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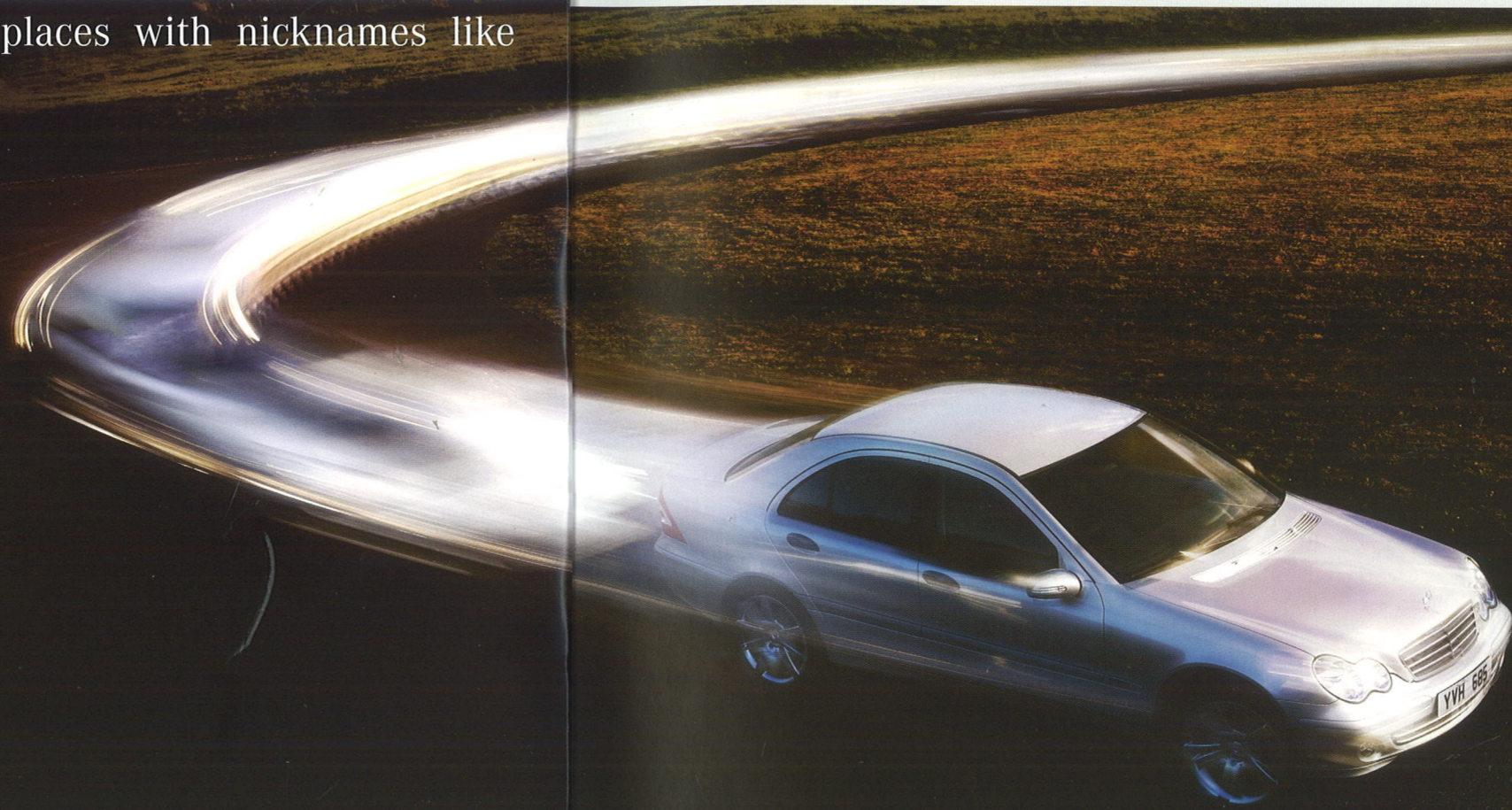


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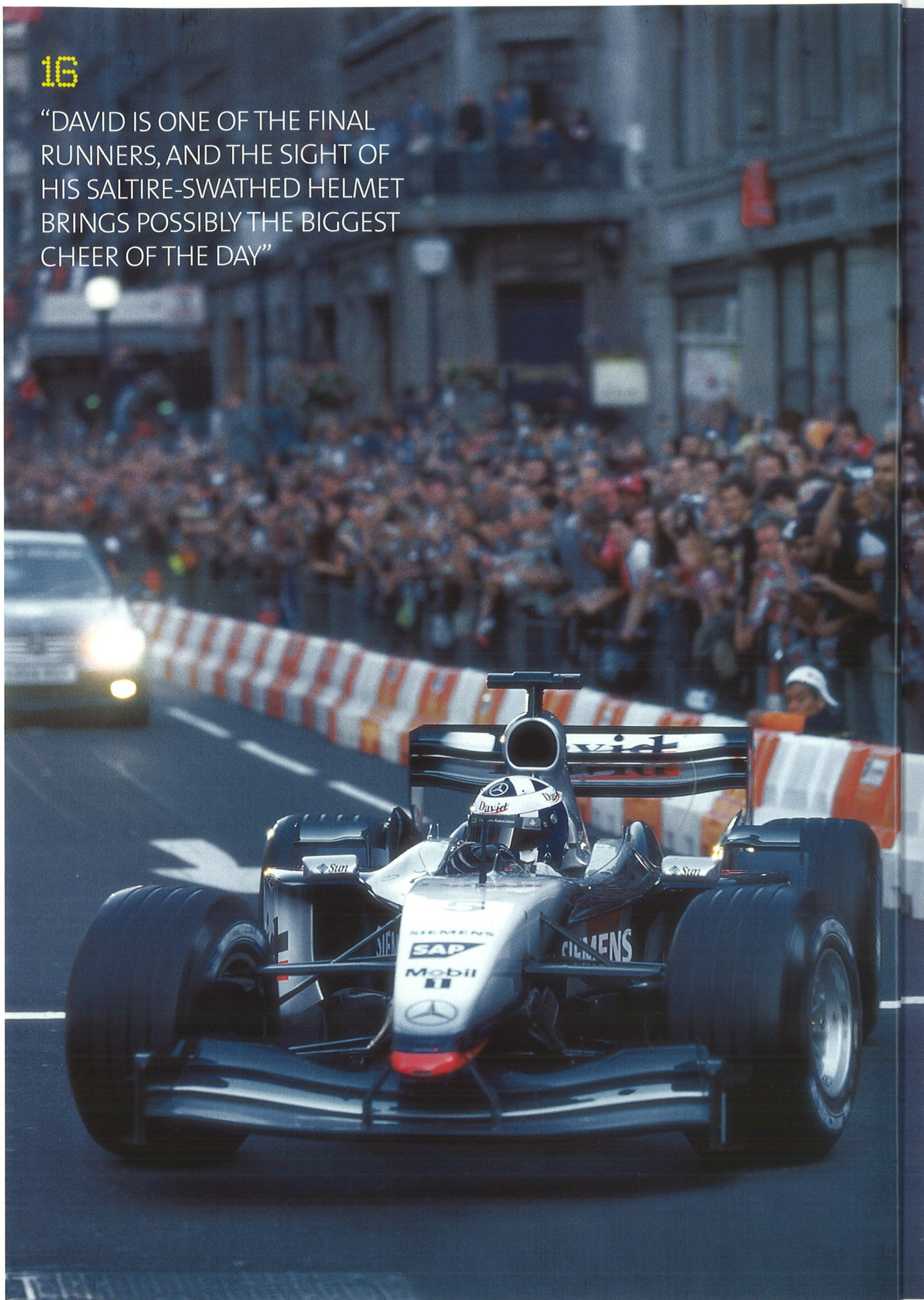


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"DAVID IS ONE OF THE FINAL RUNNERS, AND THE SIGHT OF HIS SALTIRE-SWATHED HELMET BRINGS POSSIBLY THE BIGGEST CHEER OF THE DAY"



RacingLine

SEPTEMBER 2004

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Eight Constructors' Championships

1974 – M23-Ford, 73 points
1984 – MP4/2-TAG Porsche, 143.5 points
1985 – MP4/2B-TAG Porsche, 90 points
1988 – MP4/4-Honda, 199 points
1989 – MP4/5-Honda, 141 points
1990 – MP4/5B-Honda, 121 points
1991 – MP4/6-Honda, 139 points
1998 – MP4-13-Mercedes, 156 points

Eleven Drivers' Championships

1974 – Emerson Fittipaldi – M23-Ford, 55 points
1976 – James Hunt – M23-Ford, 69 points
1984 – Niki Lauda – MP4/2-TAG Porsche, 72 points
1985 – Alain Prost – MP4/2B-TAG Porsche, 73 points
1986 – Alain Prost – MP4/2C-TAG Porsche, 72 points
1988 – Ayrton Senna – MP4/4-Honda, 90 points
1989 – Alain Prost – MP4/5-Honda, 76 points
1990 – Ayrton Senna – MP4/5B-Honda, 78 points
1991 – Ayrton Senna – MP4/6-Honda, 96 points
1998 – Mika Häkkinen – MP4-13-Mercedes, 100 points
1999 – Mika Häkkinen – MP4-14-Mercedes, 76 points

2004 GP Results

Australian GP: David Coulthard 8th; Kimi Räikkönen DNF
Malaysian GP: David Coulthard 6th; Kimi Räikkönen DNF
Bahrain GP: David Coulthard DNF; Kimi Räikkönen DNF
San Marino GP: David Coulthard 12th; Kimi Räikkönen 8th
Spanish GP: David Coulthard 10th; Kimi Räikkönen 11th
Monaco GP: David Coulthard DNF; Kimi Räikkönen DNF
European GP: David Coulthard DNF; Kimi Räikkönen DNF
Canadian GP: David Coulthard 6th; Kimi Räikkönen 5th
United States GP: David Coulthard 7th; Kimi Räikkönen 6th
French GP: David Coulthard 6th; Kimi Räikkönen 5th
British GP: David Coulthard 7th; Kimi Räikkönen 2nd
German GP: David Coulthard 4th; Kimi Räikkönen DNF



在上海赛车

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Portrait by Hugo Burnard



InsideLine

It was clearly a huge disappointment for everybody at Team McLaren Mercedes when Kimi Räikkönen spun out of the Mobil 1 German Grand Prix at Hockenheim following what we have identified as a structural failure of his car's rear wing. It also goes without saying that it is a testimony to the integrity of today's generation of grand prix cars that he was able to climb from the cockpit unharmed after what was clearly a very spectacular accident.

It was perhaps equally frustrating that David's promising showing was not only compromised by Rubens Barrichello's Ferrari running into him mid-way around the opening lap, but also by running over debris from Kimi's accident. Under the circumstances, David did well to finish in fourth place after a strong drive which further endorsed the potential of the MP4-19B.

It is also worth reflecting that at the moment of Kimi's retirement he had a very real possibility of winning the race. Losing is painful, but we have clearly made a step forwards.

Whilst we obviously go into each race weekend with the firm objective of winning, there is a very big difference in retiring from a race you believe you could have won to dropping out of one that you couldn't. Such performances send a very important and clear message to our competitors, Partners and also back to our own workforce who see it as a well-earned reward for their efforts, whether at the circuit or back at base.

The Mobil 1 German Grand Prix was followed by a three-week break in the calendar prior to the Hungarian round of the World Championship. This spell has allowed members of the race team to take some deserved holiday time. The pace and intensity of effort of those in the factory does not ease for a moment as they press on in their efforts to help the MP4-19B deliver the hard results which its initial promise has so decisively signalled it is capable of.

Ron Dennis CBE
McLaren Group Chairman and CEO

Kimi and David tour Mercedes-Benz museum, Hawthorn Memorial Trophy is David's for a fifth time

DRIVERS STAR IN GERMANY

Team McLaren Mercedes race drivers Kimi Räikkönen and David Coulthard had a busy couple of days in the run-up to one of the team's 'home' races, the Mobil 1 German Grand Prix.

On the Wednesday before the race they joined journalists for a tour around the Mercedes-Benz museum in Stuttgart-Untertürkheim, where Stefan Röhrig, head of the facility, welcomed everyone to an exhibition celebrating 70 years of the famous

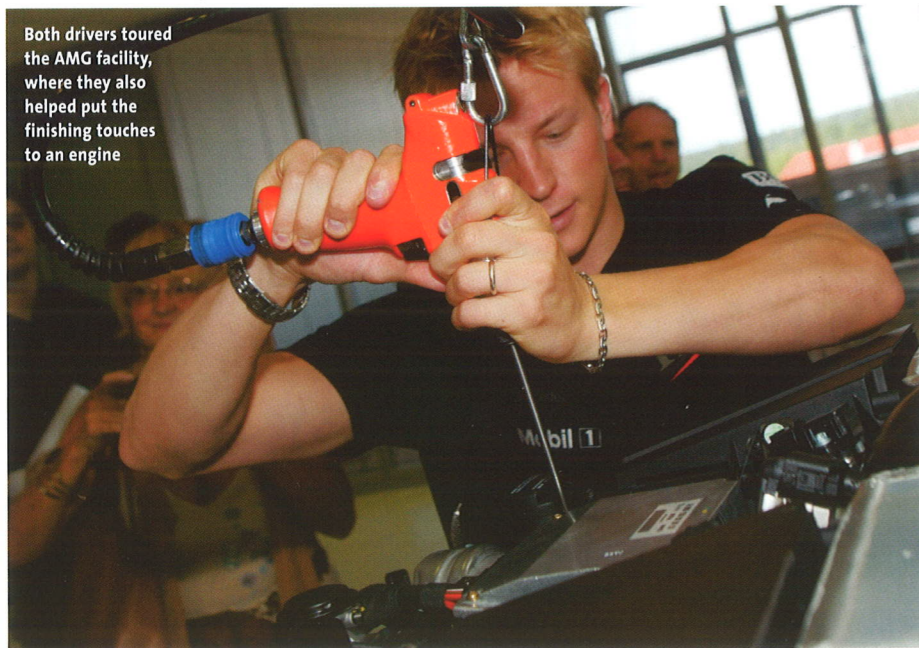
'Silver Arrows' and the 50th anniversary of the first Mercedes-Benz Formula 1 victory. The tour never fails to provoke amazement when the drivers of the modern era take a close look at the machines driven by the greats of a bygone age.

The media later separated into national teams, spanning Italy, France, Germany and the UK, for a debate on Formula 1. Mercedes Benz Vice-President of Motorsport Norbert Haug also played a role in discussions. As has

become a popular tradition, the day ended with a meal at the museum.

On the Thursday morning, the drivers joined a tour of the Mercedes-AMG manufacturing plant in Affalterbach. There everybody was welcomed by AMG's Hubertus Troska, Domingos Piedade and Wolf Zimmermann and went on find out more about the production process for the engine that powers the Mercedes-Benz SLR McLaren. They also viewed the 6.0-litre V12 biturbo powerplant which was recently voted 'Best Performance Engine' at the prestigious International Engine of the Year Awards.

Kimi and David then played a hands-on role in finishing-off the production of one of the engines before meeting some Mercedes-AMG employees.



Both drivers toured the AMG facility, where they also helped put the finishing touches to an engine



SEIC WELCOMES RON DENNIS

McLaren Group Chairman and CEO Ron Dennis was a key note speaker at the recent opening of the world's first centre of excellence for systems engineering.

The Systems Engineering Innovation Centre (SEIC), opened at Loughborough University in the UK, is a £60 million collaboration between industry, academia and the local authority. It will house industry and academic teams involved in this sphere under the one roof for the first time. Team McLaren Mercedes Technology Partner BAE Systems will train 1000 new engineers there by 2005.

SAP HITS THE ROAD TO TAKE SHOW ON TOUR OF 16 CITIES



Team McLaren Mercedes Corporate Partner SAP took a roadshow to 16 German cities in the six-week period culminating in the Mobil 1 German Grand Prix.

Based in a specially converted truck, the show featured a presentation theatre and also contained a Team McLaren Mercedes simulator. During the course of the tour, SAP was able to focus on the vital small-to-medium size customer sector.

In a country passionate about Formula 1, the company used its relationship with Team McLaren Mercedes to showcase its expertise.

PICTURE CREDITS>
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MATTEL WINNER AT SILVERSTONE

One of the proud winners of the Mattel 'Hot Wheels Design Challenge', a competition for schools in which pupils were asked to draw the design of a car of the future, was a lucky visitor to the British Grand Prix.

Crystal Wright won her age group in the contest last year, as a result of which a Team McLaren Mercedes Formula 1 car had been taken to her school, and the pupils given an opportunity to visit the team's headquarters in Woking.

As a further reward, she and a friend attended the British Grand Prix at Silverstone. Here, they were given a tour of the Team McLaren Mercedes garage and had the opportunity to take some photographs that would surely be the envy of all her classmates!

SAP INVITES LOCAL CHILDREN TO RACE

Team McLaren Mercedes Corporate Partner SAP invited over 200 children from the local hospitals in Mannheim and Heidelberg to watch the first practice sessions on the Friday of the Mobil 1 German Grand Prix.

From their privileged viewing position, the children were able to view a great deal of the recently revised track. They also had a chance to try out some remote control model cars and have a go in the Team McLaren Mercedes race simulator.

The highlight of their day, however, was a visit by Team McLaren Mercedes Third Driver Alex Wurz. Alex spent a great deal of time talking with the children, signing autographs and having photos taken with them to record a special day that they will never forget.

McLaren Racing Managing Director Jonathan Neale attended a function hosted by Team McLaren Mercedes Corporate Partner SAP on the Saturday evening of the Mobil 1 German Grand Prix. He joined 130 of SAP's most important customers from around the world who were also invited, while taking the time to discuss the particular challenges posed by Formula 1 and also to detail the team's preparations for one of its three 'home' grands prix.

Following hard on the heels of its successful German roadshow, which toured around 16 cities [see story on opposite page], SAP played host to over 1000 guests during the course of a weekend that provided an ideal platform for business-to-business networking.

Team McLaren Mercedes Third Driver Alex Wurz starred on the Mercedes-Benz stage at the British Grand Prix. His question and answer session on the team's fortunes and life as a Formula 1 test pilot attracted hundreds of fans.

Siemens, one of the team's Technology Partners, took a stand at the British Grand Prix, offering fans the chance to purchase products from the Siemens range of mobile phones.

COULTHARD WINS THE HAWTHORN TROPHY FOR FIFTH TIME

Team McLaren Mercedes Formula 1 driver David Coulthard was presented with the coveted Hawthorn Memorial Trophy in advance of the British Grand Prix.

The trophy is awarded annually to the most successful British or Commonwealth driver in the FIA Formula 1 World Championship. It is presented to mark the memory of Mike Hawthorn, who became Britain's first World Champion in 1958 but who died in a road accident one year later.

This was the fifth time David had won the award. "He is a thoroughly deserving recipient," said Colin Hilton, Chief Executive of the UK's governing body for motorsport, the MSA. "He has been one of the most consistent and successful Formula 1 drivers in recent years. He has also been a great ambassador for sport and for his country."



David receives the prestigious Hawthorn Memorial Trophy for the fifth time while triple Michelin-starred chef Gordon Ramsey, who was a guest of Team McLaren Mercedes at the British Grand Prix, looks on

LAP BY LAP

- 1 Kimi makes a great start, leading the field into the first corner. David jumps one place to sixth
- 2 Kimi sets fastest lap of the race, extending his lead to 4.3 seconds
- 10 David pits for the first time (8.6 seconds)
- 11 Kimi makes his first pit stop (7.5 seconds)
- 15 Schumacher gets out of the pits just ahead of Kimi, who falls to second place
- 28 Kimi resumes second after his second stop (6.7 seconds)
- 30 David's second stop (7.2 seconds) sees him drop one place to seventh position
- 40 Jarno Trulli's accident at Bridge brings out the Safety Car
- 41 Both Team McLaren Mercedes drivers take advantage of the caution period to make their third stops, Kimi in 8.5 seconds, David in 6.9 seconds. They resume in second and seventh positions
- 46 The race re-starts but Kimi loses time trapped behind two backmarkers
- 60 Schumacher wins the race; Kimi finishes second, David seventh



The British Grand Prix was a race that finally rewarded months of hard work behind the scenes at Team McLaren Mercedes. Kimi Räikkönen underlined the potential of the MP4-19B by scoring the team's first pole position of the season, then finished second in the race itself to secure the organisation's first podium of the 2004 campaign.

The Finn was the star of Saturday's qualifying session with a 1m 18.233-second lap that earned him the third pole of his career. "The car is starting to show its real potential," he admitted. "The team has worked extremely hard to regain competitiveness. This pole position is a reward for all their efforts and late nights."

Team-mate David Coulthard lost

time through Becketts in the windy conditions, and lined-up seventh.

Expectations had been raised, and Kimi did not disappoint come race day. He stormed away from pole position, leading the pack into the first corner, then extended his lead to over four seconds by setting the fastest lap second time around. He went on to trade quickest laps with the Ferrari of Rubens Barrichello throughout the early stages.

He was still ahead when he made the first of his three planned pit stops, on lap 11, but encountered traffic soon after rejoining the track. That delay, allied to a burst from Michael Schumacher, saw the two-stopping Ferrari slip ahead after its stop.

Despite putting his rival under heavy pressure, Kimi was unable to find a

way past. His next opportunity arose after the second round of stops when Jarno Trulli's crash on the exit from Bridge corner brought out the Safety Car on lap 40. Team McLaren Mercedes seized the opportunity to make both cars' third and final stops during the caution period.

When the racing resumed David was lying seventh, where he would also finish. Throughout the race he felt uncomfortable with the balance of his car, particularly in slow corners.

Kimi ran a strong second in the closing stages. He struggled with the balance of his final set of tyres, though, and was unable to mount a late attack on the leader.

Nevertheless, Kimi's second place finish provided a timely boost for the team before it headed to the next race.



As a two-time British GP winner, David was disappointed to finish seventh in 2004



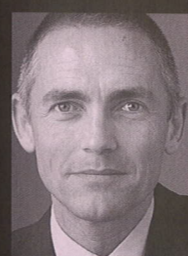
The first visit of the season to the podium for Team McLaren Mercedes and Kimi signalled an upturn in the team's fortunes

TALKING POINT

Team Principal Ron Dennis is not often moved to make emotional statements. So when even he described Kimi Räikkönen's opening lap at the British Grand Prix as "staggering", it gave some indication of quite what a remarkable start the young Finn had made. Scoring Team McLaren Mercedes' first pole position since last year's United States Grand Prix was one thing, but translating that hard work into an early race advantage was another challenge entirely. Not only did Kimi make a great getaway from the line, he produced one of the laps of the season. By the end of the first lap he was an incredible 3.5 seconds clear of the pack. After the race, Ron Dennis admitted that the gameplan had been to exploit to the full the early advantage offered by the team's Michelin tyres. He also revealed that he had spoken to Kimi on the grid before the formation lap.

"I'm not big on trying to play with the psychology of a driver," he noted. "I said to Kimi that he wasn't going to get any instruction or push from the pit wall, but that he had got to give 100 per cent. He said, 'Don't worry about it. When you see him pulling out such a lead, it's pretty impressive.'"

The pace of development in Formula 1 is equally impressive: just two mornings after the British Grand Prix, Team McLaren Mercedes was back at Silverstone testing further development parts for the MP4-19B...



TEAM ANALYSIS MARTIN WHITMARSH

Kimi Räikkönen's pole position at the British Grand Prix was a public demonstration that Team McLaren Mercedes' Formula 1 challenge is back on track.

It was a great qualifying lap by Kimi that illustrated the potential of MP4-19B. He then went on to make a fantastic start in the race, pushing hard to put distance between himself and his pursuers. Indeed, he had opened up a significant gap on second-placed Michael Schumacher by the time he came in for his first of three stops on lap 11.

"IT WAS A PUBLIC DEMONSTRATION THAT OUR CHALLENGE IS BACK ON TRACK"

The crucial phase of the race, then, was during laps 11-15 before Schumacher made his first of what would be a two pit stop strategy. After his stop Kimi unfortunately rejoined the race among some slower traffic which cost him a significant amount of time. This therefore allowed the Ferrari to emerge slightly ahead of Kimi on lap 15.

David, meanwhile, was not happy with his performance in what is his home grand prix. After qualifying in seventh place, he struggled on his second and third sets of tyres in the race and could not find a balance in the car.

The consequence of this is that he didn't have a car with which he felt able to really push, so a points finish could be considered something of a bonus.

In the final analysis, however, victory was a real possibility for Team McLaren Mercedes at Silverstone but our highest finish of the season can provide some consolation.

RACE RESULTS SILVERSTONE

1	Michael Schumacher	1h24m42.700s
2	Kimi Räikkönen	+2.130s
3	Rubens Barrichello	+3.114s
4	Jenson Button	+10.683s
5	Juan Pablo Montoya	+12.173s
6	Giancarlo Fisichella	+12.888s
7	David Coulthard	+19.668s
8	Mark Webber	+23.701s

DRIVERS' STANDINGS

1	Michael Schumacher	100pts
2	Rubens Barrichello	74pts
3	Jenson Button	53pts
4	Jarno Trulli	46pts
5	Fernando Alonso	33pts
7	Kimi Räikkönen	18 pts
9	David Coulthard	14 pts

CONSTRUCTORS' STANDINGS

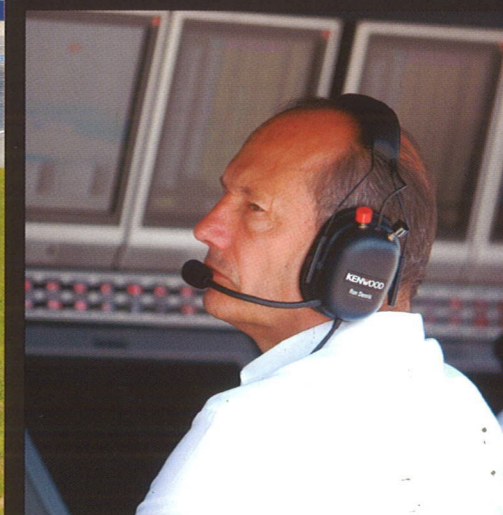
1	Ferrari	174pts
2	Renault	79pts
3	BAR	67pts
6	Team McLaren Mercedes	32pts

LAP BY LAP

- 1 Kimi ends the opening lap in third; David is fourth but with his car damaged after Rubens Barrichello hit him at the first corner
- 2 Kimi overtakes Fernando Alonso's Renault to move into second position
- 10 David makes his first pit stop (7.6 seconds). Kimi sets a new lap record of 1m 13.780s, averaging 223.182 kph
- 11 Kimi in for his first scheduled pit stop (8.9 seconds)
- 13 Rear wing structural failure pitches Kimi into a spin and out of the race. Debris from the accident damages the front wing of David's car, affecting the handling balance
- 28 David makes the second of his pit stops (7.6 seconds)
- 47 David exits his final stop (8.3 seconds) to resume in fourth place
- 66 Michael Schumacher takes the flag in first place. David finishes in fourth position to earn five points in the World Championship



The supporters in the Mercedes-Benz grandstand had a novel way of showing their affection.



TALKING POINT

The end of the Mobil 1 German Grand Prix marked the start of a welcome three-week break for the Formula 1 teams.

The concept of an enforced 'holiday' is a relatively new one, but also particularly welcome against the backdrop of the increasing globalisation of the sport and a World Championship calendar that contains more races than ever before.

So what do teams and drivers do during this three-week hiatus, when testing is banned? In Kimi Räikkönen's case, the answer was particularly exciting: he got married! He and long-time girlfriend Jenni Dahlman tied the knot in Finland before getting away for a short break [see *Inside Track*].

The gap in the calendar was introduced to guard against 'burnout' for team personnel. Many of Team McLaren Mercedes' employees used the gap to whisk their families away for a few days, or even to stay at home and unpack their suitcases properly for the first time in weeks!

One thing, however, remains constant: the pace of development in Formula 1. In the modern era development is fuelled as much by off-track simulation as it is by the acquisition of on-track data. The use of simulation aides such as CFD (Computational Fluid Dynamics) and wind tunnel testing goes on around the clock, with employees working in shifts. The racing may stop for a while, but the hard work certainly doesn't.

The Mobil 1 German Grand Prix underlined the recent resurgence of Team McLaren Mercedes.

The team ended the weekend with five points courtesy of David Coulthard's fourth place finish. More than that, the race demonstrated its re-emergence as a genuine contender for grand prix wins.

Kimi set the tone for the weekend by clocking second quickest time in Friday afternoon's practice session. Both he and his team-mate suspected that the MP4-19B could be a genuine contender at Hockenheim, and Saturday's qualifying session endorsed that belief when they lined-up third and fourth on the grid.

Sunday's race proved one of the most exciting and eventful contests of the year, and both drivers were right in the thick of the action from the opening lap.

Kimi gained a position on Juan Pablo Montoya but found himself relegated back to third by Fernando Alonso. He gave chase to the Renault

and dived through with a beautifully executed move two laps later.

David's car, meanwhile, was hit at the rear by Rubens Barrichello's Ferrari at the first corner. As a result, the Scot would suffer with handling problems for the rest of the afternoon.

Kimi closed in on race leader Michael Schumacher after the first round of pit stops, setting a new lap record and the fastest lap of the race during his charge. He was lapping quickly and looking strong when his rear wing suffered a structural failure. "I just lost downforce and then I was a passenger," he explained of the high speed incident. "I was quicker than



Michael after my first pit stop and only needed a few more laps to be able to mount a real challenge for the lead."

His misfortune also compounded David's bad luck, for the debris from the accident broke the deflector on the sister car's front wing. The team worked hard at the pit stops to dial-out the resultant understeer but, though David reeled in the third-placed Alonso in the closing laps, the handling problems left him unable to press home an attack.

"We had a real chance of winning the race," reflected Team Principal Ron Dennis. "But there is no doubt that we have taken a great step forward."



PHOTOGRAPHY HOCH ZWEI /AT



TEAM ANALYSIS

MARTIN WHITMARSH

To have both our cars qualify on the second row of the grid represented the team's highest dual-qualifying position of the season so far. In the race itself, the Renault of Fernando Alonso made a fast start, before Kimi performed a great move on him to take second place and set off in pursuit of the leader. After his first pit stop he looked in reasonable shape, so it was disappointing to suffer such a dramatic failure of his rear wing. The component in question had been through many thousands of kilometres in testing, and the failure was completely unforeseen. We will look at the design methodically and

"THIS REPRESENTED OUR HIGHEST DUAL-QUALIFYING POSITION OF THE SEASON SO FAR"

make sure that the same thing doesn't happen again.

Meanwhile, David had a first-lap incident with Rubens Barrichello which damaged both his rear wing endplate and the rear of the car's floor. This didn't affect his handling too much, but he subsequently picked up more debris from Kimi's accident which damaged his front wing. This had an effect on the handling of the car, causing understeer for the whole race. During David's second and third stops, we made adjustments to try and dial out the understeer, but there is only so much that can be done in the pits during the race. In the circumstances, David had a reasonable grand prix.

We now head into a three-week break in the calendar, but the team will continue to work hard to improve our chassis and engine while looking for more performance. There is a strong sense of momentum in our programme at the moment. When we launched MP4-19B, we said it was our goal to win a race before the end of the season. That remains the case.

RACE RESULTS HOCKENHEIM

1	Michael Schumacher	1h23m54.848s
2	Jenson Button	+8.388s
3	Fernando Alonso	+16.351s
4	David Coulthard	+19.231s
5	Juan Pablo Montoya	+23.055s
6	Mark Webber	+41.108s
7	Antonio Pizzonia	+41.956s
8	Takuma Sato	+46.842s

DRIVERS' STANDINGS

1	Michael Schumacher	110pts
2	Rubens Barrichello	74pts
3	Jenson Button	61pts
4	Jarno Trulli	46pts
5	Fernando Alonso	39pts
7	David Coulthard	19 pts
9	Kimi Räikkönen	18 pts

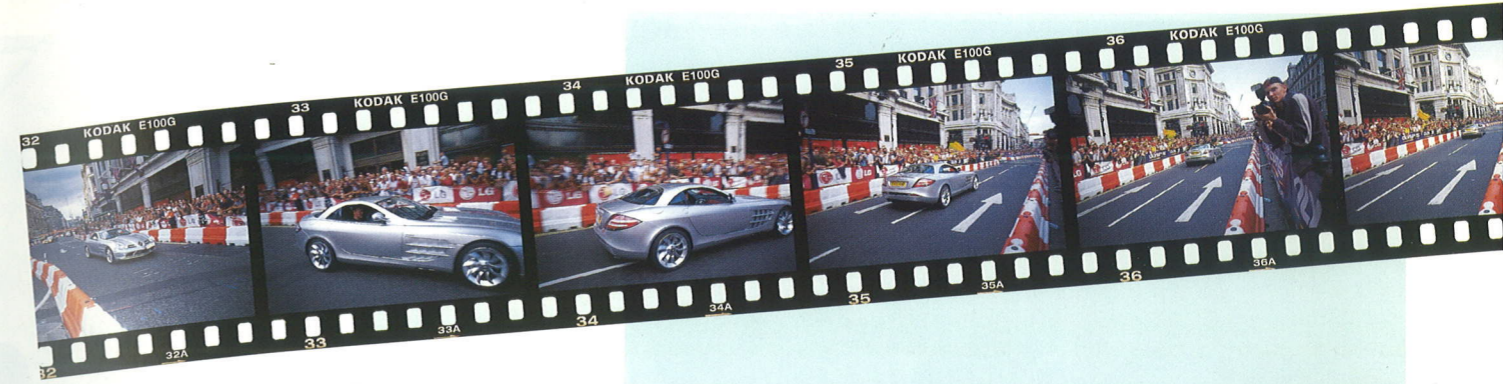
CONSTRUCTORS' STANDINGS

1	Ferrari	184pts
2	Renault	85pts
3	BAR	76pts
5	Team McLaren Mercedes	37pts

CAPITAL GAINS

The streets of London's West End recently played host to some very special visitors. Team McLaren Mercedes and David Coulthard were among them

WORDS LUKE HAYTER PHOTOGRAPHY TED HUMBLE-SMITH, LAT, GETTY IMAGES, SUTTON IMAGES



Two members of the Metropolitan Police force are approaching David Coulthard across a busy London street. Is the Team McLaren Mercedes star about to get his collar felt? He's not, of course (they merely want an autograph) but this scene typifies the bizarre and surreal nature of this particular London day.

Some months ago, plans were announced to close a part of London's West End to allow a demonstration of Formula 1 cars. The event would serve as a sound publicity generator in the run-up to the British Grand Prix. Several teams and drivers confirmed their attendance, including Team McLaren Mercedes and its British driver. "This event is a major achievement for London," explains event promoter, Harvey Goldsmith. "As an attraction, it will draw attention from all corners of the world."

Fast forward to July 6, 2004: it is a hot, bright day in the capital. Temporary barriers have been erected to keep back the crowds — estimated at some 250,000 people — that line the Regent Street route. The display is due to commence at 6pm, but by lunchtime there are already thousands of people leaning against the barriers, putting themselves in pole glimpsing position for when the action kicks off.

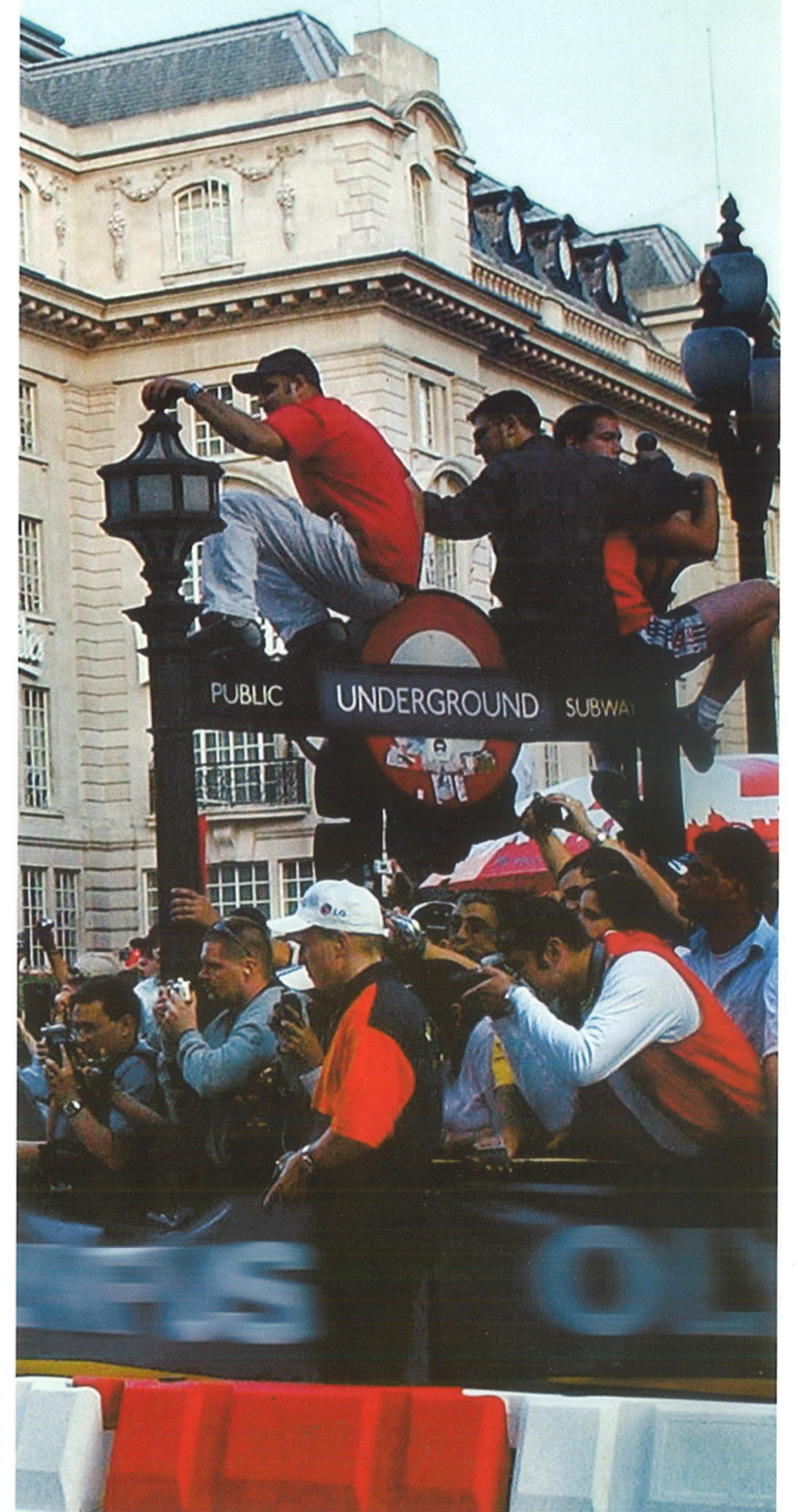
A temporary paddock/pit complex has also been built, and eager passers-by hold their cameras over the top of the fence to see the shots that their eyes are too low for. There are six teams beside Team McLaren Mercedes taking part in the event: Ferrari, Williams, BAR, Jordan, Jaguar and Minardi.

There are also David Coulthard fans by the dozen, and when the man himself appears the crowd goes wild. "DA-VID; DA-VID; DA-VID!" they chant. The amiable Scot gives them a wave before striding over to sign autographs. "This event is taking Formula 1 to the British people in the truest sense," says David. "Hopefully, the spectators will get a genuine experience of the sound and smells of the sport, heightened by the fact that we are in such an enclosed environment with buildings all around."

The real business of the day is just hours away, and even the police seem excited by what they are about to witness. The impressive Georgian architecture that frames the scene forms an unusual backdrop for Formula 1 cars that are traditionally encircled by large, open spaces. And, as the drivers congregate for a photocall on a specially-erected podium, the scene seems as discordant as it does delightful.

The sense of anticipation, though, is rising. The 'track' is now clear, and the sound of Formula 1 engines being fired in the paddock brings a cheer from the crowd. Many of the people here have never seen a Formula 1 car in action, let alone been so close to one.

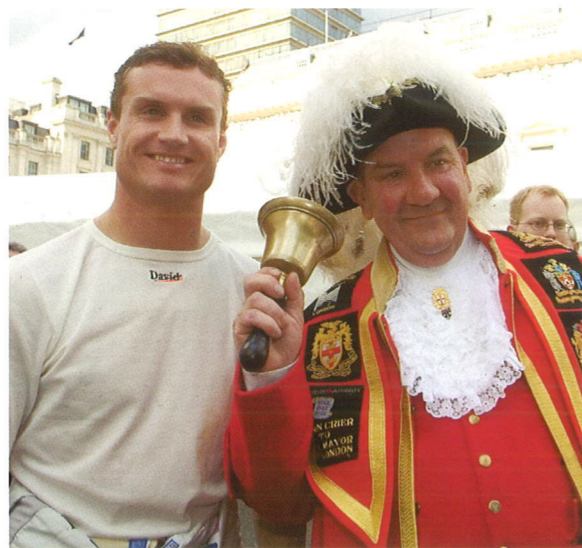
As the sun begins its downward journey the drivers





“THE ‘TRACK’ IS NOW CLEAR, AND THE SOUND OF F1 ENGINES BEING FIRED IN THE PADDOCK BRINGS A CHEER”

CLOCKWISE FROM TOP
Some 250 media personnel were present at the event; just popping down to the shops; David with a traditional London town crier



undertake their reconnaissance laps. David is driving the Mercedes-Benz SLR McLaren along the narrow trackway, and the roar of the engine is enough to get camera flashbulbs popping all along the street as people crane their necks and cheer. After each driver has had a chance to check out the surface, a small convoy of Westminster council street-cleaning vehicles wander ponderously along the route, their circular brushes scooping up the detritus of the London streets. Their snail's pace brings a cheer – never have street cleaners been so rousing received. Once they have done their job and swept the surface, the Mercedes-Benz SLK AMG Safety Car powers out along the route, checking, as it does at grands prix, that all is well before the drivers set off.

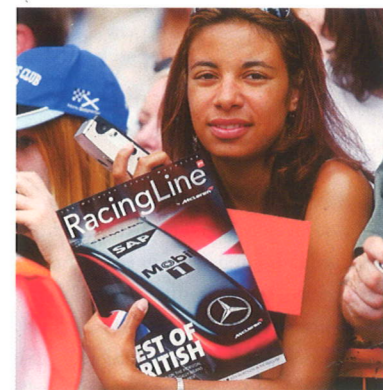
Some minutes of calm follow. It is slightly unsettling to see and hear so many thousands of people congregating in almost total silence. Overhead, the famous edifices that line Regent Street are speckled with people hoping for the ultimate vantage point. Traffic lights and bus shelters have become temporary grandstands.

A roar goes up from the bottom of the street, the first car is out! As it snakes along the ludicrously narrow track, rafts of rapt applause ring out. People are cheering, happy, holding their ears from the noise and drinking in what they know is a once-in-a-lifetime spectacle.

David is one of the final runners, and the sight of his Saltire-swathed helmet brings possibly the biggest cheer of the day. There is, of course, no room to get the power of a Formula 1 car down. Instead, David travels at (relative) crawling pace. The only hint of the latent power coming from the occasional banshee wail of the rising revs followed by the smoking of the rear tyres. David rounds the right-hander past Liberty's department store and disappears from view. As he travels carefully back onto the main drag, he treats the audience to more wheelspins. Back at the pits, he coaxes MP4-17D into a lurid 'doughnut', and the cheer volume rises accordingly. Unstrapped, out of the car, David knows, along with the thousands here today, that he has made London history. ■




TOP TO BOTTOM
The narrow streets are jammed solid; making the Safety Car and the TAG Heuer-liveried course car essential; quality reading matter, team supporters and some quality 'doughnuts' from David Coulthard



SYSTEMS IN PLACE

BAE Systems, the Team McLaren Mercedes Technology Partner, has also been a partner to the Systems Engineering Innovation Centre. *Racing Line* went along to the official opening to find out more

WORDS MIKE CABLE PHOTOGRAPHY MARC BURDEN

 The Spitfire, Britain's most famous fighter aircraft, was designed from scratch by one man alone whereas it takes the combined efforts of one hundred people to design a modern washing machine.

This startling statistic was used at the official opening of the Systems Engineering Innovation Centre (SEIC) at Loughborough to highlight the complexities involved nowadays in even the most mundane engineering processes and to explain why, as a result, the role of the systems engineer has become so vitally important.

Ron Dennis, Chairman and CEO of the McLaren Group and one of five speakers at the opening in July, produced an equally fascinating statistic from the world of motorsport to illustrate the same point.

Interviewed by British television and radio personality Nick Ross in front of an audience of 160 people that included Lord Sainsbury, Minister for Science and Technology at the Department of Trade and Industry, he recalled that when he was Chief Mechanic with the Brabham Racing team back in the 1960s, the entire organisation numbered less than one third of the personnel that Team McLaren Mercedes now takes to a grand prix just to look after the catering!

He added that during the same period the overall development cycle for a grand prix car had shrunk from 18 months to a matter of weeks, while the time allowed for the actual assembly process had been reduced from three or four months to three or four days. "The car features around 7,000 separate components, 90% of which are likely to be changed each season, and the complexities involved in designing, developing, testing and manufacturing every one of these components and making sure that they arrive at the right place and at the right time are horrendous," he said.



Lord Sainsbury officially declares the Centre open



Ron Dennis talks with BAE Systems' Mike Rouse

"Without systems engineering it would be impossible."

In simple terms, systems engineering is all about the integration of people, processes, tools and technology in order to improve the management of very complex engineering projects. In our increasingly high-tech world, it is at the core of an ever-widening range of products and is seen by many as the future face of engineering.

The opening of the SEIC, a £60 million joint venture between Loughborough University, the East Midlands Development Agency and Team McLaren Mercedes Technology Partner BAE Systems, establishes Britain as a world leader in this emerging discipline.

The Centre represents a unique collaboration between industry, academia and an ambitious and forward-looking regional authority. It will give industry researchers and engineers the opportunity to get together under one roof with their academic peers from Loughborough University for research and training aimed at meeting the current shortfall in systems engineers.

It is hoped to have 1,000 BAE Systems engineers in training there by next year. They will be able to take

advantage of state-of-the-art research facilities that include synthetic environment laboratories, virtual engineering capabilities, a lecture theatre, exhibition area and a highly integrated communications infrastructure.

Located in Loughborough University's Holywell Park, there is nothing quite like the SEIC anywhere else – not even in America. The scale of the venture is unprecedented in terms of the numbers involved and the timescale of the commitment to systems engineering. It is anticipated that firms throughout the UK involved in industrial sectors such as aerospace, automotive, food and drink processing, medical technologies, clothing and textiles will benefit from the training and expertise on offer.

Formally opening the Centre during a week in which the Government had announced an extra £200 million investment in science and technology over the next three years, Lord Sainsbury said, "I firmly believe that in the new global economy we will only be successful on the basis of our knowledge, skills and creativity and this Centre brings together one of the most dynamic and industry-orientated of our universities and one of our most >>

ABOVE
The SEIC is a joint-venture between BAE Systems, Loughborough University and the East Midlands Development Agency



ABOVE Ron Dennis and Lord Sainsbury, (left) listen intently as the intricacies of the latest military hardware are explained to them

successful world-class high tech companies, backed by the far-sighted East Midlands Development Agency.

"It would be difficult to find an initiative that more clearly illustrates what the Government thinks needs to be done in this country today in order to ensure our success in the global economy of tomorrow.

"We believe very strongly that the UK will only be able to compete in the future against countries like China, which has five percent of our wage costs, on the basis of innovation. And, of course, that innovation will involve the integration of a number of technologies."

"We are proud to be a major initiator of the SEIC," said Mike Rouse, Group Marketing Director for BAE Systems. "It will benefit not only our company in providing us with the highly skilled people we need to improve our competitiveness in the marketplace, but will also provide a huge boost to other technologically advanced firms

across the region."

He added: "Greater collaboration between universities and business to provide a sharper focus for research and an impetus to innovation and productivity growth is vital for the better commercial transaction of leading edge technologies to applications in business. Collaboration across the engineering spectrum is, indeed, already happening today and BAE Systems and Team McLaren Mercedes are a great example of how two different industries can work together with academia."

On display as a centrepiece at the opening ceremony, one of the Team McLaren Mercedes Formula 1 cars symbolised not only BAE Systems' eight-year partnership with the team – born out of a shared commitment to innovation, leading edge technology and world class engineering – but also the drive to make engineering a more attractive career option to the younger generation.



ABOVE Sir David Wallace of Loughborough University BELOW A Team McLaren Mercedes showcar highlights the team's proud association with the SEIC

"We have to make young people understand the excitement of technology," Ron Dennis told his audience at Loughborough. "I am passionate about engineering, but in my opinion industry has always lagged behind in understanding the need to stimulate at grass roots. That doesn't mean apprenticeships – although they should never have gone. It means lighting the spark of enthusiasm.

"Engineering and science have to have a face that is attractive to young people and that can create that spark and can inspire them. We need to present engineering in an interesting and stimulating way and, in part, that involves persuading people that it's not a dirty environment any more. These days, in fact, you can have engineering organisations with a very high level of corporate hygiene, creating a great environment in which to work. That's what we all have to do. And we have to create centres of excellence such as we have here at SEIC.

"This building is a showcase and should be used as such. I feel strongly that we need to persuade more and more businessmen to become like-minded and to follow the path and the example that we are part of here today. If necessary, we should force them to come! Because the future of the UK is here – and it lies not in heavy industry, but in brainpower. We need brainpower and it has to be encouraged out of young people by inspirational people and inspirational actions. In every way, this is an inspirational place."

The successful and long-standing Technology Partnership between Team McLaren Mercedes and BAE Systems grew out of a meeting of minds on this and many other aspects of high tech engineering between Ron Dennis and BAE Systems' former Group Engineering Director, Professor Dave Gardner. It was Professor Gardner who helped to introduce the first-ever undergraduate course in systems engineering in this country at Loughborough in 1991 and who also played a part in the development of the SEIC.

There are many obvious synergies between Team McLaren Mercedes and BAE Systems, especially in the field of advanced aerodynamics and Computational Fluid Design (CFD), which was pioneered by BAE Systems. Through the partnership, the team gained access to the full breadth and depth of BAE Systems' experience and expertise in these areas and also made extensive use of the wind tunnel there before installing its own state-of-the-art facility at the McLaren Technology Centre. In return, the company has benefited by exposing its design engineers to Team McLaren Mercedes fast-track development cycles. The association with Formula 1 has also helped to change the image of engineering in the way that both Professor Gardner and Ron Dennis agree is vital in the drive to attract young people into an industry that the Government estimates will require a national intake of 45,000 new engineers a year between now and 2010.

With regard to the importance of systems engineering in particular, Ron Dennis says, "People now see it as the future of engineering, but as far as we are concerned it >>





Ron Dennis was interviewed by television personality Nick Ross on stage, where he alluded to the importance of systems engineering in modern Formula 1.

is the past as well. By the very nature of what we do, we have always had to have systems engineers within the team, although they are never specifically referred to as such."

Likening a systems engineer to the conductor of an orchestra who, at the same time, also knows how to play each individual instrument, he adds: "Being responsible for integrating the whole technology package – the engine, gearbox, chassis, suspension, aerodynamics, the driver, the testing and everything involved in the race weekend – and getting all that to operate on a start line exactly as required is all about systems engineering. It is a fundamental discipline and the team relies heavily on it." ■



The opening of the SEIC is a positive step for the UK's engineering community

WHAT THEY SAY ABOUT THE SEIC

RON DENNIS, Chairman and CEO of the McLaren Group:

"The future of the UK is here. I feel strongly that we need to make more and more businessmen like-minded and to persuade them to follow the path and example that we are part of here today. If necessary, we should force them to come here!"

LORD SAINSBURY, Minister for Science and Technology at the Department of Trade and Industry:

"It would be difficult to find an initiative that more clearly illustrates what the Government thinks needs to be done in this country today to ensure our success in the global economy of tomorrow."

MIKE ROUSE, Group Marketing Director, BAE Systems:

"Systems Engineering is becoming the face of future engineering and this venture will not only benefit BAE Systems

by providing highly skilled people but will also improve our competitiveness in the world marketplace by providing a huge boost to other technologically advanced firms across the region and the UK."

IAN HARRISON, Head of Economic Development at the East Midlands Development Agency:

"Innovative companies grow faster, are more profitable and sustain a higher level of performance. The SEIC will help existing companies to exploit new ideas, attract new businesses from outside the region and hopefully help us achieve our aim of being amongst Europe's Top 20 regions by the year 2010."

PROFESSOR SIR DAVID WALLACE, Vice-Chancellor, Loughborough University:

"Loughborough University and BAE Systems have enjoyed a long and fruitful relationship, which a decade ago resulted in the first of our four Queen's Anniversary Prizes. The SEIC takes this relationship to a new level and is an exemplar of business-university links for the 21st century."

SHARED TECHNOLOGY - THE NUMBER ONE FORMULA FOR SUCCESS.



The Technology Partnership between BAE Systems and Team McLaren Mercedes got off to a flying start 8 years ago and has been a winning formula.

By sharing cutting edge technologies such as Aerodynamics, Rapid Prototyping and Computational Fluid Dynamics, Eurofighter Typhoon and the Team McLaren Mercedes MP4-19 both deliver outstanding performance.

BAE Systems and Team McLaren Mercedes, working together to keep British engineering in pole position.

INNOVATING FOR A SAFER WORLD

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BAE SYSTEMS

World Professional Snooker Champion **Ronnie O'Sullivan** has thrilled fans across the world with his exciting and attacking style of play. He talks to *Racing Line* about his first visit to a Formula 1 race and his record-filled career on the green baize

WORDS ADAM COOPER PHOTOGRAPH ALEX LIVESEY/GETTY IMAGES

The British Grand Prix was your first visit to an F1 race. What did you make of it?

I was really pleased that I went. It was a great experience. I was nearly invited about six years ago, but the sponsor left snooker, so I missed out. The whole experience was much more than I ever imagined it could be. One thing I really couldn't believe was how professionally and how well everything was done.

Did you get a chance to see the cars and garages up close?

I went in some of the garages and I sat in one of the cars. I couldn't see anything. I can't believe they sit in them for 70 laps. With the snooker you're pretty much on full view, so a lot of people in the teams seemed to recognise me, and they were all really friendly and welcoming.

Do you follow grand prix racing on TV?

Yes, I always watch the races when I can. Often I don't watch it as it happens, because I prefer the highlights. I find it more exciting, as long as I don't find the result out. Always since I was a kid I've been into Formula 1, or any sort of car racing really. I just love cars.

What car do you drive?

I drive a Mercedes-Benz 500SL. I like the old 'Merc', and it suits me. It's a very fast car, and great for cruising up and down the motorway.

Did you ever have any ambitions to drive yourself?

I wish I had been a racing driver, because I would have fitted in better with the racing driver life. Snooker players like partying all night, which I have done in the past. But with racing

drivers everything is done to the maximum in terms of fitness and diet and so on. So I'm thinking of changing careers. I'd love to race a car, and if there's any opportunity to get me in a car – and I don't care if it's rally driving or anything – I'd love to do it. And I don't want to wait 10 or 15 years, I'd like to do it quite soon.

How did you get started in snooker?

Just watching it on the TV. I went down the pub with my dad and they'd have a pool table. He'd give me some 50p pieces and tell me to go and play. I was beating people and beating people and my dad recognised the hunger and passion I had for it, and encouraged me lightly into it – he didn't push me into anything. So that's how it all started. Now if you were to take snooker away from me it would be like taking away my life.

Did you have to sacrifice a lot when you were younger and had to be inside practising and so on?

The funny thing is when I was a kid it didn't seem to be much of a sacrifice, but when I got to 17 or 18 I tried to make up for lost time. After four or five years I was burned out, and it no longer seemed like a sacrifice to me. I enjoy things like going to Silverstone – it was like a Friday night out for me.

You won the Snooker World Championship in 2001 and again this year. How important is it, especially winning it a second time?

It was lovely, a great buzz. I was a bit disappointed when it was all over to be honest, because I wanted to carry on playing. I was pleased to have won it. The goal is to repeat it and win back-to-back world titles, or

even a hat-trick. Stephen Hendry has won it seven times. He's the equivalent of Michael Schumacher, without a doubt, but records are there to be broken...

There are always new young guys coming along. How hard is it to stay on top of the world rankings?

I'd rather be the hunted than the hunter. Being the hunter was good, because you're always looking to get that much better, but now I'm aware that I've won a few titles and done quite well. Every year I set myself new goals. Even though I'm number one and I've won the world title, there's still room for improvement and to get better in every area of my life, not just on the snooker table, and to feel inner happiness and contentment. I'm always striving to be the best.

Racing drivers sometimes say that the important thing is to keep improving, even if you're in a bad car and can't win...

It's true. As long as you're getting the best out of yourself, you can't do any more than that. There have been times when I've done well, but I knew that I could do better. In the last three or four years I've been quite disciplined. Talent can only take you so far. I think you need the hard work, desire and commitment. I think that's maybe the difference between the top drivers and some of the others.

Any ambitions left outside sport?

Just to be happy and enjoy my life, and start a family soon – I'm 28 now. I'll just keep playing snooker and enjoying it, and the day that I don't enjoy it, I'll put my cue down and give up, but I'll probably stay involved in the sport in some way.




SILVER SERVICE



Team McLaren Mercedes hosts a number of very special guests in its VIP Club at each grand prix. *Racing Line* caught up with the team at Silverstone to find out more

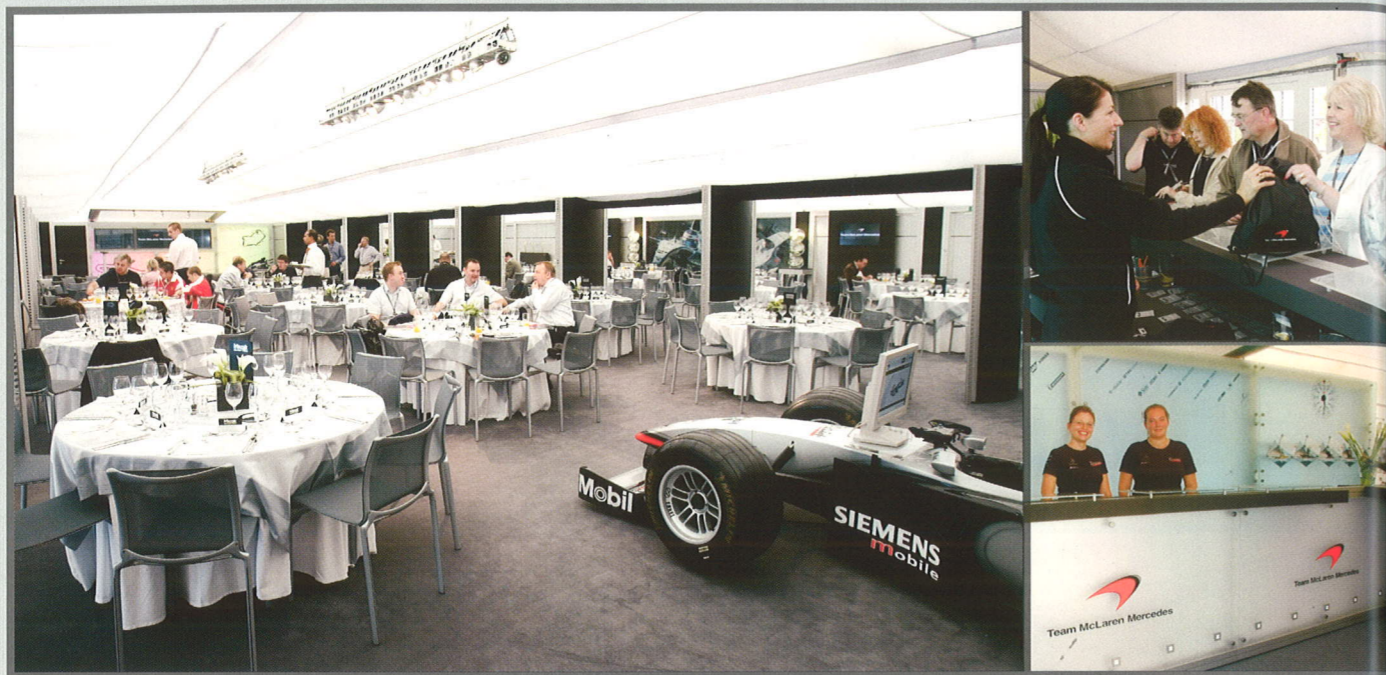
WORDS LUKE HAYTER

PHOTOGRAPHY ANTTI PUSKALA, NICOLAS GILSON, LAT

 The Team McLaren Mercedes VIP experience starts before you have even closed your front door to head off for the race. The invitation arrives in a silver bubble-wrapped parcel, and there is no mistaking which team it comes from. Inside, you find your complete access package for the day. A car pass, electronic access card and itinerary. The whole thing is packaged in such a way as to reflect the team's personality and, as such, is modern and well designed.

The Formula 1 Paddock Club is the most exclusive way to watch a grand prix. There are no hot dog vendors, empty beer cans or klaxons here; rather, it's a haven for canapés, champagne flutes and hushed conversation. Each team has its own hospitality area within the confines of the garden party-esque Paddock Club environment. Team McLaren Mercedes' stands out not only for its size – it is substantially more spacious than the others – but also the >>

The Team McLaren Mercedes VIP Club is comparable to the very finest dining experiences



attention to detail that has been paid to each and every aspect of the VIP experience.

The design of the interior is classic McLaren – simple yet tasteful. A number of silver-grey hues echo the design language of the McLaren Technology Centre and the Team Communications Centre, making the experience modern, uncluttered.

“The interior of the Team McLaren Mercedes VIP Club was planned in conjunction with our European-based contractor,” explains McLaren Marketing’s Head of Hospitality, Caroline Sayers. “We wanted an up-to-date facility that is bright and modern yet offers levels of comfort not normally found at grands prix. The use of opaque panels and creative lighting helps us to reflect the feel of the McLaren Technology Centre – though it is quite a challenge to bring that to fruition inside a marquee!”

Upon arrival, guests are greeted by friendly and attentive staff, who hand over the exclusive gift pack, containing a Hugo Boss Team McLaren Mercedes polo shirt and a team cap and disposable team-branded camera among other items. Displays of various TAG Heuer timepieces line the walls behind the check-in area.

The official welcome to the guests is delivered by a team member, who addresses the throng from a stage at the front of the suite. There are three plasma screens directly behind him, attached to the wall. Beneath his feet, encased within the stage itself, are a selection of original Formula 1 steering wheels from some of the team’s world champion drivers: evocative names such as Fittipaldi, Senna, Häkkinen et al.

Also in residence within the suite is the Team McLaren Mercedes simulator, which has been set up to allow guests to try their hand at a quick lap around – where else? – Silverstone. A plasma screen directly behind the ‘driver’ allows the other guests to see how well (or not!) they are doing. A full-size Formula 1 showcar sits at an angle near the entrance, and many guests will pose beside it over the course of the weekend. One of the team’s Official Suppliers, Canon, has supplied an all-in-one imaging solution which allows guests to have their picture taken digitally alongside the car and see the results printed instantaneously. The photo is then placed inside a special wallet to take home and treasure.

“Coming to a grand prix as a VIP

CLOCKWISE FROM TOP
Attention to detail is evident in the marquee; guests are greeted by being handed a ‘goodie bag’ at the purpose-built reception area

guest of Team McLaren Mercedes is always a fantastic experience,” says Nigel Geach, Director of Sports Marketing Surveys, an Official Supplier to the team. “As a guest you know that, from the moment you arrive until the moment you leave, every need will be well catered for.

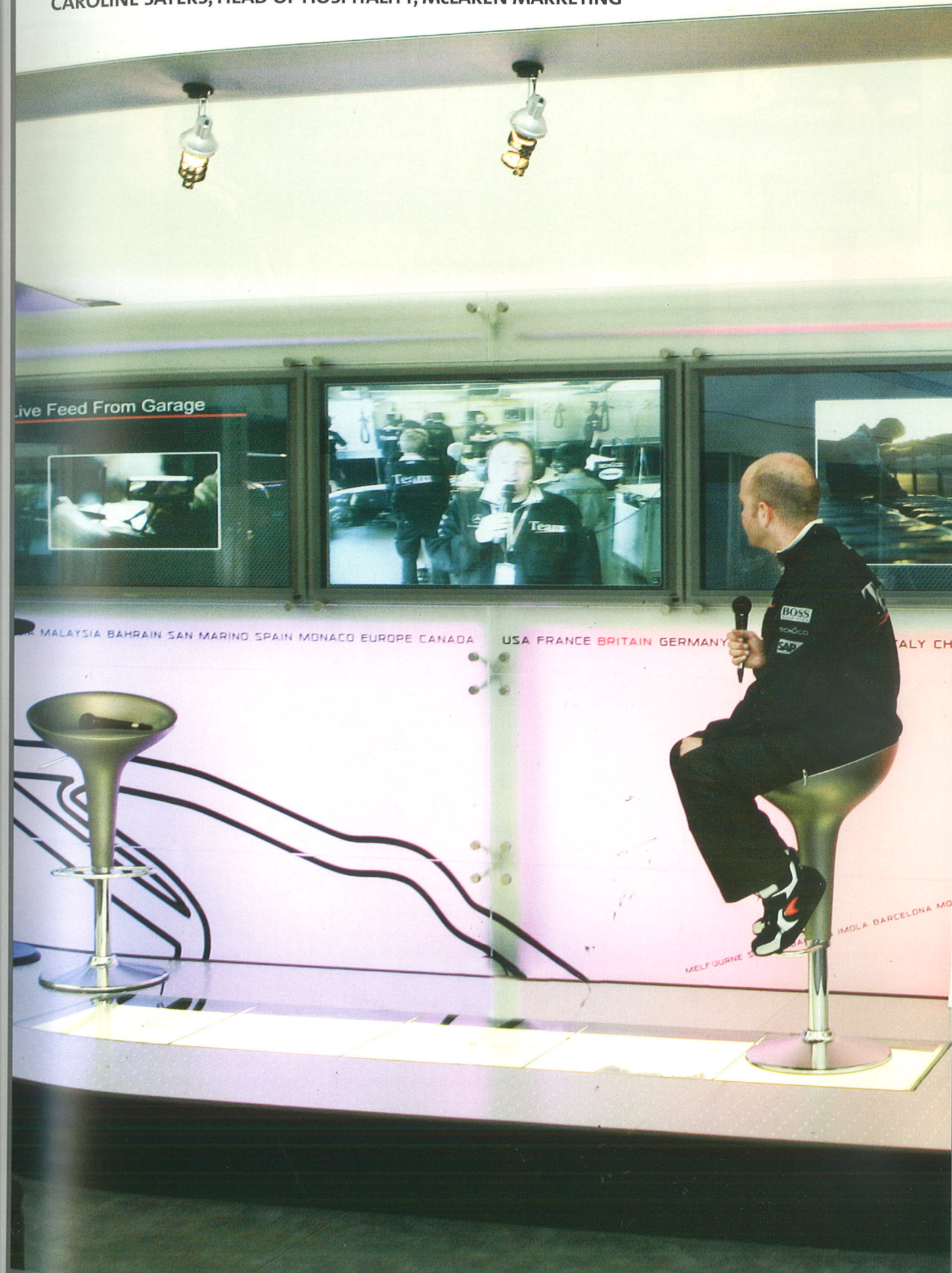
“In many ways, Team McLaren Mercedes has set the corporate hospitality standard for others to follow, and when I bring guests here they always comment on the high standard of service and presentation.”

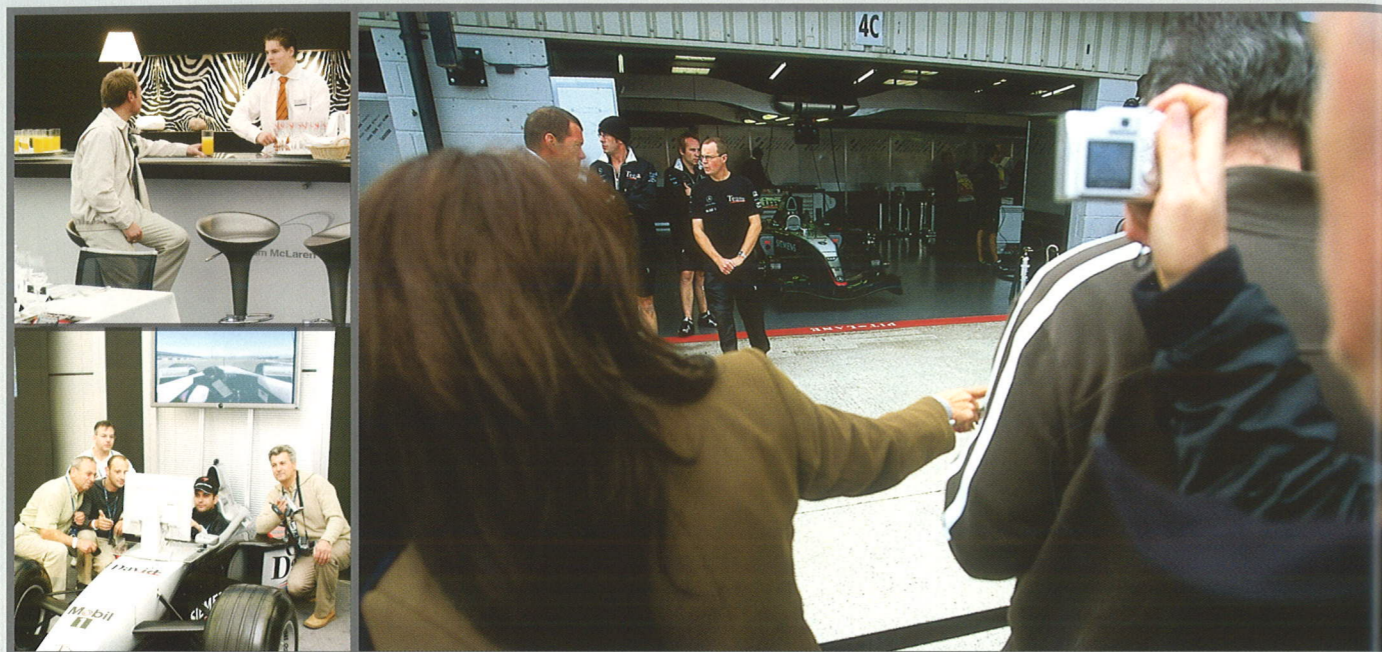
Another facet of the VIP Club experience is a chance to link live via the plasma television screens to the pit garage, where a team member explains to the guests the many and various processes that the team goes through over the course of a grand prix weekend. “The live pit link contributes to our aim of ensuring the VIP guests feel part of the team,” explains Sayers. “It offers them exclusive and insightful access, the kind many fans would love to be able to enjoy.

“Here at Silverstone, we’ve had to lay over 1000 metres of cable to allow the live link-up to the pits to take place,” says Sayers. “That’s a lot of hard work, but it’s certainly worth >>

“THE LIVE PIT-LINK CONTRIBUTES TO OUR AIM OF ENSURING THE VIP GUESTS FEEL PART OF THE TEAM”

CAROLINE SAYERS, HEAD OF HOSPITALITY, McLAREN MARKETING





it because it brings the live garage action direct to the guests."

Among the treats to be enjoyed by Paddock Club guests is the pit lane walkabout, and the first of the day is scheduled for 08:15. This is a chance for VIP guests to get real access to the everyday activities of the team at a grand prix. All the competing teams' garages are open, and the cars sit gleaming in the sunshine, waiting for their moment, while the guests point animatedly and take photos.

Back in the hospitality suite, there is a breakfast on offer, and as the guests start to arrive, there is an informal feel to proceedings. Everybody looks relaxed and happy. A number of staff are on hand to cater for every need, and they go about their business in an unobtrusive yet attentive manner that is reminiscent of the finest dining experiences.

"In the late 1980s, McLaren raised standards in corporate hospitality," explains Ekrem Sami, McLaren Marketing's Managing Director. "We were not comfortable to entertain our VIP guests in what was effectively a tent. So, we had designed a bespoke interior that we transported around Europe from race to race. No other team had anything like that. In the 1990s, however, other teams in the

CLOCKWISE FROM TOP
Friendly, attentive staff enhance the experience; the pit lane walkabout is an opportunity to scrutinise the garages early on the morning of the grand prix; the ever-popular race simulator lets guests have a go at turning a quick lap

pitlane began to realise the importance of corporate hospitality, meaning that they now pay much more attention to the quality of the experience they offer. For Team McLaren Mercedes, though, this is second nature. We are proud that we can offer such a high standard of race hospitality. In current Formula 1, with all hospitality operations on a broadly similar level, it's the attention to small details and the level of service that makes the difference."

A life-sized mannequin of Kimi Räikkönen stands by the showcar, resplendent in team overalls and helmet. It's a nice touch and adds to the intimate flavour of the occasion. At 10:35, on schedule, the real Kimi appears. He is here to answer questions from the guests and to give his thoughts on his chances for the race. It is an exciting few minutes, and the guests clearly appreciate the chance to be addressed directly by the pole-position man himself.

As Kimi sits on the stage, answering the questions, the guests are silent, leaning forward in their chairs the better to hear clearly what Kimi is saying. Unfortunately, his time comes to an end all too soon. He has to leave, but still finds time to give his autograph to as many people as possible. "Good luck for the race,

Kimi!" shouts one well-meaning observer. Kimi nods and smiles, acknowledging the support. The guests are now free to relax and enjoy themselves before lunch is served. There are plenty of diversions to occupy them while they do so. In addition to the race car simulator, there is also a computer games console set up for them to enjoy, along with a raft of newspapers and magazines.

"We try to personalise the whole experience as much as we can for the guests," continues Sayers. "In order to achieve this, we have a permanent group of staff who travel with the unit, as well as hiring local people from each of the countries that we visit. Our aim is to have contact with every single guest, so that they're able to form relationships with the staff and feel like an integral part of the team.

"In this respect, each guest is offered the opportunity to receive *Racing Line* magazine each month to remind them of their Formula 1 experience and keep them in touch with Team McLaren Mercedes."

There is also the small matter of the racing taking place outside on the circuit: the Paddock Club provides guests with an exclusive-access grandstand, overlooking the final complex of turns at the >>



Pole-position man Kimi Räikkönen pays a visit to the VIP Club to answer questions about his chances in the forthcoming race

THE F1 Paddock Club



"WE ARE PROUD THAT WE CAN OFFER SUCH A HIGH STANDARD OF GRAND PRIX HOSPITALITY TO OUR GUESTS"

EKREM SAMI, MANAGING DIRECTOR, McLAREN MARKETING

Northamptonshire track. It is covered to protect viewers from the elements – vital perhaps more in Britain than in most other countries – and affords a fantastic view of the cars as they snake their way around the turns before powering onto the pit straight at Woodcote to start another lap. There are a number of race meetings beside the grand prix on offer for the judicious motorsport watcher, including the Maserati Trophy Race and the Porsche Supercup. The main event, though, is of course the 2004 British Grand Prix, and as the day passes by, the sense of anticipation from Team McLaren Mercedes' guests regarding this event is palpable. This is added to by the fact that one of their own is starting the race from pole.

After the race, in which Kimi has taken second place, it's back to the VIP

Club. A live link-up with Martin Whitmarsh, Team McLaren Mercedes' CEO, Formula 1, is taking place. Martin gives an immediate reaction to the race, and the guests listen intently to his analysis. The VIP hospitality suite stays open until well after the grand prix, and weary race-watchers take the opportunity to kick back and relax before facing the journey home.

"It's a constant challenge for our hospitality team to always be pushing the boundaries – to discover something extra that will give us the edge on our competitors," admits Caroline Sayers.

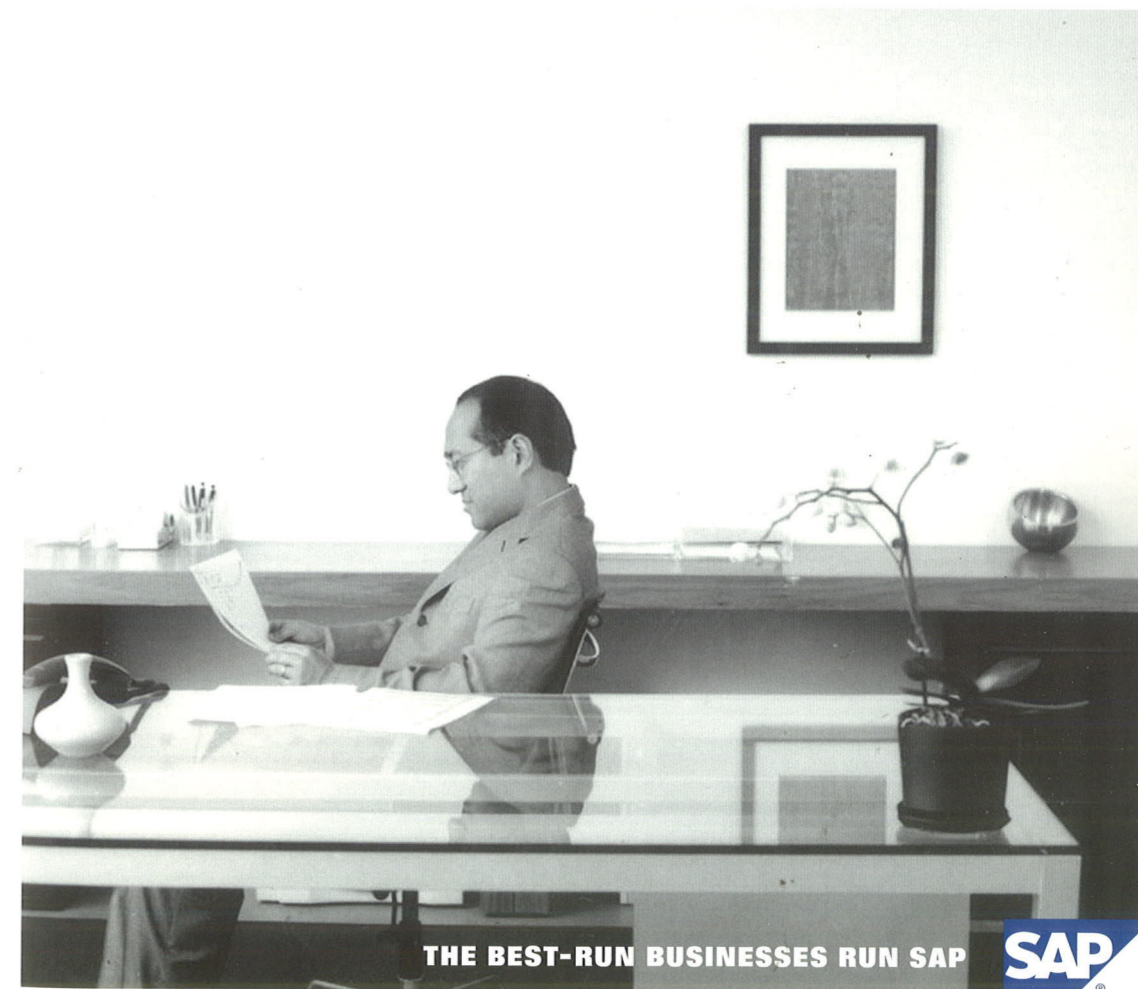
"We are always asking ourselves how we can improve the experience for the guests, how we can make it different. It is a constant search for perfection."

On- or off-track, this is simply the Team McLaren Mercedes way. ■



FROM TOP TO BOTTOM
A full-size showcar reminds guests why they are here; a pit walk and an exclusive covered grandstand complement the day

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TEAM McLAREN MERCEDES FORMULA 1

THE EXHAUST PIPE

WORDS MARK SKEWIS PHOTOGRAPHY TED HUMBLE-SMITH/HOCH ZWEI

 The basic function of an exhaust pipe on a Formula 1 car is to vent the hot gases from the engine. A straightforward remit, you might think. And it would be, was it not for the fact that they also have a vital influence on the car's engine and aerodynamic performance, as well as its safety.

The positioning of the exhausts – which currently exit the MP4-19B towards the rear of its top bodywork – is extremely important, for a car's aerodynamics are sensitive to changes in airflow.

"The gas has got to be fed into the car's airstream at exactly the right point," explains Team McLaren Mercedes Design Engineer Nick Butler. "It exits the pipe at high velocity when the engine is on full power, and that can be harnessed to help the aerodynamics. When the throttle is shut off, though, you have to ensure that the sudden loss of flow doesn't make the car's handling sensitive."

In terms of engine performance, the shape, size and length of the exhaust pipes influence power and, ultimately, the driver's feel for his car.

Formula 1 is a hostile environment for any component but the phenomenal temperatures the exhaust system must withstand, combined with the high level of vibration associated with the engine, add an extra dimension to the design challenge.

The pipes themselves run as hot as 700 degrees C; the gas forced out of them may reach a brutal 900 degrees C. In order to cope with this environment the system is manufactured from Inconel, a nickel-based metal chosen for its properties, particularly its toughness at elevated temperatures.

However, fatigue cracking is inevitable and the exhaust has a limited life so the mileage of each system is carefully recorded and each system retired after 1500 km.

"If a pipe split and blew straight onto one of the suspension components, for example, it would be dangerous, so we use tiny sensors to monitor temperatures of key components," says Butler. "If we do get a breakage and gas escapes we will see a sharp rise of temperatures in that area on the car's telemetry and we will stop the car."

Although only the two exhaust pipes exiting the car are visible, the system actually features 10 pipes – one for each cylinder of the V10 engine. Five run each side of the car and are channelled into one collector and then out of the exit pipe.

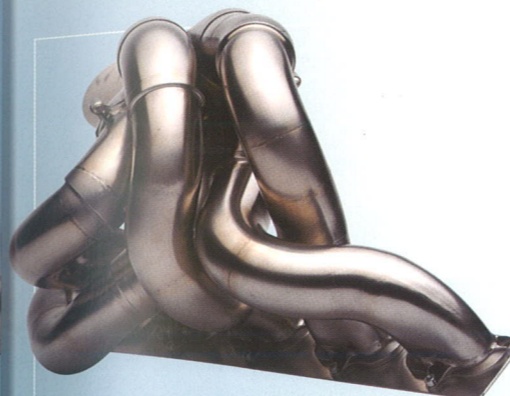
In a perfect world, the design of the pipes would feature only gentle bends to ensure a smooth flow of gases. Yet the no-compromise approach to the car's overall design means that the packaging of the exhaust system must necessarily accommodate higher design objectives.

Computational Fluid Dynamics – a sophisticated computer simulation programme – is used to calculate the ideal flow through what can often be intricate, bending shapes.

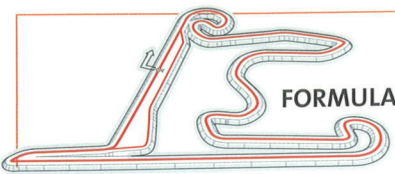
Typically, each set of exhausts takes around 90 man-hours to make. Such is the complexity of the whole system, however, that months of development work have been involved before the first set ever goes into production.

i TECHNICAL SPEC

LENGTH 760 mm



The exit position of the exhausts is calculated to cause the least disturbance to the car's aerodynamics

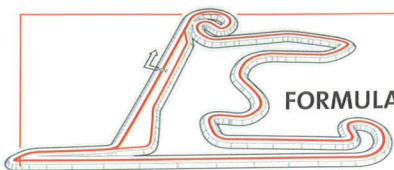


ORIENT EXPRESS

Formula 1 is going to Shanghai for the first Chinese Grand Prix. How do teams tackle new races? *Racing Line* finds out

WORDS MARK SKEWIS/LUKE HAYTER PHOTOGRAPHY SUTTON IMAGES/LAT/HOCH ZWEI
CIRCUIT ILLUSTRATION PETER LIDIARD





Team McLaren Mercedes has a total commitment to making Formula 1 the best possible spectacle for our global audience. The inaugural Chinese Grand Prix not only marks the start of a new and exciting era for motorsport in the region, but also allows us to call our sport truly global as it now has a real presence in the world's largest nation.

With any new grand prix for the team, logistics are vital. We try to build a relationship with the various representatives of the race circuit. Several team personnel normally go out to the new host country at least twice before the event. We have also worked with the various hotels to secure good accommodation and have learned a lot about Shanghai's infrastructure in order that we can work smoothly when we actually get there.

The Chinese market is one of the world's largest and most progressive; with its incredible expansion rate the opportunities for Team McLaren Mercedes are immense. As a result there is also a huge significance to the event from a commercial perspective, for both our Partners conducting business in the region or opening up a new territory for others. The Chinese Grand Prix will enable them to reach out to a vast audience, and will also provide many potential opportunities for our Partners to reach their respective target markets.

There are clearly significant cultural differences. Chinese characters are indecipherable to most Europeans, so it will be a culture shock. At the same time, it's a great opportunity for the Formula 1 teams to build a relationship with the Chinese supporters.

Shanghai is a beautiful circuit: the architecture is stunning – you can tell that a tremendous amount of effort has gone into the buildings. The circuit has already hosted races in preparation for Formula 1, and we are all very grateful for the amount of work that has gone into the facilities.



ABOVE A giant wing, 140 metres wide, spans the main start/finish straight at the new circuit
LEFT The unique team facilities have been constructed on a small lake. They have been modelled on China's ancient Yu Yuan gardens



A new race circuit such as Shanghai presents a driver with a different challenge.

In the absence of being able to drive the track beforehand, we have some additional techniques we can use, from an engineering point of view, to give us baseline settings for things like wing levels and gear ratios.

From a driver's perspective, we can use global satellite positioning to plot a visual of what the track will actually look like



LEFT Formula 1 personnel face a culture shock when they arrive in China

BELOW The old and the new live side-by-side in Shanghai



when we are racing. We go to the factory for the equivalent of what looks like a computer game, only more advanced. The reality is that within 10 laps of driving at any new circuit, a racing driver will have found his way around. This is because that is generally enough time to work out things like racing lines, braking distances, gear-change points etc.

The racetrack has the advantage of learning from all the other circuits on the calendar, and I expect it to be a great facility.

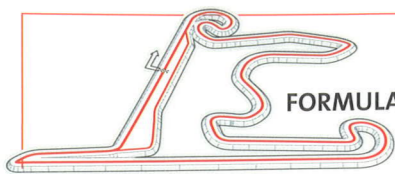
From what I've seen the track looks demanding technically, from a set-up point-of-view, and also physically. Just how we flow through the sections will only really become clear once we're there, but I think it's going to be very challenging.

I will try to get into the track as soon as possible, walk around it with my engineers, look at the curves – all the things you need to know as a driver.

Away from the racetrack, I'm fascinated about going to China. The closest I've been before is racing in Macau and being based in Hong Kong, but I've never actually gone into Shanghai.

I will try to get out to the city a few days before the race. That will give me a chance to get used to the time difference and also to have a look around.

I find that when Formula 1 visits new countries it's best to soak up the atmosphere beforehand rather than to stay on after the race. After the event, your mind moves onto the next grand prix.



FORMULA 1 COMES TO CHINA



STEVE HALLAM
TEAM McLaren MERCEDES
HEAD OF RACE ENGINEERING

“ The first thing you need to do when preparing for a new circuit is to get an architect’s map, or a detailed circuit map. That helps us to determine elevation changes, direction of the cambers and any banking on the corners. From that, we generate a ‘racing line’, which is the trajectory that we expect the car to drive around on the circuit.

Armed with that racing line, we then start to simulate the performance of the car using software that we have developed in-house. The first step is to conduct an aerodynamic scan to determine the downforce level required for the circuit.

Technology Partner Sun Microsystems powers the CFD (Computational Fluid Dynamics) system we use to evaluate aerodynamic permutations. Once we have got an idea of what the aerodynamic requirements of the circuit are, it is then possible to refine our model to go into the more esoteric aspects of the car set-up.

We are trying to get the car as close as possible to an optimum set-up before the driver gets in the car. In that respect these

techniques are little different, in principle, from developing a car set-up to run at an existing circuit. The main difference is that having actual data from the car once it has run on the circuit makes the task easier.

The biggest variable we are likely to encounter will be the asphalt and whether the tyres are working well on the new circuit’s surface.

Michelin normally visits all the new circuits and makes an assessment of the aggregate that has been used for the track surface. This, coupled with an expected track temperature profile that we are likely to be dealing with when we go racing, helps it optimise tyre choice for the venue. ”



CHENG CONGFU
FORMULA RENAULT UK DRIVER



“ Racing in China is nowhere near the standard that it has reached in Europe, but there is huge interest in Formula 1 and I think that the grand prix will raise the whole profile of the sport in Asia.

When I go back to China and have interviews with the media, or with some fans, I get the feeling that interest has already grown spectacularly since the grand prix at Shanghai was announced.

For a long time people have been waiting to see a race in their own country and now they are finally going to get that chance.

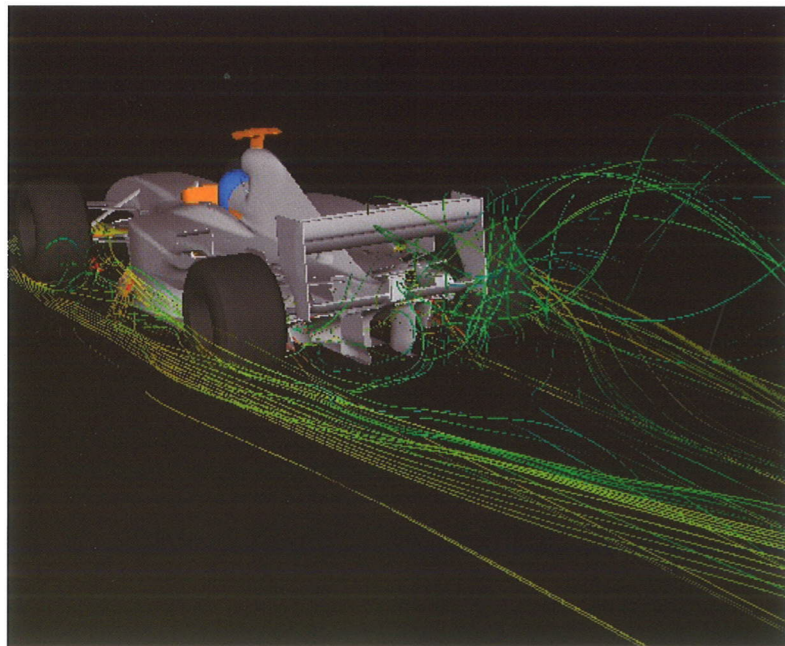
All the teams will find that it is a very different culture compared to Europe. I only found out how big that gap is when I moved in the other direction. In Asia, the drivers don’t speak very directly to their engineers. When I first started racing in England, I was told not to be so polite; the engineers told me I had to speak more directly. At first, I was really shocked but afterwards I found it a lot easier to communicate. I like it!

I used to watch Formula 1 races with my father. I remember that when I was nine years-old I told him, ‘One day I want to be the first Chinese Formula 1 driver!’

To be honest, I didn’t have particular heroes when I was growing up. When people ask me if I have any idols, I tell them that I don’t but that I would like to have David Coulthard’s experience, Juan Pablo Montoya’s aggression and Kimi Räikkönen’s speed. Kimi is a really good benchmark for me, and I would love to be like him.

Team McLaren Mercedes has given me the chance to make my boyhood dream come true. Some of the Chinese media ask me how long it will take to become a Formula 1 driver? I tell them that I honestly don’t know. All I can do is my best.

I don’t want to tell myself that tomorrow I can be a Formula 1 driver; I tell myself tomorrow I am going to work harder to get there. ”



ABOVE Working on aerodynamic simulation with the CFD system RIGHT This season’s other new race, in Bahrain, was testimony to the team’s accurate pre-race predictions



Years of planning have gone into Shanghai’s state-of-the-art racetrack



CLOCKWISE FROM ABOVE LEFT Michelin does considerable behind-the-scenes work on studying the track surface; Team McLaren Mercedes-supported young driver Cheng Congfu is bidding to become China’s first F1 driver; he is gaining experience in the Formula Renault UK racing series this season




Pedro

DE LA ROSA

In the fourth of our series of Team McLaren Mercedes driver biographies, we focus on Test Driver Pedro de la Rosa, who has become an integral part of the team since joining in 2003

WORDS ADAM COOPER PHOTOGRAPHY HOCH ZWEI, LAT

 Pedro de la Rosa joined Team McLaren Mercedes as Test Driver in the spring of 2003, and since then has shared the increasingly heavy workload with Alex Wurz. He's also become a very popular member of the team. He's intelligent and articulate, attributes that help to make him extremely good at his job. But he's also very fast, as his impressive CV includes a string of championship wins as he made his way up the ranks.

Pedro was born in 1971 in Barcelona, where he still lives with his young family. He inherited his love of speed from his father, although at the time he grew up grand prix racing had a very low profile in his country.

"My father used to do some rallying, and he loved cars and bikes," Pedro recalls. "When I was about three years old I started riding motorbikes. He had a 50cc bike and he put four wheels on it so that I could run it a bit like a go-kart! Later he bought me an off-road buggy, for driving on sand,

and I started driving around my parents' house in the countryside. From then on I realised that four wheels were better than two! On the weekends after school we went there so I could run with it. I was not interested in Formula 1, I was just interested in having fun with my brothers and my cousins that lived next to us."

Usually the next step would be racing karts properly at eight or nine, followed by a string of junior titles. In fact while Pedro's family were happy for him to play around on anything with an engine, proper competition was out of the question.

"I started very late. I got interested in karting, but my father did not want me to go racing at all. He was afraid because his brother had died in a traffic accident, and he didn't want to hear anything about racing. He said, no way, you won't go racing as long as I'm your father..."

"In fact I started in radio-controlled

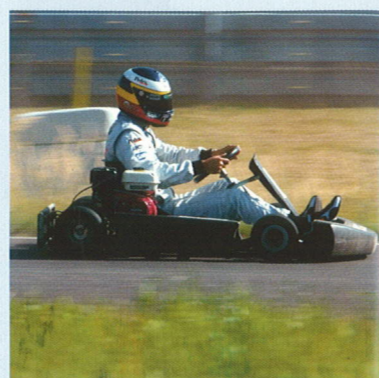
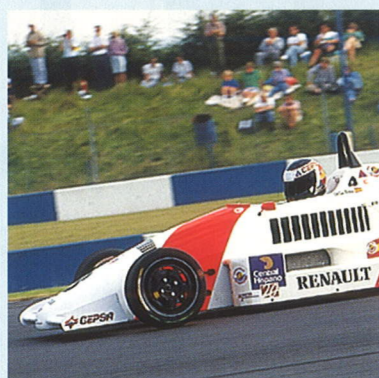
cars, which were much safer! I did that from nine until I was 15, and then I was bored. I asked my father just to give me a chance. It was a bit of a set-up, because I convinced him to buy me a kart, but only to go testing, no racing. Basically a bit like what I'm doing now.

"But I knew that if I went quickly I would have more reasons to convince him. Immediately I was quick, so I started racing soon after that. In fact I did very little karting, just some races in the Catalunan championship, but I didn't really follow a whole year"

Nevertheless he soon caught the eye and was among a group of youngsters who were given the opportunity to win a prestigious scholarship that was Spain's version of the McLaren/Autosport/BRDC Young Drivers' award.

"The Spanish federation did a shootout of all the young karting drivers, and they chose me, so I won the prize, which was sponsorship. Without that I would never have >>

LEFT TO RIGHT Pedro raced well during the 1992 Formula Renault season, winning the British Championship and European finals; he enjoys mountain biking as part of his intense fitness regime, as well as returning to his karting roots as his schedule and the occasion allows



gone into single-seater racing, because I didn't have the money."

Pedro started out in the Formula Fiat Uno series, and soon repaid the faith of those who had selected him.

"It was the first step, the cheapest single-seater. In the first year in 1989 I won the Spanish Championship, when I was 18. I was lucky, because it got much easier for me. The federation made me step up into the Racing for Spain programme, which included Jordi Gene [Marc's older brother]. When he went to Formula 3 I stepped up to Formula Ford. I did some races in England and the whole Spanish championship, which I won."

By now racing was getting serious. Inevitably other things began to suffer, especially his studies.

"I was at Barcelona University, studying Economics, but it was impossible for me to do everything. I started being a very bad student. When I was racing in England I spent many weeks away and when I came back I had to study so many hours, so I gave up the study to focus on racing."

The next step was Formula Renault, thanks to the French company's links with the Racing for

Spain programme. "In the first year I didn't do well, but in the second, 1992, I won both the British Championship and the European finals. I was on my way."

Pedro had by now made Britain into a second home of sorts, and the next move was the local Formula 3 series, which had produced so many great drivers. Quite a few of them were graduates of the West Surrey Racing team – indeed Pedro joined exactly 10 years after a certain Ayrton Senna had driven for the team.

"In my first year with the team I finished sixth in the championship. But in the second year we had no money, although Renault sponsored the programme, and they made us use their engine.

"It was a very bad year, the worst of my career. I thought it was the end, because we didn't achieve any results. For the last race of the year at Donington I hired a Mugen engine and got pole. In the race I went off, but at least I proved a point..."

In fact that race was to change Pedro's life. The people from TOM'S Toyota were at that event looking for a driver to race in the following year's

Japanese Formula 3 series. Pedro didn't hesitate when they made him an offer.

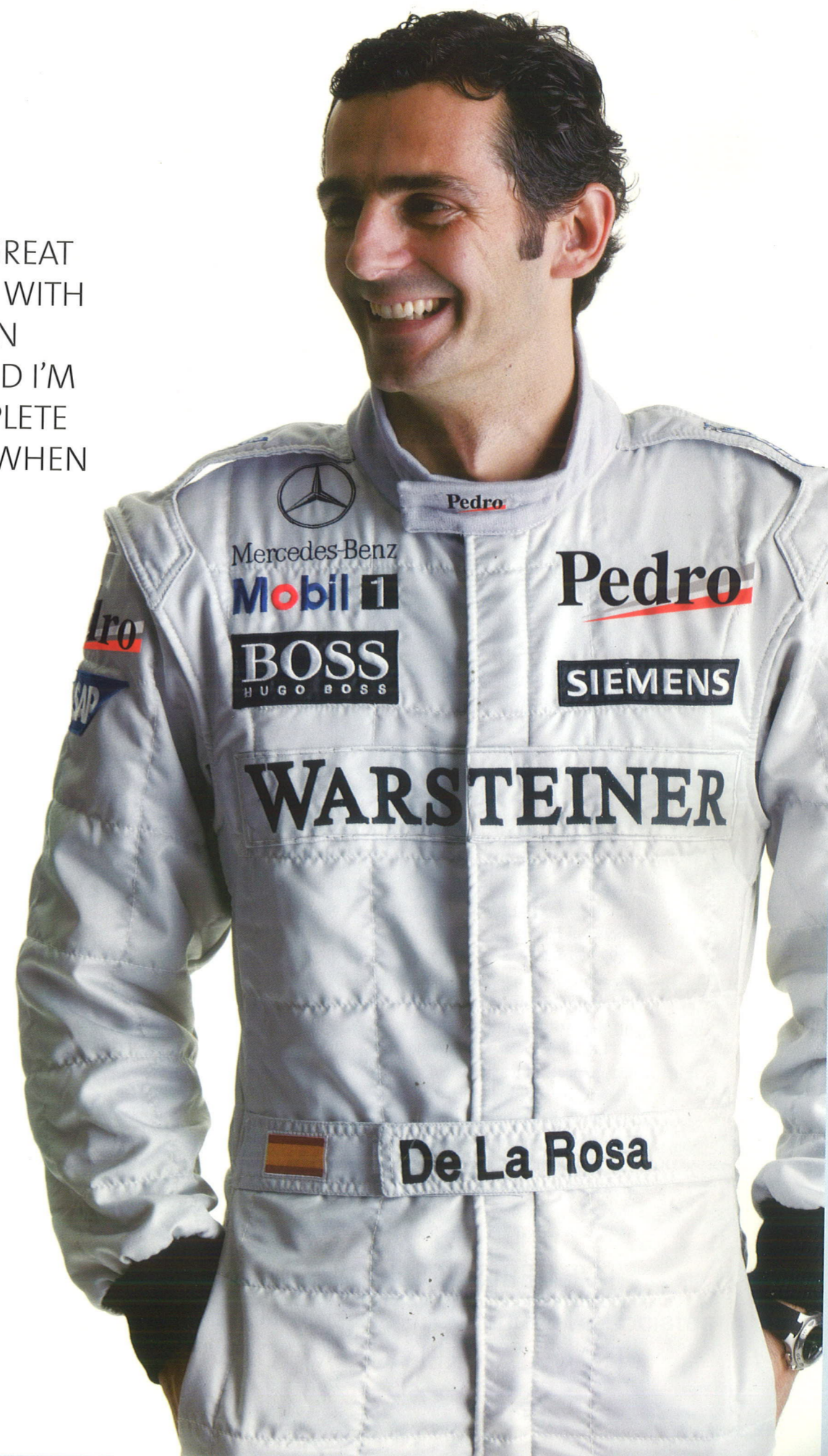
"I was very lucky. I was able to go to Japan and keep racing, otherwise I would have stopped. I went to the best team and I won eight of nine races and the championship, and finished third in Macau. It was a very good year, especially as 1994 had been such a disappointment.

Pedro was to remain in Japan for a total of three seasons, and in 1997 he won both the Formula Nippon and GT titles, which was an extraordinary achievement. He learned a lot about driving, but the experience of living in such an different cultural environment was also beneficial.

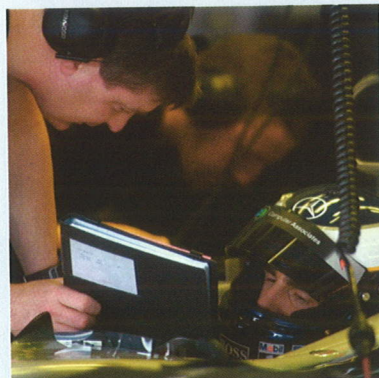
"They were the best years of my career. I was racing, I was winning, and I was in a different country, learning a lot. I was making new friends, but also spending time alone, which was good for me. I improved a lot as a driver, and I matured also as a person.

"The atmosphere was great, and all the foreign drivers went out together after the races. You felt very free. By 3pm I had already sent my faxes and read my e-mails, and because of the time difference I felt I was ahead of >>

"I'VE BUILT A GREAT RELATIONSHIP WITH TEAM McLAREN MERCEDES AND I'M A MORE COMPLETE DRIVER THAN WHEN I STARTED"



LEFT TO RIGHT
The quality of Pedro's feedback has been clear to all in the team since he joined in 2003; he is also an adroit performer out of the car; all this counts for nothing, though, unless you can drive very quickly, and Pedro has no worries in that area



the world!" Pedro knew he had to get back to Europe to fulfil his dream of becoming a Formula 1 driver, and for 1998 he agreed a testing deal with the Jordan squad.

"Every time I stepped in the car I was starting from zero. But it was the only chance I had to go into Formula 1, and I knew if I stayed in Japan that was the end of my career."

The testing did at least get his name known in Formula 1 circles, and for 1999 he landed a drive with Arrows. He soon joined a list of famous names like Alain Prost by scoring a point at his very first race in Melbourne.

"I think Arrows was a very good experience. Although it was a small team it was very well organised, and they had good people but no money. The car was from the previous year, and the engine was unreliable with no power. But I learned a lot about Formula 1. The downside was that the point was scored in the first race, and

not the last. I got into Formula 1, the first race, I took a point, I thought it was going to be quite easy! But I hardly finished any races after that."

Pedro had a deal to stay on for a third year in 2001, but as late as January 29 the team changed its plans and he was left on the sidelines at a time when there were no obvious alternatives. His only chance was a return to testing.

"Jaguar made me an offer, so I went there." Not long into the season luck went Pedro's way when he was promoted to a race drive after regular Luciano Burti was dropped. He finished sixth in Canada and then fifth in Italy, but had a disappointing second season in 2002 as the team went through some turbulent times.

Jaguar underwent a major reorganisation, and Pedro was left without a job. However, early in 2003 he had the chance to test for Team McLaren Mercedes. A successful first

outing led to a fulltime testing role.

"It was very reassuring to learn that Team McLaren Mercedes was interested in me. I'm very grateful that they gave me the opportunity. If you have to be a test driver there's nothing better than being with a top team. You're learning every time you step in the car, and there are so many things to test, in the chassis, aerodynamics, the engine side, and also the tyres.

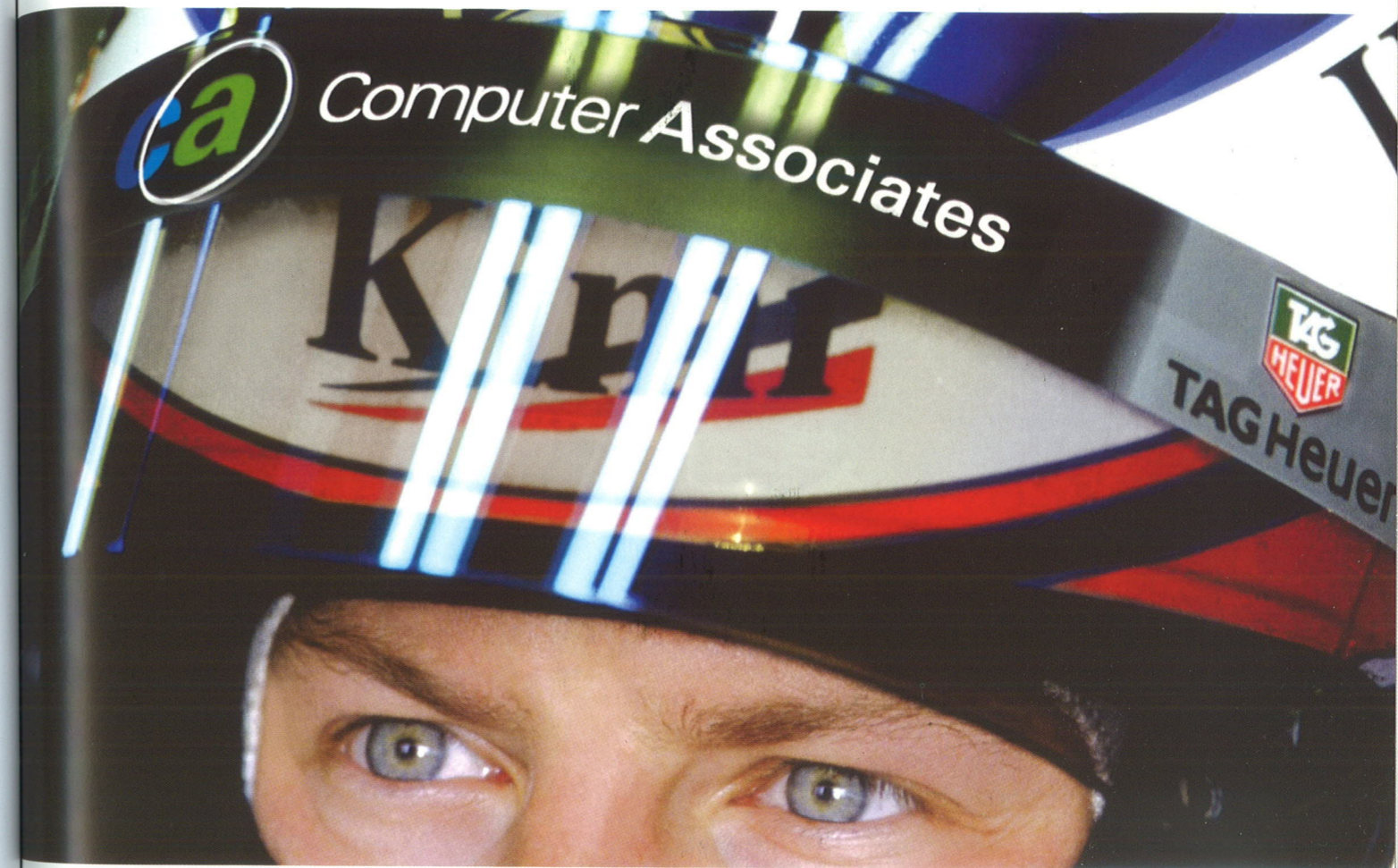
"I've been doing a lot more testing this year than last year, simply because the team believes more in me and can rely more on my driving than last year. I've built up a relationship with them, and I'm just a more complete driver than when I started."

So what of the future? Inevitably Pedro hopes to get back to racing, although he accepts that it's not easy, especially as there are always new drivers coming along.

"Being a test driver is the best way to get back to racing. Alex is the Third Driver, so I have no possibility of replacing David or Kimi if the need should arise. But I'm pushing hard in testing, because I know that the only way to go back to racing is by doing a good job for the team." ■

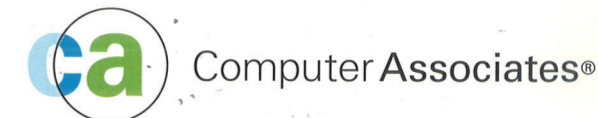
"I'VE BEEN DOING A LOT MORE TESTING THIS YEAR BECAUSE THE TEAM CAN RELY ON MY DRIVING"

Technology is leading
the way and the race is on.



One High-Tech Formula

PURE Computer Associates International, Inc. (CA) is a proud technology partner with
INNOVATIVE Team McLaren Mercedes for this year's Formula One races. It's an exciting time
DRIVE for all of us, and combining CA technology with some of the most incredible racing vehicles ever made is pure power. We are driven by innovation because it helps us develop technologies to propel our customers even further down the track. We like to be out in front. Just ask the drivers. For more information, go to ca.com/mclaren.



PAUL MAY PURCHASING MANAGER McLAREN RACING

WORDS ANDREW GILLINGWATER PHOTOGRAPH STEVE ORINO



How did you join McLaren?

I was working in the defence industry when a colleague pointed out an advertisement in a national newspaper for a purchasing manager at McLaren. I had always been interested in motorsport but at that time my involvement extended only as far as sitting down in front of the television every other Sunday! I joined McLaren in 1996. I knew that it would be a very exciting challenge and I would also be working for a prestigious company with a household name and a long pedigree of success in its chosen field. These were the deciding factors in my decision.

What does your role entail?

I manage the team that buys anything that is used by McLaren Racing but isn't produced in-house. This includes parts and raw materials for the car, computers and the majority of the machines based at the team headquarters – even stationery.

In some cases this can involve searching for new suppliers, especially if we receive a request from the design or engineering team, for example, to see if we can find a source for a particular material. The biggest difference between this job and my last is that the defence industry moves along at quite a slow pace and some projects last for years, which definitely isn't the case with Formula 1, as the sport is constantly evolving.

Which elements of your job do you particularly enjoy?

I think there are three main areas. The first is the immense variety of projects that I have to handle in my role as purchasing manager. Very few companies offer such a broad job description – and that keeps everyone in the team focused and determined to do the best job they can. At McLaren Racing we do a lot of in-house manufacturing, so it is my job to ensure that we can react to requirements so that we have the parts or raw materials to carry out the manufacturing and development work that is scheduled throughout the season.

Secondly, because it's Formula 1 and the team's performance is paraded in front of the world every other week for eight months of the year, the pressure to develop new ideas and manufacture new parts is immense.

Thirdly, I also really enjoyed purchasing the equipment for the McLaren Technology Centre. I have spent a considerable proportion of the last nine months working on this project. To see it finished with the equipment in place is very fulfilling.

How do you see your role within the team developing?

When I first started in Formula 1 there used to be pronounced peaks and troughs in the workload throughout the season. January and

February are still 'peak' times in preparation for the first race in March – the only difference now is that the troughs have largely disappeared!

The speed of development in Formula 1 today demands that we constantly update the car throughout the season and this necessitates a high level of involvement from every area of the company. In the purchasing department we are always striving to build up a portfolio of recognised suppliers who are able to work with us and meet our demands. This is very much an ongoing situation.

Talk us through some of your highlights of your time at McLaren

Winning the Drivers' and Constructors' World Championships in 1998 was a fantastic time for the team. Successes on the track generate a real buzz around the company. Race wins are one thing but if you can turn them into a World Championship then it really brings the workforce together.

This feel-good factor then has a knock-on effect with the team's suppliers – something I witness first hand every day. When you contact them and talk about a new contract, the reaction to success is amazing: they congratulate you and work twice as hard to get the job done. Moving to the McLaren Technology Centre was also a great experience. It's fantastic to see the project come from blueprint to fruition. ■

team
McLaren

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BELGIAN GRAND PRIX

SPA-FRANCORCHAMPS, AUGUST 27-29

After a year's sabbatical from the Formula 1 calendar, the Belgian Grand Prix makes a welcome return to the schedule this year. The Spa-Francorchamps circuit, which has hosted the event for the past two decades, is - quite rightly - regarded as a classic.

The 6.973km track, which uses former public roads, sweeps dramatically through the hills and forests of the Ardennes. All the drivers on the Formula 1 grid love the high-speed corners, such as Pouhon, Blanchimont and the truly daunting Eau Rouge.

But, it wasn't always so. In fact, the circuit's current layout, while challenging by modern standards, is a shadow of its former self. Like most road racing venues in the 1950s and '60s, Spa-Francorchamps, in its former guise, was an awesome proposition.

Its expansive triangular layout was in use as early as 1924, with the first grand prix taking place at the track in 1925. Pre-war aces, including Antonio Ascari, Tazio Nuvolari and Rudi Caracciola reinforced Spa's reputation as one of the truly challenging road racing circuits.

Spa-Francorchamps was a richly deserved cornerstone of the inaugural Formula 1 calendar, and built something of a reputation as a circuit on which only the very best drivers of the day - such as Juan Manuel Fangio, Alberto Ascari, Jack Brabham and Jim Clark - could win.

McLaren founder Bruce McLaren scored the team's first ever grand prix victory at Spa in 1968, in what was the team's first full season at the top level. Sadly, an increasing number of accidents towards the end of the 1960s meant that Spa-Francorchamps' days as a grand prix circuit were numbered.

For three seasons from 1972, the Belgian Grand Prix alternated between a track at Nivelles, near Brussels, and the Zolder circuit, with Emerson Fittipaldi taking victory for McLaren at Nivelles in 1974. From 1975, Zolder became the regular host for the Belgian event, with John Watson winning for McLaren in 1982.

The owners of Spa-Francorchamps were keen to win the race back, however, and had been busy making the circuit shorter and safer. The new layout - which has remained relatively unchanged to this day - retained a

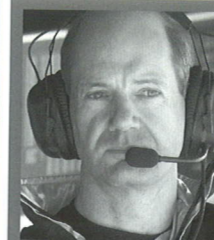
large portion of the original circuit in a bid to retain its character and, in 1983, it made a welcome return for one year, before becoming a full-time venue again in 1985.

That year, up-and-coming Brazilian Ayrton Senna laid down his marker, winning at Spa for the first of what would turn out to be five times for the future triple World Drivers' Champion. Four of those wins were taken at the wheel of a McLaren in a four-year period from 1988 to 1991 in which the Brazilian dominated racing at the circuit. His long-time rival, four-times World Drivers' Champion Alain Prost, also won the race for McLaren in 1987.

David Coulthard returned the team to the top step of the Belgian podium in 1999, before his team-mate, and twice title-winner, Mika Häkkinen, followed that up with another success in an incredibly dramatic race (see 'Classic Race') the following season.

This year, for Spa-Francorchamps' return to the Formula 1 calendar, the Bus Stop chicane that ends the lap has been re-worked, adding yet another unique facet to what is one of Formula 1's truly great challenges.

LOCATOR

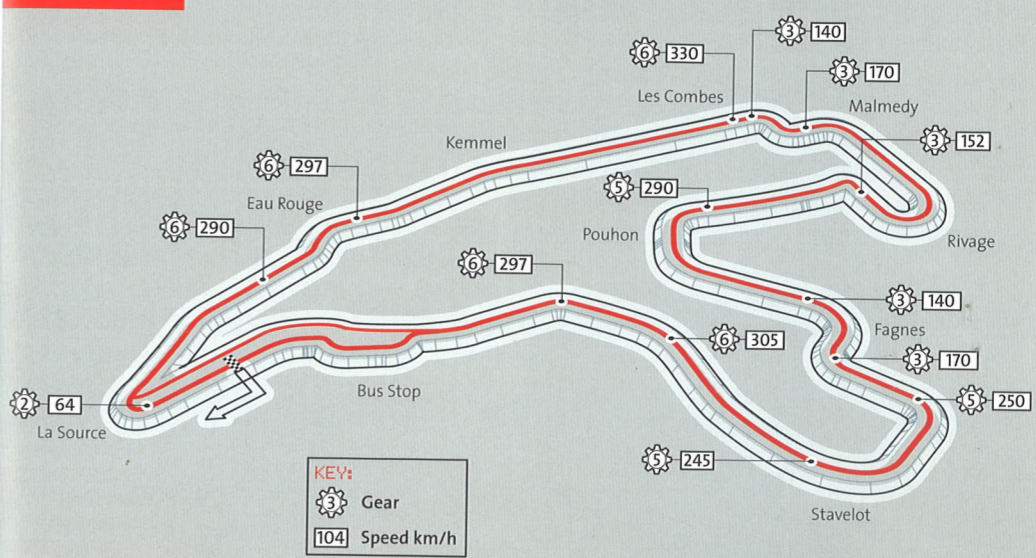


NEWY'S VIEW

Spa is one of the few remaining traditional old circuits. It's a fantastic track for the drivers, full of challenging, high speed corners, including the amazing Eau Rouge. Although we end up watching the race on the monitor in the garage, the atmosphere of the place is exciting, especially when your drivers go out to qualify. We don't get a chance to test here, so it's not easy in terms of set-up. It's a medium downforce circuit, a similar level to Indianapolis in the USA and Montreal, Canada.

There are a lot of long straights and high speed bends, and then at the very end of the lap, the low-speed Bus Stop and La Source corners. Traditionally it is a circuit where you can overtake. It's not easy, but it can be done, either at the end of the long straight or perhaps into those two slow corners. It's important to be quick through Eau Rouge to have a high exit speed for the long haul up the hill. Once you're out of the corner, then it's all about engine power. The weather is notoriously unpredictable. The surrounding trees tend to hold the moisture, creating their own weather systems. It can suddenly rain with no warning. That has caused some interesting races over the years!

TRACK MAP



CLASSIC RACE SPA-FRANCORCHAMPS 2000



Mika Häkkinen showed us his best at the 2000 Belgian Grand Prix - and he knew it

After a difficult first half to the 2000 season, double world champion Mika Häkkinen and Team McLaren Mercedes were back on top when they rolled into Spa-Francorchamps for the Belgian Grand Prix. In the preceding four races, Häkkinen had scored two wins and two second places, and both he and the team were narrowly leading the drivers' and constructors' championships from arch rivals Michael Schumacher and Ferrari.

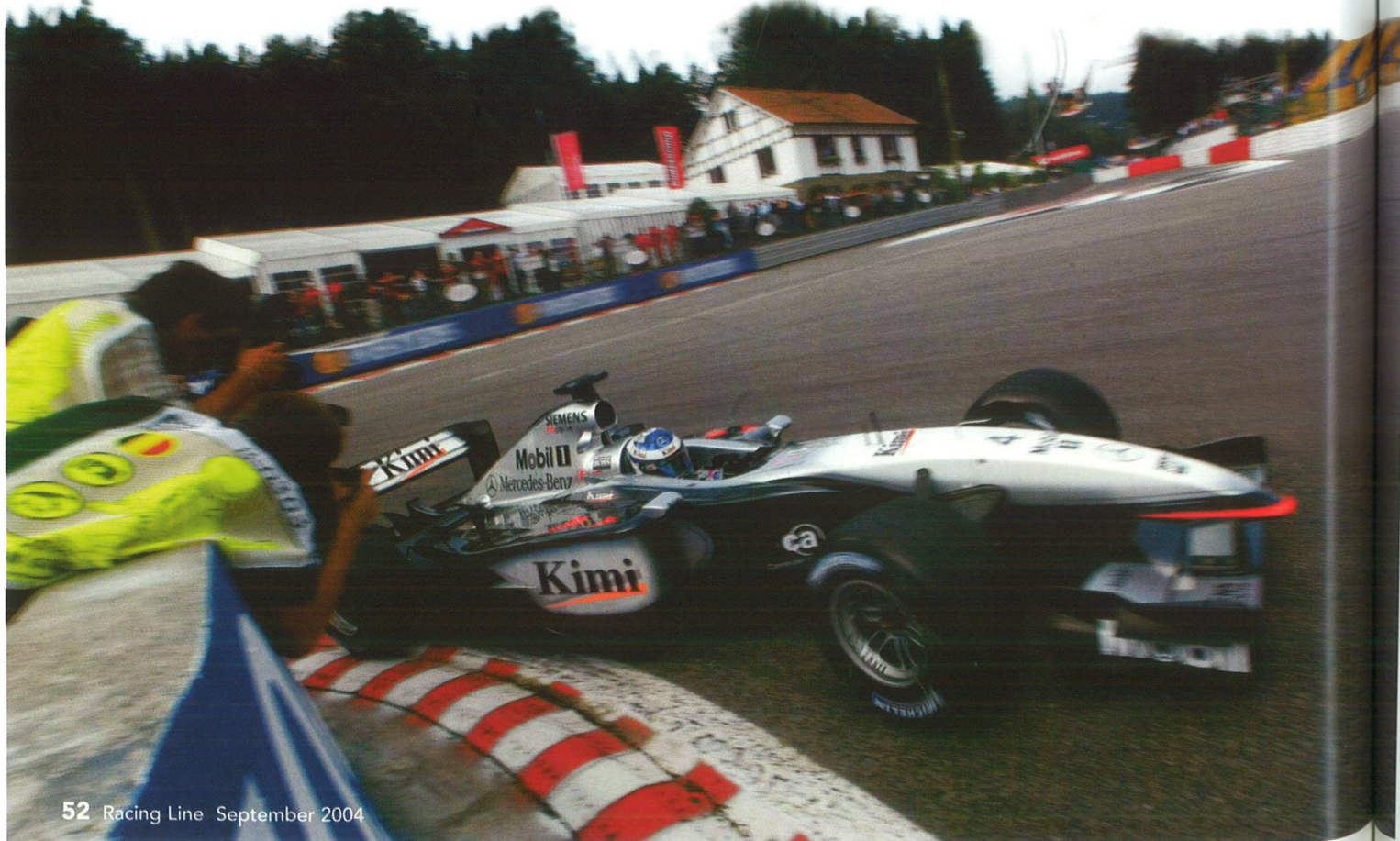
With just five races left, the pressure was on to maintain that momentum. Häkkinen led the wet early stages of the race from pole, but, as the track dried and the leaders changed to slicks, the Finn spun on a white line at Stavelot, handing a 12 second lead to Schumacher.

Häkkinen doggedly worked to re-catch his rival and, with five laps to go, was close enough to try and make a move down the inside on the zoomph run to Les Combes. He received an unhealthy covering chop from Schumacher for his troubles but, after an angry wave of the fist, he settled back into his rhythm to try again.

On the next lap at the same point, the pair happened upon a backmarker. With the laps counting down, it was now or never. As Schumacher dived left of Zonta to take the racing line, Mika went right and miraculously had enough straightline speed to clear both cars in one go. It was an incredibly brave move that had the entire paddock talking about it for weeks afterwards. Mika was never one to wax lyrical in public about his experiences on the track. Even he, though, had a wry smile as he described the move. "I knew I had to go for it," he said. "It was very exciting indeed."

1	Mika Häkkinen	1h28m14.494s
2	Michael Schumacher	+1.103s
3	Ralf Schumacher	+38.096s
4	David Coulthard	+43.280s
5	Jenson Button	+49.914s
6	Heinz-Harald Frentzen	+55.984s

Kimi and Team McLaren Mercedes last tackled Spa in 2002, seen here at the La Source hairpin



TRACK INFORMATION

LAP LENGTH:	6.973km
RACE DISTANCE:	306.812km
NUMBER OF LAPS:	44
2002 POLE POSITION:	1m43.726s
2002 LAP RECORD:	1m47.176s

PREVIOUS McLAREN WINS

- 1968 Bruce McLaren M7A (Spa)
- 1974 Emerson Fittipaldi M23 (Nivelles)
- 1982 John Watson MP4/2 (Zolder)
- 1987 Alain Prost MP4/3 (Spa)
- 1988 Ayrton Senna MP4/4 (Spa)
- 1989 Ayrton Senna MP4/5 (Spa)
- 1990 Ayrton Senna MP4/5B (Spa)
- 1991 Ayrton Senna MP4/6 (Spa)
- 1999 David Coulthard MP4-14 (Spa)
- 2000 Mika Häkkinen MP4-15 (Spa)

RACE TIMETABLE

- FRIDAY AUGUST 27
- 11.00-12.00 Practice session one
 - 14.00-15.00 Practice session two
- SATURDAY AUGUST 28
- 10.00-10.45 Practice session three
 - 11.15-12.00 Practice session four
 - 14.00 Qualifying session
- SUNDAY AUGUST 29
- 14.00 Belgian Grand Prix

FURTHER INFORMATION

- NEARBY CITIES (AIRPORTS)
- Brussels - 138km
 - Cologne (Köln-Bonn) - 125km
 - Luxembourg - 114km

TICKET INFORMATION

+32 (0) 8727 5138

WEBSITE
www.spafrancorchamps.be

ITALIAN GRAND PRIX

MONZA, SEPTEMBER 10-12

It's almost a cliché to say that the 5.793km Monza circuit, situated on the outskirts of Milan, oozes atmosphere, but that's probably because it's true. The high-speed track is located in former royal parkland, with the Italian Alps towering over the circuit to the north. The trees and ageing concrete grandstands just seem to reverberate with the sounds and smells of legends past and present.

When it was first constructed in 1922, Monza was only the third permanent racing circuit in the world. It was very quickly a success, with the passionate local Italian fans – known as the *Tifosi* – turning up in their hundreds of thousands to watch the first grand prix in September that same year. Ever since then, the second weekend of that month has been the Italian Grand Prix's traditional date. Only once, in 1980, has the Italian Grand Prix not been held at Monza – the Imola circuit, the future home of the San Marino Grand Prix, briefly winning the right to host Italian

motorsport's jewel in the crown after a fierce political battle.

The list of grand prix winners at Monza reads like a *Who's Who* of Formula 1's legends. Juan Manuel Fangio, Sir Stirling Moss, Jim Clark, Sir Jackie Stewart, Mario Andretti and, more recently, McLaren's own Ayrton Senna and Alain Prost, have all won at the track, further contributing the circuit's legendary nature.

In its original 10 kilometre layout, Monza incorporated a pair of daunting, flat-out banked sections at each end, most memorably immortalised in the 1960s film *Grand Prix*. These – which actually started off relatively flat and were made steeper over the years – were an integral part of the circuit until safety concerns finally forced their closure in 1962.

Overall, this did little to control escalating speeds, though, as Peter Gethin led a photo finish of five cars across the line in a classic Monza slipstreamer with a 150mph average speed. Astonishingly, it remained the fastest grand prix in the sport's history

right up until 2003, but although the introduction of chicanes and slightly reprofiled corners has slowed average speeds and increased safety over the years, the nature of Monza as a power circuit, where top speeds are crucial, thankfully hasn't been destroyed.

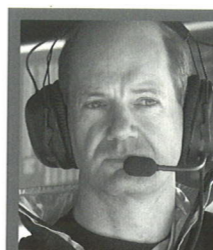
As you'd expect, McLaren has experienced its fair share of success at Monza. Denny Hulme scored the first Italian Grand Prix win for the team in 1968, but it wasn't until 1984 that the team tasted the victory champagne again in Italian racing's heartland, courtesy of Niki Lauda, with Alain Prost winning again for the team the following year.

Senna missed out on his first victory at the circuit in 1988 after colliding with a backmarker, denying McLaren a clean sweep in one of the most stunning dominations of a Formula 1 season of all time. Prost made up for that in 1989 before Senna came good in 1990 and followed that up with another win in 1992. David Coulthard scored a memorable win for the team in 1997 (see 'Classic Race').

Monza demands a fast car and plenty of commitment from the drivers, as Italian grand prix-winner David Coulthard knows only too well



LOCATOR

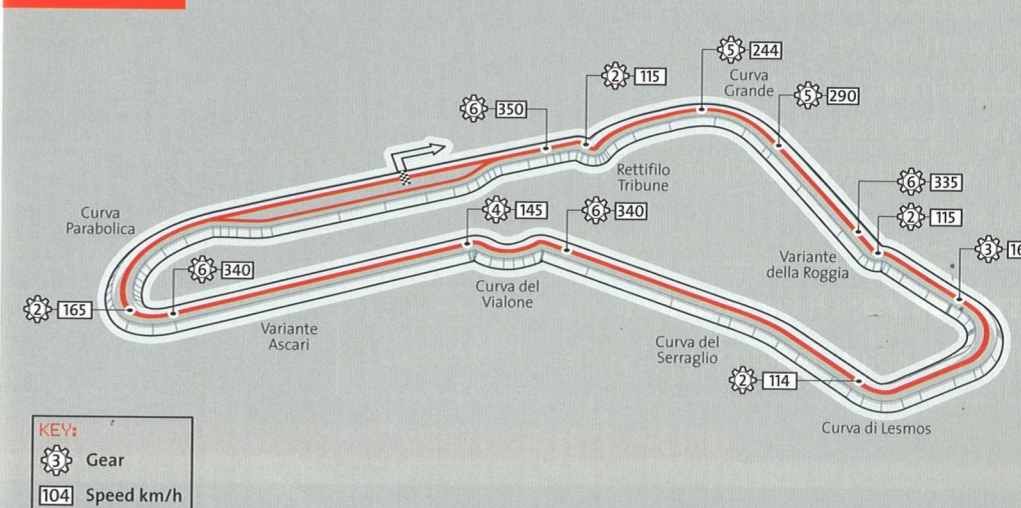


NEWHEY'S VIEW

“ Monza is steeped in history so it's a satisfying race to go to, especially seeing the passion and enthusiasm of the Italian fans. To be reminded of how motor racing was when you see the old banking is very nostalgic. As a track it's now unique since Hockenheim has been cut short. It's the only race where the priority is on top speed and downforce has to take a back seat. The wings are trimmed right down to achieve a top speed of around 360kph at the end of the straight.

Along with Montreal it's the heaviest braking circuit that we go to, so brake wear is a worry. All cars will have big brake ducts, and there will be concern during the race about brake wear, so all teams will be monitoring the telemetry. The other thing about Monza is that the kerbs are quite aggressive, and that's another area that can cause problems. As a circuit, Monza should lend itself to overtaking, but it's difficult to get close to the cars in front. It is difficult for a following car to stay close through Parabolica, the last corner onto the straight, because its aerodynamics are upset by the leading car. Down the long straight it will gradually pull into the slip stream, but not be quite close enough by the start of the braking area. ”

TRACK MAP



CLASSIC RACE MONZA 1997



David's 1997 Italian Grand Prix victory was all about a smart strategy, and plenty of speed

It's a truism of modern Formula 1 that pitstops are a crucial part of the race. Tenths of a second here can cost even more on the track, and races have been won and lost with the smallest of errors or the speediest of teamwork in the pits. Never was this more pointedly demonstrated than in the 1997 Italian Grand Prix.

Team McLaren Mercedes arrived at Monza in fighting mood. After victory in Australia, the team had come close to winning again in Canada and Britain and was hungry for more champagne. After a closely-fought qualifying session, Mika Häkkinen and David Coulthard started the race from fifth and sixth on the grid, but the Scot quickly moved up to third with a stunning start.

As he shadowed pole-sitter Jean Alesi's Benetton and the Williams of Heinz-Harald Frentzen, it was clear that this race would be about who could stay out on the circuit the longest, thereby gaining vital laps on a low fuel load to stay ahead, or get ahead, of an earlier-stopping rival.

Frentzen was the first to blink, pitting on lap 29. It was now a straight fight between David and Alesi. On lap 30, the Scot was lucky to survive a massive sideways moment at the Ascari chicane. It was clear he was pushing hard as he doggedly clung onto Alesi's rear wing, but as he passed the pits, both he and the team saw that Alesi would be pitting next time round. Despite having more fuel to stay out, they decided to follow the Benetton in. It was a gamble that worked. Alesi was stationary for 8.7 seconds; David just 7.8s. It was enough to get the Scot past and into a lead he would hold to the flag.

1	David Coulthard	1h17m04.609s
2	Jean Alesi	+1.947s
3	Heinz-Harald Frentzen	+4.343s
4	Giancarlo Fisichella	+5.871s
5	Jacques Villeneuve	+6.416s
6	Michael Schumacher	+11.481s



TRACK INFORMATION

LAP LENGTH:	5.793km
RACE DISTANCE:	306.720km
NUMBER OF LAPS:	53
2003 POLE POSITION:	1m20.963s
2003 LAP RECORD:	1m21.832s

PREVIOUS McLAREN WINS

1968	Denny Hulme	M7A (Monza)
1984	Niki Lauda	MP4/2 (Monza)
1985	Alain Prost	MP4/2B (Monza)
1989	Alain Prost	MP4/5 (Monza)
1990	Ayrton Senna	MP4/5B (Monza)
1992	Ayrton Senna	MP4/7A (Monza)
1997	David Coulthard	MP4/12 (Monza)

RACE TIMETABLE

FRIDAY SEPTEMBER 10	
11.00-12.00	Practice session one
14.00-15.00	Practice session two
SATURDAY SEPTEMBER 11	
10.00-10.45	Practice session three
11.15-12.00	Practice session four
14.00	Qualifying session
SUNDAY SEPTEMBER 12	
14.00	Italian Grand Prix

FURTHER INFORMATION

NEARBY CITIES (AIRPORTS)
 Milan (Milano Linate) – 25km
 Malpensa – 55km

TICKET INFORMATION
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WEBSITE www.monzanel.it

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SEND YOUR QUESTIONS TO: I have something I need to ask...
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BEST WISHES FROM TEAM McLAREN

Team McLaren members who use the forum on the team's official website, www.mclaren.com, have offered their congratulations to Kimi Räikkönen who got married to long-term girlfriend Jenni Dahlman in August. Below are a selection of their greetings.

"My best wishes for your wedding day, Kimi and Jenni, and a lifetime of health and happiness together"

Sandy Bilbe

"Best wishes for a happy and joyful life together"

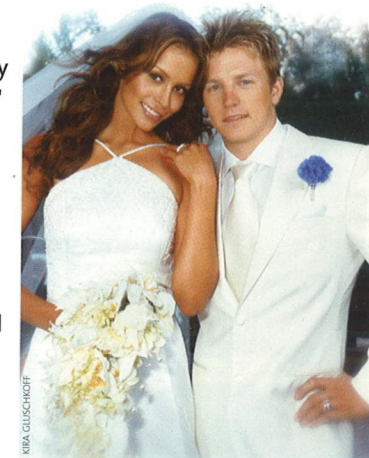
Robert Fernandez

"Best wishes to Kimi and his bride"

Mark Constable

"Congratulations and all the best. May your lives be rich with love and happiness"

Cindy McLoughlin



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READERS' PHOTOS

Back in 2003, we invited Team McLaren members to send in photographs they had taken of Team McLaren Mercedes in action. Still the *Racing Line* postbox bulges with your entries, and the best from this month are shown below, complete with analysis and comment from top Formula 1 snapper Steven Tee, of LAT Photographic. You can still send us your pictures of anything related to the team. So, what are you waiting for? Send your snaps now to Team McLaren, Admail 622, Woking, Surrey GU21 1WH or email us at racingline@mclaren.com

PHOTOS BY JOHN BENDER



"The shot of David Coulthard sitting in the garage is a classic pose of a driver waiting. You can see the concentration etched on his face."



"The rear shot of David in the pit lane is well executed and framed, and the spray gives the shot extra drama and a sense of speed. Likewise the use of a slower shutter speed on the front three-quarter shot of Kimi gives this well-framed shot a more dramatic and purposeful feel. The rear three-quarter shot of Kimi on track is fine technically. Considering Silverstone's limitations, John has done a good job to capture such an image."



Canon

POSTCARDS FROM KIMI AND SIEMENS

IN ASSOCIATION WITH CANON

Kimi Räikkönen recently took part in a special promotion for Team McLaren Mercedes Technology Partner, Siemens. The event involved a number of activities both in and around the McLaren Technology Centre. Kimi sent us some snaps of his day



The personal organiser facility on my Siemens SX1 mobile phone helps me to make sure I'm never late for an appointment. Now, what time is my flight?



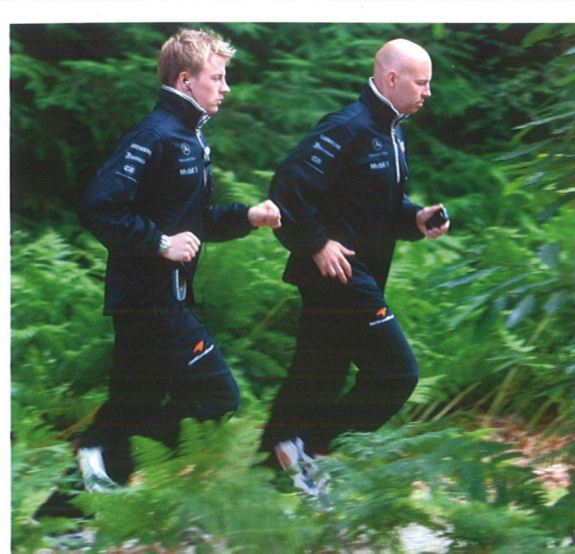
I always enjoy catching up with the team back at the base, and finding out what new developments are in store for the race team



As part of the promotion, we took time out for a few holes at a local golf club. But I must admit I'm no Tiger Woods!



A short run was scheduled as part of the day, and I'm glad that my Siemens SX1 has a built-in MP3 player, as I like to listen to music when I'm running



Here's me with Mark Arnall, my personal trainer and therapist, enjoying the benefits of some exercise. Mark keeps us at a steady pace, as does the music from my SX1

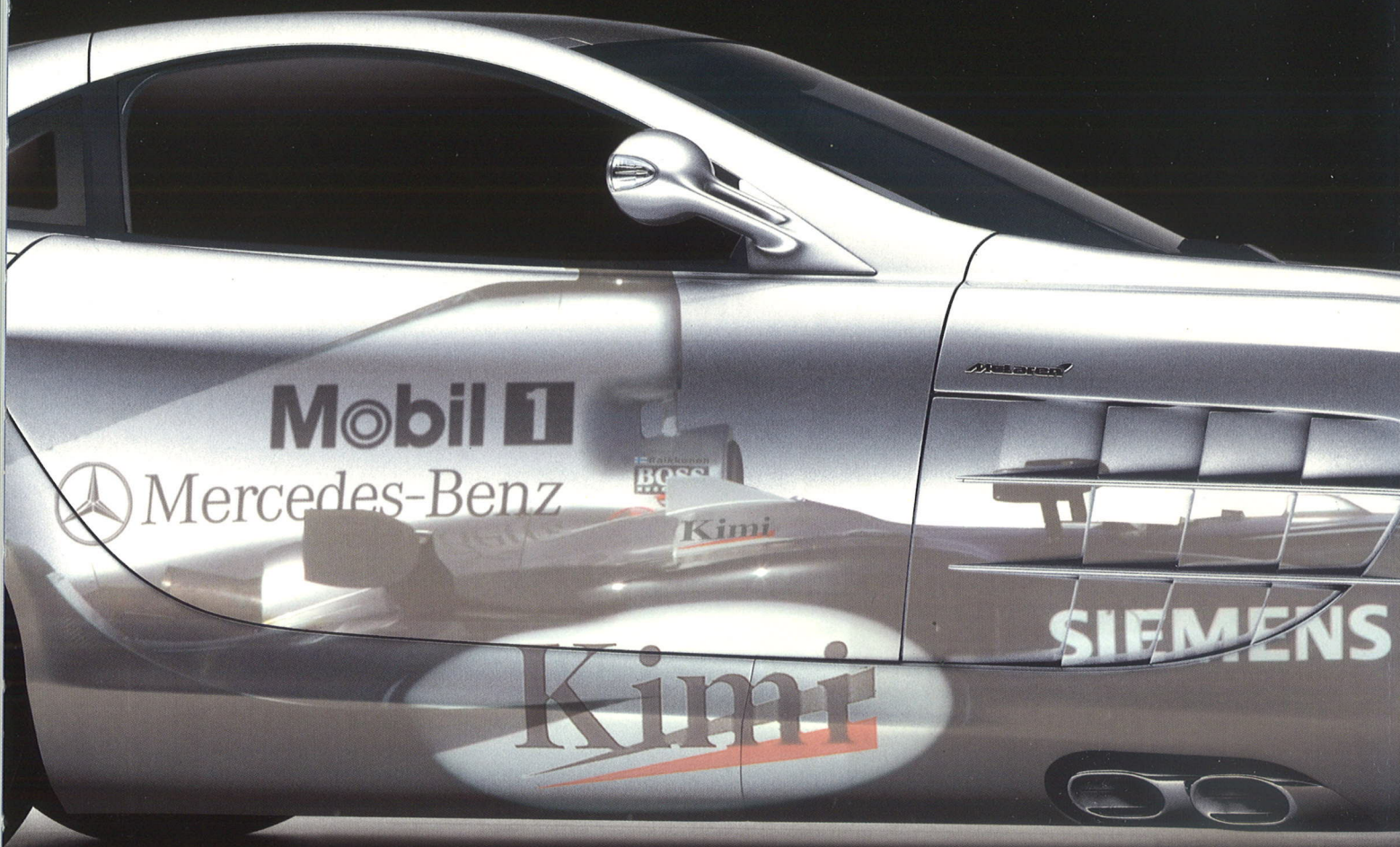
IN THE NEXT ISSUE

SPECTACULAR Spa



The inside story of Team McLaren Mercedes' bid for glory as Formula 1 returns to one of its most famous racetracks

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