowing About the Present Day and Yesteryear

Historical Dates

The first 24 hour race was instigated by the Frenchmen Charles Faroux and Georges Durand. The winners covered a distance of 2,209 kilometres at an average speed of 92.064 km/h. 1999 will see the 67th edition of the 24-Hours of Le Mans. The most successful Le Mans race driver of all time is the Belgian Jacky Ickx, with six victories to his name.

From 1925 to 1969, the Le Mans start was implemented, in which the drivers ran to their vehicles which were parked across the track from them. 1970 saw the drivers already in their cars waiting for a standing start. Since 1971, the race has been set off with a flying start.

The circuit was shortened in 1929 from its original 17.262 km to 16.30 km, and again in 1932 to 13.492 km. The present and tenth variation of the "Circuit des 24 Heures" measures 13.60 km and has been used since 1990. The 5.475 km long Hunaudières straight was split into thirds by two chicanes in 1990, in order to reduce the top speed.

The first and longest section is about two kilometres long. The cars reach their highest velocities here, the fastest ones travelling at more than 330 km/h.

Grid positions and categorisation

The organiser, l'Automobile Club de l'Ouest (A.C.O.), has had many more candidates than the available number of places on the grid for many years now. In order to select the 48 contenders, a prequalifying session is held about five weeks before the race.

Open sportscars contend with coupés in Le Mans for the overall victory and the win in the respective categories. Only cars in the categories 'Le Mans-Prototypes' (LM P - open-top) and 'Le Mans GT-Prototypes' (LM GTP - coupés) have a realistic chance of an overall win. What is new, is the recategorisation of the vehicles which until recently were referred to as GT1 cars into GT Prototypes.

The BMW V12 LMR will be starting in the open-top Le Mans Prototype class, with a minimum weight of 900 kilograms.

Technical Description of the BMW V12 LMR

Compromise between maximum performance and reliability

The BMW V12 LMR is an open-top two-seater Le Mans sportscar powered by a rear-mounted BMW V12 engine - which is more or less all it has in common with the 1998 BMW Le Mans sportscar. BMW will be starting at the 24-Hours of Le Mans in 1999, taking on one of the greatest motorsport challenges with a new construction.

"Building a racing car for Le Mans is extremely difficult and therefor especially enticing for our engineers," says Dr. Mario Theissen, who heads BMW Motorsports and who is responsible for technology. "These days Le Mans is driven like a sprint: every lap at the limit for 24 hours. It is the special task of the engineers to find the optimal compromise between maximum performance and long-distance reliability."

The new sportscar is the first project which evolved at BMW Motorsport Ltd. in Grove in England. The new buildings were moved into in the summer of '98. The machine works are at Formula 1 level and include the equipment for the production of carbon-fibre body parts. "In this way," continued Dr. Theissen, "the percentage of self-produced parts in our car is very high, with very little having been out-sourced."

Theissen's colleague, Dr. Ulrich Schiefer directed and co-ordinated the project. He is in charge of motorsport technology excepting Formula 1. The Briton, John Russell, is Chief Engineer for the car, whilst Herbert Vögele is responsible for the engine development in Munich. "Our V12 is based on a series engine," says Theissen, "which is actually a handicap for racing. Herbert Vögele has nevertheless managed to make considerable improvements over last year's unit."

A brief history of the development

The concept phase for the new roadster began in July 1998. The new components, mainly aerodynamic parts and axle-concepts, were tested on the '98 chassis. The tests were driven by Tom Kristensen, Pierluigi Martini, Steve Soper and Hans-Joachim Stuck. The aerodynamics of the new car were developed parallel to these tests and are based on results obtained from 1:2 scale models in the BMW partner Williams F1 windtunnel.

The chassis design was completed at the end of October and the body shell design a month later. The construction of chassis No. 1 was commenced on 27 December, with the roll-out taking place in mid-January in

England. Tests in Jarama, Le Castellet, Miramas and Homestead, USA were followed by a race which served as a test of strength. Tom Kristensen/JJ Lehto/Jörg Müller won the 12-Hour Race on the extremely uneven circuit of Sebring, in Florida, on 20 March.

Vehicle concept and construction

The body shell of the BMW V12 LMR, which weighs in at 900 kilograms, consists mainly of five carbon fibre panels. Once one removes the service-friendly front and rear ends, only the side panels remain, allowing an unhindered view of the carbon fibre monocoque with the front mounted crash box.

This self-supporting structure encloses the cockpit and the integrated safety fuel tank behind it. The capacity of the rubber fuel cell is restricted to 90 litres by the regulations.

Behind the tank and the rear wall of the monocoque, a Z-frame and shear-plate, which are united with the engine and gear box, form a structural unit.

The six speed gear box, built by BMW Motorsport Ltd., is situated transversally behind the engine. The gear change is sequential and operated by a stick shift; automatic gearboxes are forbidden by the regulations. The entire unit is lighter and more compact than that used in 1998.

Suspension - construction and development

The connection of the rear axle drive is integrated in the magnesium gear box housing, which defines the housing as a structural unit. The front end components are mounted directly onto the monocoque.

The BMW V12 LMR is fitted both front and rear with twin-wishbone axles. Pushrods operate the shock absorbers via rocker arms. Carbon fibre brakes make sure that the car comes to a halt in Formula 1 style.

The vehicle kinematics are computer-simulated in the development phase and then tested with the entire vehicle on a kinematics test-bed. The finite-element method was used to optimise all the car's structural components when it came to defining the different parts of the vehicle. This means that the different items are computer-tested with regard to tension and deformation, whilst being represented by simplified elements of finite dimension.

Aerodynamics - all about downforce and cool air

The conflict is as natural as physics itself: high downforce stabilises the car's handling and allows high cornering speeds. On the other hand, it also creates high drag, resulting in loss of top-speed and also a higher rate of fuel consumption. Drag has to be kept as low as possible in Le Mans, which is why the front of the BMW V12 LMR was designed with the aim of reducing the amount of area 'in the wind' to a minimum. No detail was deemed so small as to be irrelevant. For example, Pierluigi Martini fits behind a smaller polycarbonate windshield than one of his bigger colleagues.

It is also necessary to produce as little drag as possible whilst channelling cold air under the car. Lift should be avoided at all costs. Air to cool the brakes flows in through the intakes on either side of the BMW 'kidney', whilst the intakes on the left and right hand side, between the wheel arches and the monocoque, supply the engine with cooling air.

Viewed from above, the radiators are situated in a 'V' form near the middle of the car, to the right and the left and in front of the engine. The air vents in the typical BMW 'kidney' can be opened in order to take in additional air to cool the electronics if required. Talking about typical: the front lights are BMW twin-headlamp units with Xenon beams.

Form follows function - asymmetrical Design

The motor aspirates fresh air through the periscope-style air-intake on the driver's right hand side. This asymmetrical solution is part of the entire asymmetrical concept which is reflected in many details. This is in turn a consistent implementation of the regulations, which stipulates an off-centre position for the driver.

The changes in the technical regulations from 1998 to 1999 have affected more or less every aspect. "Which is why the parities of the engine and vehicle have been entirely readdressed," says Dr. Theissen. "Despite extensive simulations, the race will show in the end which concept prevails."

Technical Specifications of the BMW V12 LMR

Length:	4,650 mm
Width:	2,000 mm
Height:	1,020 mm
Wheelbase:	2,790 mm
Track width:	front: 1,641 mm, rear: 1,596 mm
Car weight:	900 kilograms (minimum weight according to regulations)
Tank capacity:	90 litres (stipulated by regulations)
Chassis:	one-piece carbon-fibre tub with aluminium mounting brackets for the attachment of all subsidiaries, e.g. front axle and roll bar, fixed into the honeycomb structure. front-end crashbox bolted onto the chassis; sectioned carbon-fibre body shell; two-part rear-wing (mounting points cast onto gear-box housing). Engine and gearbox in structural sub-frame bolted to chassis; fuel tank between cockpit and engine, two pre-delivery and two high-pressure fuel pumps
Drive train/ gearbox:	rear-wheel drive; transverse, sequential six-speed gearbox, straight-toothed gears, magnesium housing; gearbox oil-cooler in water-cooling duct; steel drive shafts; limited-slip differential, four-plate carbon fibre clutch
Front axle:	twin-wishbone axle, spring/shock absorber unit, operated by rocker arms and pushrods adjustable shock absorbers, welded steel uprights , Stabiliser
Rear axle:	mounting brackets cast onto gearbox housing; twin-wishbone axle, spring/shock absorber unit, operated by rocker arms and pushrods adjustable shock absorbers, welded steel uprights, stabiliser

Brake system:	six piston aluminium mono-block brake callipers, inner-vented carbon fibre brake discs, diameter front: 380 mm, rear: 335 mm
Steering:	rack and pinion steering with optional assisted steering
Electrics:	separate engine and vehicle wiring harness; all instrumental and operational units positioned in cockpit or chassis 4 x 150 mm XENON main headlamps; radio communication
Wheels:	OZ-Magnesium rims, 18 inch diameter, width front: 13 inch, width rear: 14.5 inch;
Tyres:	Michelin race tyres, front: 33/65-18, rear: 36/71-18

The BMW V12

Riding with a Le Mans winner

Engine development for Le Mans, just like vehicle development, is a balancing act. The aim is to maximise power and reliability, whilst minimising weight and fuel consumption. A BMW V12 engine, with a history of endurance experience, powers away at the back end of the BMW V12 LMR. The V12 achieved its greatest successes as the powerhouse of the McLaren BMW. This sportscar coupé won the 24-Hours of Le Mans in 1995, taking the BPR Series title in '95 and '96 and winning the GT1 category in Le Mans in 1997, not to mention having been runner-up in the FIA GT World Championship in that same year.

The current version of the V12 is considerably lighter and more compact. 15 kilograms have been trimmed off since 1998 - gram for gram and through meticulous detail work. This also resulted in a lower and therefor more advantageous centre of gravity.

In addition, gas exchange, friction coefficients and oil distribution as well as an extension of the motor management's functions were further improved, under the direction of Herbert Vögele. "All these factors together have optimised the power production of the unit," says Dr. Mario Theissen, "and also reduced the fuel consumption, which is a deciding factor in an endurance race."

The variable timing of the two overhead inlet camshafts was retained. The VANOS system is a great advantage with regards to fuel consumption and also has a positive effect on the torque development

The engine's air intake was entirely redrawn as part of the car's entire aerodynamic concept. The result is an asymmetrical air collector and the periscope-intake to the right hand side of the driver.

Two air-restrictors - each 32.9 millimetres in diameter

The volume of air that feeds the engine is restricted by so-called air-restrictors. These air-restrictors are specified by the regulations, their diameter depending on the engine concept, vehicle category, car weight and engine displacement. In this way, the A.C.O. hopes to minimise the differences in performance between the different motor and chassis concepts.

The normally aspirated six-litre BMW 12-cylinder engine is the powerhouse of a Le Mans prototype with a total weight of 900 kilograms. The V12 breathes in fresh air through two air-restrictors, each with a diameter of 32.9 millimetres. This results in a restriction of the engine's power from a potential 800 hp down to about 580 hp.

The specifications of the voluminous V12 hint at a long engine life. Top-ending at a maximum 8,000 revs/min, its peak torque of 670 Nm is already available at 4,500 revolutions per minute.

30 Le Mans endurance races on the test bed

The engine has to demonstrate its stamina on the test bed at every stage of development. The development module on which the construction of the race units is based, has to pass this test with over twice the distance of the Le Mans race.

The engines run on dynamic programmable test-benches in Munich in so-called operating-load drive simulations. The different loads which have been determined on various race tracks are emulated specific to individual track and deployment conditions, whilst taking into account the shortened time span factor, over which the tests are run.

In its different configurations, the BMW V12 has covered over 30 complete Le Mans distances on test benches, including the preparation for its very first Le Mans engagement in 1995. During its test period, the newest version of the V12 has also become aquainted with every engine revolution and load shift it would normally encounter on the 13.6 kilometre long circuit. "But even the best tests only add up to theory in the end," says Dr. Mario Theissen. "One cannot simulate the actual experience of a 24-hour race."

BMW V12 Motor Specification

Type:	normally aspirated V12
Cylinder angle:	60 degrees
Displacement:	5,990.50 cc
Bore x Stroke:	86 mm x 85.94 mm
Compression ratio:	13:1
Max. power:	approx. 580 bhp at 6500 rpm
Max. torque:	670 Nm at 4500 rpm
Max. revs:	8000 rpm
Block:	aluminium alloy with nikasil-coated cylinder liners
Pistons:	box-type pistons, forged
Con-rods:	titanium alloy
Cylinder head:	4 valves per cylinder
Camshaft casing:	magnesium alloy, carbon fibre cover
Valve drive:	4 overhead camshafts, driven by twin chains, mechanical tappets, adjustable valve timing (Vanos, infinitely adjustable)
Intake system:	twelve individual throttle butterflies, air collector made of carbon fibre
Air-restrictor:	2 air-restrictors, diameter: each 32.9 mm
Ignition system:	transistor coil ignition with twelve individual coils
Fuel system:	one injection nozzle per cylinder
Flywheel:	aluminium
Exhaust system:	fan-type manifold with flame tubes
Lubrication:	dry sump
Oil cooling:	oil and water heat exchanger
Fuel:	98 RON, unleaded
Motor management:	TAG-3.12 with oxygen sensor control, engine load determined via throttle butterfly angle and engine speed

Art and Motorsport

BMW Art Car by Jenny Holzer in Le Mans

Jenny Holzer, one of the greatest artists of this century, has swathed a BMW V12 LMR with her written art, creating the 15th Art Car of the BMW Art Car Collection. The car took part in prequalifying at the beginning of May in Le Mans and will be presented to the international public at the race in June.

Jenny Holzer, a concept artist born in 1950 in Ohio/USA, has attained world-wide recognition with her provocative text images. These represent a new and singular dimension in art. Jenny Holzer combines the medium of language with an object which she then places within a particular context. Her constructions and highly technological presentations, shining from walls and chiselled into stone, have gained a special standing in contemporary art.

This time, a BMW racing sportscar is to be the canvas for her statements. She intends to deliver surprising messages in a spectacular car race with this Art Car. "PROTECT ME FROM WHAT I WANT", Jenny Holzer's most famous statement, is to be part of her foray into the world of motorsports. The concept will be based on the traditional markings, colours and graphics of racing car design as part of its expressive character.

The idea of the BMW Art Cars thus returns to its origins in Le Mans. The American artist Alexander Calder transformed a BMW 3.0 CSL into an extravagant art-work on wheels for his friend, the art auctioneer and racing driver Hervé Poulain in 1975 in Le Mans. In the years that followed, this unique combination of motorsport and BMW design fascinated the most famous artists of our time. Frank Stella, Roy Lichtenstein and Andy Warhol have turned BMW racing sportscars into Art Cars. The spectrum of designated models widened in the '80s: the painted bodywork was no longer restricted to racing cars, but now encompassed above all BMW series models.

Following their premier presentation in front of international motorsports spectators, the BMW Art Cars could be contemplated in the world's most famous museums, amongst which are the Louvre in Paris, the Ludwig Museum in Cologne and the Solomon R. Guggenheim Museum in New York.

All the BMW Art Car artists in chronological order:

Alexander Calder (USA)	1975	BMW 3.0 CSL Race version
Frank Stella (USA)	1976	BMW 3.0 CSL Race version
Roy Lichtenstein (USA)	1977	BMW 320i Group 5 Race Version
Andy Warhol (USA)	1979	BMW M1 Group 4 Race Version
Ernst Fuchs (A)	1982	BMW 635 CSi
Robert Rauschenberg (USA)	1986	BMW 635 CSi
Michael Jagamara Nelson (AUS)	1989	BMW M3 Group A Race Version
Ken Done (AUS)	1989	BMW M3 Group A Race Version
Matazo Kayama (J)	1990	BMW 535i
César Manrique (E)	1990	BMW 730i
A.R. Penck (D)	1991	BMW Z1
Esther Mahlangu (ZA)	1991	BMW 525i
Sandro Chia (I)	1992	BMW Racing Touring Car Prototype
David Hockney (GB)	1995	BMW 850 Csi
Jenny Holzer (USA)	1999	BMW V12 LMR

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Yannick Dalmas

Monsieur Le Mans

Yannick Dalmas, eyes wide open, pours out his account of the practice laps to his engineers, accompanying his report with a rich vocabulary of gesticulative body language. During such moments, the lively Frenchman seems more like a Wall Street broker than an endurance racer. But the exterior excitement is counterpoint to an inner calm.

Yannick Dalmas has the stamina which an endurance driver needs. With three overall victories (1992, '94 and '95), as well as a second and third place to his name, he has earned a place amongst the most successful Le Mans drivers. His fellow countrymen call him 'Monsieur Le Mans'. He also won the Sportscar World Championship with Peugeot in 1992. "Victories are always the product of perfect team work," comments the 37 year-old. "To be able to drive for a top team is the greatest motivation for me."

He didn't succeed in landing in a top team during his four years in Formula 1 (1987 till 1990). However to be at odds with this fate is not his style. "I don't live in the past," he stresses. "Okay, I was never able to sit in the best Formula 1 car, but then again I always had fine cars, which many people had worked hard on to make, qualitatively speaking, good."

Extending and living the moments of success belong to his philosophy of here and now. He admits: "I can hardly think of a moment when I am happier than about three hours after a victory in Le Mans, whilst enjoying a small cigar in the bath tub."

Such moments also mean the fulfilment of a childhood dream. Yannick Dalmas always wanted to be a racing driver. Geographically speaking, the conditions under which he grew up couldn't have been better in order to chase his dream career. He was brought up in Toulon on the South coast of France, just a stone's throw away from the Grand-Prix circuit in Le Castellet. The race track was his favourite place for excursions - Formula 1 driver François Çevert became his idol.

Dalmas sat on a motorcycle for the first time at the age of ten. Two years later he was the proud owner of a trials bike. His talent allowed him to race professionally in enduro and cross sport for five years. "I actually managed to break everything apart from my neck," he recounts. In 1982 he broke his wrist and he decided to end his career in that sport once and for all. In the same year, he won the Marlboro talent spotting competition for young bloods, which marked the start of his career in motorcar sport. It also resulted in him still enjoying going to Le Castellet.

Yannick Dalmas (F)

Date/birth place:	28 July 1961 / Toulon (F)
Address:	Campione (CH)
Family:	Single, two sons: Paul and Pierre
Hobbies:	Jogging, mountain biking, karting, cooking

Racing career:

1976-1981	Enduro racing and moto cross racing
1982	Winner, Marlboro final contest
1983	3rd place, French Formula Renault Turbo, three wins
1984	1st place, French Formula Renault Turbo, six wins
1985	2nd place, French Formula 3 - three wins
1986	1st place, French Formula 3 - six wins, Winner, Formula 3 Grand Prix of Monaco
1987	5th place, European Formula 3000 Championship - two wins (Pau and Jarama); three Formula 1 Grand Prix (Lola-Ford), 5th place in Australia
1988	Formula 1 (Lola-Ford)
1989	Formula 1 (Lola-Lamborghini, AGS-Ford)
1990	Formula 1 (AGS-Ford)
1991	Sportscar World Championship (Peugeot) - wins in Magny Cours/F and Mexico City/MEX
1992	Winner, Sportscar World Championship (Peugeot) - three wins: Silverstone/GB, Le Mans/F and Suzuka/J, 2nd places: Monza/I and Donington/GB
1993	2nd place, 24-Hrs of Le Mans/F (Peugeot); 2nd place, 24-Hrs of Spa/B (Porsche); French Touring Car Championship (Peugeot-Testdriver)
1994	Winner, 24-Hrs of Le Mans/F (Porsche); 4th place, French Touring Car Championship (Peugeot 405), four wins
1995	Winner, 24-Hrs of Le Mans/F (McLaren BMW); German Touring Car Championship (Opel Calibra)
1996	3rd place, 24-Hrs of Le Mans/F (Porsche); German and International Touring Car Championship (Opel Calibra)
1997	FIA GT-Championship (Porsche); Winner, 12-Hrs of Sebring/USA (Ferrari); 3rd place, 24-Hrs of Daytona/USA (GT2, Porsche); 24-Hrs of Le Mans (Porsche)
1998	3rd place, FIA GT-Championship (Porsche) 24-Hrs of Le Mans/F (Porsche)

Tom Kristensen

For He Did Not Know What He Did

"I've never been so nervous," says Tom Kristensen about his first start in Le Mans in 1997, and then went on to win the race. The circumstances were extraordinary: Joest-Racing had enquired just ten days before, whether he could start for them. A test-drive wasn't possible - the car was already in Le Mans. "I think there are two things every race driver wants to do," explains the 31 year-old pilot, "Race in Formula 1 and in Le Mans." So he accepted, despite the fact that he was facing Formula 3000 tests that weekend and was leading the championship.

Whereas a private aeroplane solved his dilemma of trying to be in different places at the same time, his preparation for the race suffered. A lot was still missing in Kristensen's career: never, not even as a spectator, had he ever been to Le Mans, he had never participated in an endurance race, nor had he raced in the dark. With just a minimal introduction of only 21 practice rounds on the 13.6 kilometre track, he entered his first race turn late in the evening.

Half an hour later, dusk had already descended. "As a greenhorn, you learn a lot in a night like that," he admits. "The cars lose a lot of rubber, oil and debris." Kristensen was, under these difficult and for him new conditions, the quickest driver on the track, setting a new track record. He was as little emotionally prepared for his triumph and his record, as he had been for the actual Le Mans race. "I'd never been able to imagine the fascination, and now know why people refer to it as a legend."

Tom is the son of Carl-Eric Kristensen, who was Danish Touring Car Champion in the 70s. "My father is not the most famous racing driver, but one of the best," says Tom proudly. "Fame might have helped me more." Tom was runner-up in the Kart World Championship and won the German Formula 3 title in 1991. "I thought, now you've made it," he remembers. "The Formula 3000 teams says: Sure, you can race for us - how much money are you bringing with you?"

Just before he reconsidered the banking career for which he had trained, due to lack of money, he received offers from Japan. For four years, he drove a variety of cars in a country with ten permanent race tracks, including Formula 3, Formula 3000, touring cars and GT cars. The only cockpit he has sat in just for test drives, is a Formula 1. "Maybe I wasn't egocentric enough when it came to business," he says. This may however be the very trait that makes Tom Kristensen so likable.

Tom Kristensen (DK)

Date/birth place:	7 July 1967 / Hobro (DK)
Address:	Monte Carlo, Monaco
Family:	Girl-friend Hanne, son Oliver
Hobbies:	Sport, music, skiing

Racing career:

1984	Danish Kart Champion (Formula Nordic)
1985	Scandinavian Kart Champion in Sweden, Seniors, 3rd place, Race of Champions, Las Vegas/USA, 3rd place Kart Grand Prix in Hongkong, Danish Kart Champion (team title)
1986	2nd place, European Kart Championship, 1st place, Italian and Danish Kart Championship, 2nd place, Race of Champions, Zaragoza/E,
1987	2nd place, Kart World Championship, Lido di Jesolo/I
1987-1990	Fewer races due to education
1991	German Formula 3 Champion, 6th place, Formula 3 Grand Prix in Macau
1992	5th place, Japanese Formula 3 Championship, 1st place, Formula 3 Super-Cup in Suzuka (J), 5th place, Formula 3 Champion Grand Prix in Macau, 2nd place, Jap. Touring Car Championship (Nissan), 2nd place, Final Jap. Sports Car-Prototype Championship (Toyota, Group C)
1993	Japanese Formula 3 Champion (Toyota), five wins, 1st place, Formula 3 World Final in Fuji/J (Toyota), 2nd place, Formula 3 Grand Prix in Macau (Toyota) Overall winner, Fuji INTER-tec (500-km-race for the Jap. Touring Car Championship, Nissan)
1994	9th place, Japanese Formula 3000 Championship, 2nd place, Japanese Touring Car Championship, 3rd place, Touring Car Race in Macau (Toyota)
1995	2nd place, JapaneseFormula 3000 Championship, 5th place Jap. Touring Car Championship(Toyota)
1996	6th place, Int. FIA Formula 3000 Championship (took part in seven out of eleven races), Test driver for Toyota (Le Mans), Test Indy Cart, Japanese GT Championship (Toyota)
1997	Victory and lap record Le Mans 24-Hour Race (Joest-Porsche); 6th place, Int. FIA Formula 3000 Champi onship, one win, six poles, Formula 1 test (Minardi); Japanese GT Championship (Toyota)
1998	Le Mans 24-Hour Race (BMW V12 Le Mans), 11th place, German Super Touring Car Champions hip (Honda), Formula 1 testdriver (Tyrrell)

JJ Lehto

Pure Driving Pleasure

If something looks as if one could have fun driving it, it won't matter to JJ Lehto whether it has two or four wheels, runners or a keel, The Finn wants to immediately find out how fast it goes. Speed is life's elixir for him and it all started with motocross and kart. "It really was great fun," is a favourite phrase to describe the most strenuous of races. He enjoys pure driving pleasure.

One of his toughest races was the 24-Hours of Le Mans in 1995. Together with the Frenchman Yannick Dalmas and Masanori Sekiya from Japan, he crowned the first Le Mans engagement of the McLaren F1 powered by the BMW V12, with the world's most coveted endurance trophy. "I felt as if I had just won a world championship," JJ Lehto says, describing his emotions after the victory. "It was an unbelievable race. The rain wouldn't stop and we had to drive each lap on the limit."

Winning Le Mans was not only so special for the 33 year old, because it was so hard, it also marked the much longed for end of a rather unsuccessful spell. 1994 was a disappointing year for Lehto whose last Formula 1 season to date began in January of that year, with an accident whilst testing in Silverstone. He fractured his fifth neck vertebra which prevented him from racing until Imola. A sixth place in the Canadian GP was his best result.

This was in spite of an excellent start to the Formula 1 career of one Jyrki Järvilehto, JJ's real name and one that is very hard to remember for a non-Scandinavian, which is why it was shortened. He started in Grand-Prix sport in 1989 as reigning British Formula 3 Champion and took third place in Imola just two years later.

Lehto was enrolled as a BMW works driver in 1997 and in that same year was runner-up in the FIA GT Championship together with Steve Soper. BMW released him from his contract for the 1998 season. The Finn hat the opportunity to drive in the American CART Series, thus adding another notch on his career in Formula racing. He moved to Phoenix Arizona together with his wife and their two daughters. He nonchalantly accepted the scorpions and rattlesnakes in and around his house - after all, the desert sands offered a tremendous amount of motoring fun.

JJ Lehto returned the favour for his extended holiday in his own special way, by taking pole position at the 12-Hours of Sebring at the very first race commitment of the new BMW V12 LMR. He won the race in Florida together with Tom Kristensen and Jörg Müller.

JJ Lehto (FIN)

Birth date/place:	January 31 1966 / Espoo (FIN)
Address:	Monte Carlo, Monaco
Marital status:	Married to Satu, daughters Juulia and Johanna
Hobbies:	Old timers, rally racing, badminton, skiing

Sporting career:

1972-1980	Cart sport
1981-1983	Moto-cross
1985	4th Place Finnish Formula Ford 1600
1986	1st Place European, Skandinavian and Finnish Formula Ford 1600
1987	1st Place British and European Formula Ford 2000, 1st Place Formula Ford World Cup
1988	1st Place British Formula 3 Championship
1989	Formula 3000-European Championship, start in Formula1 (Onyx)
1990	Formula 1 (Onyx)
1991	12th Place Formula 1 (Scuderia Italia), 3rd Place in Imola (I)
1992	Formula 1 (Scuderia Italia)
1993	Formula 1 (Sauber)
1994	Formula 1- crash whilst testing at Silverstone (Benetton), Six GP for Benetton, 6th Place in Montreal (CDN), two GP for Sauber
1995	Victory 24-Hours of Le Mans/F (McLaren BMW), 13th Place German Touring Car Championship, 11th Place Int. Touring Car Series (Opel)
1996	5th Place Int. Touring Car Championship (Opel), Win 1000 Kilometer Race Suzuka/J 24-Hours of Le Mans (McLaren BMW)
1997	2nd PlaceFIA GT-Championship, 24-Hours of Le Mans (McLaren BMW)
1998	CART Series (USA/Hogan Racing), one 5th Place in Australia

Pierluigi Martini

The Faithful Tifoso

His grandfather was a racing driver, his father was a racing driver, and so was his uncle. "What else was I supposed to become?" Pierluigi Martini asks. For him, his profession is the most natural thing in the world. The Italian has 119 Formula 1 Grand Prix to his name. He has never raced in one of the teams that could fight for the title, but he gathered 18 World Championship points in nine years.

He attained his best qualifying result in Formula 1 in 1990, starting from the front row in Phoenix. "Gerhard Berger was next to me on pole, Ayrton Senna was fourth behind me," he remembers. He achieved his best GP results during the following year, coming fourth twice and just missing a podium place. He remained faithful to the Italian Minardi Team throughout almost his entire Formula 1 career.

As a child, he was the most faithful 'Tifoso' - the Italian expression for a motor sports fan - of his uncle, Giancarlo Martini, who raced in Formula 2 until 1974. One of his uncle's competitors impressed Pierluigi in particular, and is now one of his BMW team-mates: "Hans-Joachim Stuck has an unmistakable racing style." Stuck was March BMW Formula 2 European Vice-Champion in 1974.

The 14 year-old Pierluigi started in his first race in 1975, after his uncle had given him a kart. He landed in Formula 1 having made it through Formula FIAT Abarth, Formula 3, and Formula 2. "My parents are real Tifosi, but they never put pressure on their kids." Pierluigi Martini has four brothers and a sister. His next younger brother Oliver is following in his footsteps: he became Italian Formula 3 champion in 1997.

He keeps his family life with wife Sandra and his little daughter Maria-Vittoria as a motorsport-free zone. He met Sandra, who has a PhD in chemistry, when he was 14. "She has never been interested in car racing - it's wonderful, we talk about other things at home," he says. " I really needed this oasis, especially during the Formula 1 phase. The pressure was high and constant. Sometimes I didn't even want to discuss races with my brother. I'm more relaxed nowadays,."

Totally at ease, he is also looking forward to the 24-Hours of Le Mans. He has participated four times, retired three times, and come eighth once. "Le Mans is unpredictable," he says. "Not even the fastest can be sure of success." Martini knows what he is talking about - in 1996, he retired after achieving pole position.

Pierluigi Martini (I)

Date/birth place:	23 April 1961 / Lugo di Romagna (I)
Address:	Monte Carlo, Monaco
Family:	Married to Sandra, daughter Maria-Vittoria, son Arturo
Hobbies:	Golf, angling, jogging

Racing career:

1975	Kart sport in Italy
1980	Formula FIAT Abarth
1981	Italian Formula 3 Championship
1982	3rd, Italian Formula 3 Championship
1983	European Champion Formula 3, four wins 2nd place, Formula 2 race in Misano/I
1984	24-Hour Race Le Mans, retired (Lancia)
1985	Formula 1 (Minardi)
1986	2nd, International Formula 3000 Championship
1987	International Formula 3000 Championship
1988	4th place Formula 1 World Championship (Minardi), 6th place in Detroit/USA, Formula 3000 victory in Pergusa/I
1989	Formula 1 (Minardi), 5th twice (England and Portugal), 6th once (Australia), Touring car races in Italy (BMW, Team Bigazzi)
1990	Formula 1 (Minardi), 2nd on the grid in Phoenix/USA
1991	11th place Formula 1 (Minardi), 4th twice (San Marino and Portugal)
1992	Formula 1 (Scuderia Italia), 6th twice (Spain and San Marino)
1993	Formula 1 (Minardi)
1994	Formula 1 (Minardi Scuderia Italia), 5th twice (Spain and France)
1995	Formula 1 (Minardi Scuderia Italia)
1996	24-Hours of Le Mans, pole position and retirement (Joest-Porsche)
1997	8th, 24-Hours of Le Mans, FIA GT Championship (Scuderia Italia Porsche) 1st place, ISRS race Donnington/GB (Joest-Porsche)
1998	Le Mans 24 Hour Race, Team BMW Motorsport (BMW V12 Le Mans) Development Programme BMW V8 race engine

Jörg Müller

The quick scoundrel becomes a desirable professional

Jörg Müller's curriculum vitae is impressive: titles in Formula Ford, Formula Opel, Formula 3, as well as wins in the Formula 3 classics of Macau and Monaco. He also took the Formula 3000 European Championship title in 1996. Is he one of these perfect racing drivers who's career is continuously on the climb without them ever losing their footing? "No," replies the 29 year-old, "I would have never made it without Dr. Helmut Marko's strict drilling."

Marko became Müller's manager just as the youngster's career seemed on the brink of coming to an early end. Müller's excellent car control had been registered during his spate in the German Formula 3 Championship, but so had his lack of seriousness. The carefree attitude demonstrated by this cheerful soul was too much for his team manager and his sponsors. The result was a half year without a seat in a race car.

Müller was transformed by Dr. Marko's team, in which he had to work on his own car. Like the Phoenix out of the ashes, he rose to take the German Formula 3 Championship and propelled himself into the Formula 3000. Müller was Championship leader, when he and the small team he was part of ran out of money. The season seemed to be prematurely over, when the dramaturgy, worthy of Hollywood, suddenly took a turn for the better: the surprising rescue of our hero from what seemed to be an unavoidable fate. The television station VOX gave the team a helping hand at just the right moment.

In the meantime, two Formula 1 teams have rewarded Jörg Müller's considerable technical competence with test driver contracts. He has also been the BMW Formula 1 test driver for the new engine since the end of 1998. "Jörg doesn't only understand the technical aspects of a situation, he is also able to communicate them," says BMW Motorsport Director Gerhard Berger. "He is at the same time one of the quickest drivers around." Müller has proved this quality in the BMW V12 LMR sportscar with which he will also be tackling his third Le Mans race in 1999.

"I haven't only got two great jobs at BMW," says Müller, "I have also found a place which makes me feel very much at home." Müller already demonstrated three years ago that his connection to BMW is more than just the fulfilment of his works contract. Müller, after receiving his first pay check from his BMW contract as a touring car driver which allowed him to complete the Formula 3000 season, simply sowed the white and blue BMW colours onto his formula overalls as a special way of saying thanks.

Jörg Müller (D)

Date/birth place:	3 September 1969 / Kerkrade (NL)
Address:	Monte Carlo (MC)
Family:	Single, girlfriend Julia Golliard
Hobbies:	Squash, windsurfing, snowboarding, karting

Racing career:

1982	1st place, Burg Brüggen Karting Club Championship
1984	2nd place, ADAC Junior Kart Driver Regional Championship, 1st place, ADAC Junior Driver Kart Finals
1985	1st place, ADAC Junior Kart Driver Regional Championship, 1st place, ADAC Junior German Kart Team Championship
1987	1st place, ADAC Karting Regional Championship
1988	1st place, German Formula Ford Championship
1989	1st place, German Formula Opel Lotus Challenge
1990	1st place, European Formula Ford Championship, 5th place, German Formula 3 Championship
1991	1st place, Monaco Formula 3 Grand Prix
1992	7th place, German Formula 3 Championship
1993	German Formula 3 Championship (participated in four races, one win), 1st place, Macau Formula 3 Grand Prix
1994	1st place, German Formula 3 Championship
1995	BMW works driver in the ADAC Super Touring Car Cup (BMW 320i)
1996	1st place, European Formula 3000 Championship, BMW works driver in the ADAC Super Touring Car Cup (BMW 320i)
1997	Formula 1 test driver for Arrows, 24-Hours of Le Mans (Nissan GT1)
1998	Formula 1 test driver for Sauber, 2nd place, 24-Hours of Le Mans (Porsche GT1)

Joachim Winkelhock

An Honest Fighter

Some spend an entire racing career, hoping in vain to achieve Joachim Winkelhock's popularity. He, on the other hand, finds it all "always a little embarrassing," when he is cheered and honoured by the fans and the media. "I am just not the type of guy, who likes to be the centre of attention. I'm just simply 'Jockel'." disarming, of course, disarmingly open.

To mistake the open manner in which Winkelhock conquered the hearts of his fans for a form of naivety, would be a great misjudgement. Swabian craftiness surfaces every now and then from beneath his modesty and his established humour has its effect. Yet another autograph? Another pose for a photograph with a fan? Winkelhock does so gladly. Is that his secret? That, and his style of driving: he is not particularly easy on tyres, but then he is so spectacular, that the fans literally jump out of their seats. Fairness is his highest precept: "I can become really mean if I catch someone trying to cheat me." He is then also just 'Jockel'.

A straight line career including karting as a child just doesn't fit. Joachim Winkelhock was already 18 years old, when his brother Manfred lent him the money which enabled him to start racing. Joachim raced as a hobby. His brother's accidental death was a shock and Joachim's career was halted - the grief remained. Then he decided: if you race, do it properly.

Joachim Winkelhock has now been a BMW works driver for eight years and has won three championship titles. He became British Touring Car Champion in 1993. In '94 he won the Asian-Pacific Championship for BMW and in 1995, the STC-Cup.

He celebrated most of his successes with the Schnitzer Team, for whom he also raced in the German STC-Championship in 1998. His support for Johnny Cecotto, who then took the title, was a demonstration of perfect team work. Schnitzer was, especially in England and Asia "a real surrogate family. A deep sense of trust binds us. You get to know each other very thoroughly, so far from home." That includes all the peculiarities: Everyone knows what Jockel is having, when he suddenly disappears just before a race: a nap.

Winkelhock got aquainted for the first time with a sportscar in 1998, he however did not race. He had not sat in an open race car with comparable horsepower since his foray into Formula 1 in 1989. "Testing has increased my trust in the meantime," he says. " I am really looking forward to the race, but I also have great respect for it." Disarmingly honest as usual - that's Jockel.

Joachim Winkelhock (D)

Date/birth place:	24 October 1960/Waiblingen, Germany
Address:	Korb, Germany
Family:	Married to Sabine, daughters Sina and Nina
Hobbies:	Squash, cycling, family

Racing career:

1979	Renault 5 Cup
1981	Renault 5 Turbo European Cup
1982	Formula Ford 1600
1983-1985	Various touring car races (incl. in a BMW 323i)
1986	Winner, Porsche 944 Turbo Cup
1987	Runner-up, German Formula 3 Championship (Reynard-VW), European Touring Car Championship (Ford)
1988	Winner, German Formula 3 Championship (Reynard-VW)
1989	Formula 1 (AGS-Ford)
1990-1992	German Touring Car Championship (BMW M3), three wins
1990/91	Winner, 24-Hours of Nürburgring (BMW M3)
1993	Winner, British Touring Car Championship (BMW 318i)
1994	6th place, British Touring Car Championship, races for the ADAC Touring Car Cup, Winner, Asia Pacific Championship (BMW 318is)
1995	Winner, ADAC Super Touring Car Cup, Winner, 24-Hours of Spa-Francorchamps/B (BMW 320i)
1996	5th place, British Touring Car Championship (BMW 320i)
1997	Runner-up, ADAC Super Touring Car Cup, 2nd place, 24-Hours of Spa (BMW 320i)
1998	6th place German Super Touring Car Championship (BMW 320i), BMW Motorsport Team Schnitzer Le Mans 24-Hour Race, Team BMW Motorsport (BMW V12 Le Mans) Motorsport (BMW V12 Le Mans); Victory, Touring Car Race, Macau (BMW 320i), BMW Motorsport Team Schnitzer

Two 1998 BMW V12 Le Mans on the Grid

Works drivers Auberlen and Soper with Price+Bscher

The 1998 BMW V12 Le Mans will be on the grid for the second time this year. The Price+Bscher and Goh teams will each be entering a considerably modified version of last year's open sportscar.

The BMW works drivers Bill Auberlen (USA) and Steve Soper (GB) will be supporting the Price+Bscher project of Thomas Bscher (D). Bscher, a former private banker from Cologne, is at the same time the third driver. It is not his first connection with BMW as far as sportscars are concerned. It was his initial idea which resulted in the development of the street sportscar McLaren F1 powered by the BMW 12-cylinder engine, into a successful GT-race car in 1994.

The Japanese drivers Akihiko Nakaya, Hiro Matsushita and Hiroki Kato will be at the wheel of the likewise further developed BMW V12 Le Mans, entered by the Goh team.

BMW became the trend setter for the modern open sportscars

In 1998, the BMW still looked somewhat exotic amongst the coupé prototypes, which were then referred to as GT-cars. In retrospect, it turned out to be a trend setter. Other works teams have now taken the same path, whilst the regulations for open sportscars and coupés have been brought into line with one-another, for example with regards to the total weight and the tank capacity.

The car's debut in Le Mans in 1998 was however not crowned with success. Both cars were retired after just four hours of racing. Lubricant had leaked from the wheel bearings due to defective seals - too much of a risk in Le Mans.

Bill Auberlen

Billy the Kid

It is a well known fact that children learn foreign languages best before they are old enough to go to school. The same is true of motorcycle riding - at least that is what Bill Auberlen's dad found out. Gary Auberlen stuck Bill onto a small motocross machine at the tender age of four. This turned out to be an excellent preparative measure. Bill is now 30 years old and has motorsporting experience which spans an astonishing quarter of a century.

Bill worked part time in his father's Califonian business, a workshop for European cars, in order to finance his sport. His father Gary eagerly supported his son's ambitions - after all, he himself raced motor cars. He took Bill on as a team-mate when the latter turned 18. Bill was soon also successful in automobile sport. Wins in his class and regular podium results were soon taken for granted. Forays into formula sport were immediately crowned with success: he sat at the wheel of a monoposto for the first time in Miami in 1995 and came second after setting the fastest lap.

He raced for the first time for BMW in the IMSA Series in the GTS-2 category in 1996 and was instrumental in helping BMW win the title. He was even more successful in the following year when he raced in the GTS-3 class for BMW: wins in Daytona, Sebring, Sears Point, Pikes Peak and at the Sebring Fall Festival earned him the drivers' title. He nevertheless refers to 1998 as the most important year in his career to date.

"I got into European racing thanks to BMW. As a small child, I always dreamt of one day being able to shake hands with stars such as Hans-Joachim Stuck and Steve Soper - suddenly they were my team colleagues." He tackled the development programme for the V8 engine alongside Soper, Stuck and Didier de Radiguès in the International Sports Racing Series (ISRS). "That's how I got to see Europe, from Sweden to South Italy." But his win came whilst racing in his sunny Californian homeland. Auberlen and de Radiguès won the final in Laguna Seca.

"But the greatest experience of all was Le Mans," says Bill Auberlen. He came fourth overall on his debut there in 1998. " The first time I came flying down the Hunaudières straight at over 300 km/h," he said reminiscing, "I kept thinking: where is that damned braking point - it has to come soon. But it just doesn't come for what seems like for ever. The circuit is fantastically fast. I was a total of 13 hours at the wheel and at the end of the race I knew: Le Mans is incomparable, it is the ultimate sportscar driver's dream."

Bill Auberlen (USA)

Date/birth place:	12 October 1968 / Redondo Beach (USA)
Address:	Redondo Beach, USA-California
Family:	Single
Hobbies:	Golf, motorcycles, water skiing, skiing, tennis

Racing career:

1972	Motocross races in the USA
1987	eight races IMSA GTU - one 2nd place in Sebring/USA
1988	IMSA GTU; 2nd, 24 Hrs Daytona/USA
1989-1990	Six races IMSA GTU - one 3rd place in Long Beach/USA, one pole position
1991	Seven races IMSA GTU
1992	IMSA GTU - one 3rd place in Laguna Seca/USA
1993	IMSA GTU - winner in Elkhart Lake/USA, two pole positions; Winner from pole position, IMSA East-West Challenge in Fuji/J
1994	4th, IMSA GTU - two wins and three pole positions; Winner from pole position, IMSA East-West Challenge in Autopolis/J
1995	2nd, IMSA GTS-2 - five wins and seven pole positions; first entry in a formula race (Toyota Atlantic), finished 2nd in Miami/USA
1996	IMSA GTS-2 with factory BMW team which won the Constructor's Championship - two pole positions; Testing: IMSA WSC (Ferrari), Toyota Atlantic
1997	Winner, IMSA GTS-3 Championship (BMW), wins: 24 Hrs Daytona, 12 Hrs Sebring, Sears Point, Pikes Peak and Sebring Fall Festival - five pole positions; Toyota Atlantic - one 3rd place
1998	Class Winner from pole position 24 Hrs Daytona/USA (BMW); 4th place, 24-Hrs Le Mans (McLaren BMW); Development programme for the BMW V8 race engine, victory in Laguna Seca/USA

Steve Soper

With a Will to Bite

Steve Soper is not a racing driver who consults his physiotherapist every time he wants to eat. Neither will he have detailed fitness programmes dictated to him, and between two race turns in Le Mans, he prefers going for a walk to sleeping in the paddock. "Fitness, relaxation and concentration are very personal affairs," he says. "I am best at knowing what is right for me."

The 44 year-old Englishman has real bite. His unlimited will power drives him to outstanding performance levels even under extreme conditions. "Stamina in the cockpit has never been an issue for me," he says and follows with a comparison: "When you read a book you find uninteresting, you need an enormous amount of energy to concentrate. If you're interested in it, you automatically absorb each word. Well, I am very interested in winning races."

Soper has won 146 races during his career, yet he has seldom been seen celebrating. "I can't say to myself: Wow, you've won a race. I mean, I don't go to the start in order to lose, do I. When I'm the first to see the flag, the foremost feeling I experience is that of relief because I've made it." He is as cool in dealing with his victories as he is swift in forgetting failures. "Only my own faults keep me occupied," he admits.

At the age of fourteen, Steve Soper drove his first slaloms. Years of improvising in his own garage followed. "That's when you learn that champions are not only good drivers but mostly have the best cars too." He took his first title in the Mini Cooper Cup in 1977 and one of his greatest successes is the Vice-Championship in the European Touring Car Championship in 1988. He raced for BMW in the European Championship for five years and in the World Championship for a year, during which he came to love endurance racing. "I like the challenge of sharing a car with partners and having to economise with fuel and tyres."

After a number of successful years racing single-handedly, with victories in the DTM, a championship title in Japan and a vice-championship in the German STW Cup, he returned to endurance racing in 1997. He reaped four victories and was runner-up in the FIA GT Championship in a McLaren BMW along with JJ Lehto. In Le Mans he was forced to retire in the past two years. A crash ended the race for the McLaren BMW. The BMW V12 Le Mans dropped out of the race due to defective wheel bearing seals. Soper definitely wants to sink his teeth into his next Le Mans, which will be his fifth.

Steve Soper (GB)

Date/birth place:	27 September 1953 / Greenford, Great Britain
Address:	Monte Carlo, Monaco
Family:	Married to Lulu, daughters Cassia and Gabriella
Hobbies:	Boats, helicopters and family

Racing career:

1972-1976	Special Touring Car races in Britain
1977/79	Winner of the Mini Cooper Cup
1980	Winner of the British Ford Fiesta Cup
1981	Winner of the British MG Metro Cup
1983	British Touring Car Championship and European Touring Car Championship (Rover)
1984/85	European Touring Car Championship (Rover)
1986	European Touring Car Championship (Ford)
1987	World Touring Car Championship, Winner of the 24 Hours of Nürburgring (Ford)
1988	Runner-up in the European Touring Car Championship (Ford)
1989-1992	German Touring Car Championship (BMW M3), nine wins
1992	Winner of the 24 Hours of Spa-Francorchamps/B (BMW M3)
1993	Runner-up in the British Touring Car Championship (BMW 318i), three wins
1994	3rd in the Japanese Touring Car Championship, 7th in the British Touring Car Championship (BMW 318is)
1995	Winner of the Japanese Touring Car Championship, winner of the 24 Hours of Spa-Francorchamps/B (BMW 320i)
1996	Runner-up in the ADAC Super Touring Car Cup (BMW 320i)
1997	Runner-up in the FIA GT Championship 24-Hours of Le Mans, retired (McLaren BMW), Winner, Touring Car Race in Macau (BMW 320i)
1998	24-Hours of Le Mans, Team BMW Motorsport (BMW V12 Le Mans); Development programme BMW V8 race engine

From the Regulations for the 1999 Le Mans 24-Hour Race

The aim of the regulations is to create a similar level of competition despite the variety of vehicle and engine concepts.

- **Categorisation**

The Le Mans Prototype category includes two groups of cars:

- Le Mans Prototypes	(LM P)	open sportscar
- Le Mans GT-Prototypes	(LM GTP)	closed sportscar - former GT1 cars

A minimum dry weight of 900 kilograms and a maximum fuel tank capacity of 90 litres is stipulated for all prototypes. Prototypes do not have to be based on a street legal vehicle and no minimum production numbers are required.

Competition vehicles evolved from a series model will race in the Grand Touring Category, which also includes two groups:
- Le Mans Grand Touring Sport (LM GTS)
- Le Mans Grand Touring (LM GT)

A minimum dry weight of 1100 kilograms and a maximum fuel tank capacity of 100 litres is stipulated for all GT cars.

- **Prototypes**

An LMP must have a cockpit theoretically capable of fitting two seats and must conform to the International Safety Standards of the FIA. The bodywork must cover all mechanical components as viewed from above. The flat bottom of the car must cover the entire width of the car.

A so-called diffuser which directs the air-stream at the back of the car is permitted. Its maximum width is 100 centimetres.

Dimensions	LM P	LM GTP
max. car length	465,0 cm	490,0 cm
max. wheel width	16,0 inches	14,0 inches
max. wheel diameter	28,5 inches	28,0 inches
max. diameter of wheel rim	18,0 inches	18,0 inches

No part of the bodywork is permitted more than 96.5 cm above the reference plane (flat bottom). The rear wing may not be adjusted from the cockpit. Windscreens and doors are optional. The cockpit dimensions are stipulated.

The choice of engine is free for the LM P and LM GTP categories apart from a displacement limit: max. six litres for the LM Ps, eight litres for the LM GTPs and max. four litres for turbo-charged engines. Air-restrictors are stipulated in order to minimise the performance difference between the different concepts (see below: "air-restrictors"). Prototype headlamps must compulsorily produce a white beam.

- **GT cars**

LM GT and LM GTS vehicles are open or closed cars with a door on each side and a maximum of four seats. The cars must be fully legal for road use and modified with respect to the regulations to ensure suitability for racing. The body dimensions and overhangs, (as viewed from above), as well as the doors, make and type of engine, the cylinder block, cylinder head, number and location of camshafts, firing order, position of the radiator, type and method of operation of the suspension, amongst other things, must remain as original.

Normally aspirated engines are limited to a displacement of eight litres, turbo-charged engines to a displacement of four litres. GT headlamps must produce a yellow beam and be fitted with yellow headlight covers during the day.

- **Electronics**

Automatic or electronic systems for control of the gearbox, clutch, differential, adjustment of the suspension or the ride height as well as four wheel steering, ABS and traction control are generally not permitted. A simple open-loop electrical switch activated by the driver acting on an electrical system is not considered to be an electronic control.

- **Telemetry systems** are permitted in the Prototype category.

- **Air-restrictors**

Air-restrictors are stipulated in order to provide for tighter competition between vehicles with different chassis and engine concepts. All the air feeding the engine must pass through the restrictors. One or two restrictors may be fitted, in the latter case, one per cylinder bank. The regulations regarding the diameter of the air-restrictors differentiate between the individual categories, as well as between normally aspirated and charged engines. The diameter is defined according to the engine displacement and car weight within each category. In addition, the boost pressure for turbo-charged cars is also stipulated.

- **Nominations**

A competitor is not permitted to enter more than three cars within the same group. Any newly built car must be entered with a minimum of two identical cars.

A maximum of three drivers per car can be nominated. A minimum of two must be nominated. A driver can never be nominated for two cars. Reserve drivers and reserve cars are not permitted. The entry fee is 22,308 Euro per car.

- **Set participants and number of entries**

The following are exempt from prequalifying on invitation by the organisers (A.C.O.): last year's overall winner and category winners of the 1998 24-Hours of Le Mans, the 1998 Petit Le Mans Race in Road Atlanta and the 1998 FIA GT Championship, as well as the winner of the LM GT category of the 12-Hours of Sebring. A total of 48 cars may take part in qualifying and in the race.

- **Qualifying**

All nominated drivers must take part in qualifying and must complete a minimum of three night laps. The drivers must achieve a lap time at least equal to 125% of the average of the best three laps achieved by three cars of a different make.

- **Start**

Competitors shall nominate the driver to start the race 30 minutes at the latest after the end of the warm up. The pole position is on the left of the front row. The flying start is given by means of lights. A car starting from the pit lane may join the race only after all cars have passed the pit exit during their first racing lap.

A car must be started by the driver alone for the start of the formation lap, in the case of the car having stopped in the race, and before the car rejoins the race after a terminated pit-stop.

- **Driver changes**

A driver cannot drive more than four hours in any six hour period. In case of a long lasting intervention, time spent in the pit will be deducted. Total driving hours for any one driver cannot exceed 14 hours maximum.

- **Refuelling**

The fuel is uniform and delivered by the organisers. Refuelling is only permitted in the pits at the beginning or the end of a pit stop. The car cannot be jacked up whilst refuelling (no simultaneous wheel change). The driver may remain in the car during the refuelling process, but must switch off the engine.

A maximum of two fuel attendants wearing fireproof clothing are permitted. At least one assistant holding a fire extinguisher must stand beside the car.

- **Other maintenance during a pit stop**

A maximum of two mechanics can change the wheels. One pneumatic device and/or torque wrench is permitted per mechanic. The following are permitted for further maintenance when the car is not being refuelled:
- a maximum of four mechanics (not including the two changing wheels)
- a maximum of two technicians (tyres and/or brakes),
- one further person who may assist the driver fasten his safety harness only.

The 4 mechanics rule does not apply when the car is in the pit.
During the race, it is forbidden to change the cylinder block, the chassis or the monocoque structure.

- **Speed limit** in the pit lane is 60 km/h.

- **Classification**

Competitors who fulfil one of the following requirements will be classified:
1. Cross the start/finish line when the chequered flag is waved
2. - Cover at least 50% of the distance covered by the lead car after 18 hours.
   - Cover at least 70% of the distance covered at the finish by the car placed first in its category and in its group.

Prize money General Classification	1st Place	38,462 Euro
	2nd Place	23,077 Euro
	3rd Place	16,924 Euro
	4th Place	13,847 Euro
	5th Place	10,770 Euro

The 1999 24-Hours of Le Mans

Schedule

Monday, 7 June

14.30- 18.00 hours	Scrutineering	(Quinconce des Jacobins, next to the cathedral, behind the theatre)

Tuesday, 8 June

08.30- 17.00 hours	Scrutineering	(dto.)

Wednesday, 9 June

19.00- 21.00 hours	Qualifying session
22.00- 00.00 hours	Qualifying session

Thursday, 10 June

19.00- 21.00 hours	Qualifying session
22.00- 00.00 hours	Qualifying session
ca. 00.15 hours	Pole press conference (Press Centre, room 201 A, pit building, 2nd floor)

Friday, 11 June

10.00- 20.00 hours	Pit-walk
13.30 hours	**BMW press conference** (Press Centre, room 201 A, pit building, 2nd floor)
ca. 17.00 hours	Driver parade in the city of Le Mans

Saturday, 12 June

09.30- 10.00 hours	Warm-up
16.00 hours	Start of the race

Sunday, 13 June

16.00 hours	Flagfall
ca. 16.30 hours	Winners' press conference (Press Centre, room 201 A, pit building, 2nd floor)

Organiser press

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