

braking. The front brake disc was enlarged and a larger Brembo brake calliper fitted. The wheels were of the new cross-spoke type, which allowed for tubeless tyres. Furthermore, thanks to their running through the flange, individual spokes could be replaced without removing the tyre and wheel.

Tank capacity was increased to 26 litres, placing it between the old production G/S and the special Dakar model offered hitherto. The longer and wider saddle promised more comfort, as did a small windshield which came as standard on the

tions, BMW also introduced a 27 bhp starter model, the R 65 GS, priced at under DM 10,000. By contrast with the two big models, this still featured the Monolever rear-wheel suspension.

But the R 65 GS was only granted a brief production life; in just three years no more than 1,727 units had been sold, and it was removed from the range again in 1990.

The Paralever models followed seamlessly on from the success and high sales figures of the R 80 G/S. By 1996 over 45,000 units would find buy-

Experience gained in this long-distance rally was fed into the new "special", which was modified with an ergonomically shaped 35-litre tank with a 5-litre storage compartment, a fairing fixed with a robust tubular bracket, engine casing and cowling, widened mudguards, and a single saddle with a large luggage rack.

These items could also be ordered as a conversion kit, with the option of red and white paintwork as on the special model or with a base coat only. In addition, BMW offered an extensive range of accessories for the GS as well as equipment for the rider, ranging from helmet and clothing, through specially designed case and bag systems, to training courses.

### Professional rider training

Following an ever-growing demand in the 1980s for endurance training courses, in the early 1990s BMW acquired a 22-hectare piece of land in some former sand and gravel pits. In 1994 the Hechlingen Enduro Park was officially opened. Since then, under the supervision of experienced instructors, GS riders have been able to learn the basics of off-road biking on gravel tracks, marked-out trial courses, steep climbs and descents as well as sections through sand and water.

In the past, even experienced riders have found plenty to challenge them here. In this, the planners not only kept one eye on the requirements of riders, but also placed a high value on the protection of the environment, as acknowledged by, among other things, an award from the Federal Ministry of the Environment.

Starting in the spring of 1990, ambitious GS riders could order a sports frame developed by BMW with the White Power company, and from September of that year all BMW Boxer models were supplied with a secondary air system (SLS).

This worked on the principle of afterburning of exhaust gases, reducing the emission of carbon monoxide by 40 percent and that of hydrocarbons by 30 percent. The majority of customers did not hesitate to pay the small premium of DM 150 in order to reduce environmental pollution.



Two successful siblings off the beaten track: the BMW 100 GS (left) and the R 80 GS.

R 100 GS and was optional on the R 80 GS. The press again proved enthusiastic and attributed outstanding ride qualities to the GS. With this new launch, BMW continued to set the standard in this segment of the endurance bike market.

### The entry-level model

Alongside the two big endurance machines, and specifically for the German market with its insurance classes and graduated driving licence regula-

tions, of which more than three quarters would opt for the 1,000 cc model.

### Careful model development

At the IFMA in 1988, BMW introduced the special Dakar model, so keenly awaited by the GS community. It had gained its sporting pedigree a few months previously when Eddy Hau, riding an HPN-modified production GS, had won the marathon class as the best private rider in the Paris-Dakar Rally.





The Paralever of the BMW R 100 GS, 1987.

### A 10th birthday upgrade

In 1990, on the tenth anniversary of the GS series, extensively redesigned versions of the R 80 GS and R 100 GS were presented at the IFMA in Cologne. The basic models were now also given a fixed cockpit fairing with an external tubular frame. Also new were the adjustable wind deflector and a suspension strut developed jointly with Bilstein. The rectangular headlamp and instruments on the handlebars, meanwhile, were borrowed from the K series. These were to remain the last major changes to the second GS generation.

Nevertheless, BMW had another surprise in store for the fans. October 1991 saw the launch of a road version derived from the GS models: the R 100 R. With this, BMW was reviving the tradition of the first generation of Enduro models, since in 1982 a road version of the GS, the R 80 ST, had been put on the market. But whereas that product had found barely 6,000 buyers in three years, the R 100 R generated 7,000 orders in only six months.

The new road model with its classic, stripped-down appearance benefited from the retro wave in the two-wheeled

market, which began in the early 1990s. By the time production ceased in 1996, over 24,000 units of the R 100 R and the "little" R 80 R had been sold.

### A new dimension to endurance

At the 1992 IFMA, BMW introduced a new four-valve Boxer engine, and in January 1993 came the launch of the R 1100 RS, the first motorcycle to feature this revolutionary power unit. The press kit for the R 1100 RS included drawings of a new endurance bike intended to give journalists a foretaste of future models. The R 1100 GS had its debut at the

by the end of 1994, 9,500 units had left the production line at BMW's Spandau plant. This is all the more remarkable when one remembers that not only was the R 100 GS still being marketed, but from 1993 the BMW range also included the single-cylinder F 650 "Funduro", a rough-terrain entry-level motorcycle.

So what contributed to the success of the new GS? First of all, at its heart was the four-valve Boxer engine with air/oil cooling, which was derived from the power unit of the R 1100 RS. However, in the GS the engine was given a different performance profile, resulting



Weightlifter Manfred Nerlinger during driver training at the GS.

Frankfurt Motor Show in September 1993. With its audacious styling and impressive size – compared to the R 100 GS the new model was 65 mm higher and its kerb weight had increased by 23 kg – the R 1100 GS hit the Enduro community like a bombshell.

Many observers openly expressed doubts as to whether a motorcycle of these dimensions could be at all suitable for endurance touring. Yet demand for the new "Über-Enduro" was enormous;

in a better torque curve and thus more pulling power. At 5,200 rpm, torque was as high as 97 Nm (in the R 1100 RS it was 95 Nm at 5,500 rpm). At the same time the output of 90 bhp (66 kW) was reduced to 80 bhp (59 kW). Despite this reduction in power output the R 1100 GS achieved a maximum speed of nearly 200 km/h, more than enough for an Enduro.

### The Telelever

At these speeds the height – and thus the aerodynamic disadvantage – of the R 1100 GS might have made it difficult to ride, but this problem was solved by the chassis, whose design was also taken from the R 1100 RS: the frame was constructed in three sections, with the engine and gearbox housing forming



Far left: Gaston Rahier in the Marlboro BMW Team of 1986. Left: R 100 GS of 1987.



a single stressed unit. The rear wheel was fitted with an improved Paralever single swing-arm, and the front with the Telelever. The latter, which had similarly been introduced a year previously on the R 1100 RS, was a combination of the telescopic fork with a leading link between the bridge of the fork and the frame.

### Safety and the environment

This technical solution guaranteed outstanding responsiveness and a high degree of rigidity in conjunction with an anti-dive feature, which prevented a hardening of the suspension when the brakes were applied. For cross-country work the suspension play was, of course, increased. Instead of 120 mm in front and 135 mm at the rear, as in the RS road

The two disc brakes and the Telelever were the ideal prerequisites for the introduction of an anti-wheel locking system, and so BMW's ABS II was available as a special feature – a first for Enduro bikes. This could be deactivated for cross-country riding, where locking wheels were sometimes desirable.

Those who wanted to contribute not only to road safety but also to the environment could order a GS with a three-way catalyst; from 1995 onward it was fitted as standard.

Yet the success of what was now the third generation of GS models from BMW cannot be explained solely by these innovations, nor even by its imposing appearance – for all the respect it commanded. It was rather the overall character of the motorcycle that

rider could safely bring to the road even after travelling for hours on end.

BMW met this self-imposed benchmark in the new GS as well, as described by a clearly impressed test rider for *Motorrad* magazine: "Once you have become accustomed to the generous dimensions of the big Enduro, which you do very quickly, you soon learn to appreciate the pleasant attributes of the GS: the comfortable upright position, for example, which the rider seems to assume quite naturally, and the well-padded seat cushion that leaves rider and pillion equally unsore even after many hundreds of kilometres in the saddle... With spring travel of 200 mm at the rear, the GS proves it can ride out any bumps in the road, badly surfaced sections and the toughest of pot-

### Collectables that are already sought-after today



The aristocratic profile highlights the BMW R 100 GS PD Classic which came on the market in 1994.



Pure retro: the BMW R 80 GS Basic built in 1996.

version, on the GS the equivalent figures were 190 mm and 200 mm.

The perforated double-disc brakes with four-piston fixed calliper and a diameter of 305 mm were borrowed from the K models and the R 1100 RS. Even the rear-wheel braking was provided, for the first time in a BMW Enduro, by a disc brake. The single-disc assembly with twin-piston floating calliper had a diameter of 276 mm, making it somewhat smaller than on the RS.

explained the superiority of the R 1100 GS. The way the individual components complemented each other perfectly to create a harmonious whole was the great achievement of the BMW engineers – as indeed it had been since the R 32 of 1923, the first motorcycle to bear the blue-and-white logo on its fuel tank.

What mattered to them was never just the performance that an engine could achieve on the test bed; they were more interested in the performance a

holes. It's like riding an inflatable dinghy across a rough sea... And so the GS effortlessly reaches the remotest of destinations, climbs up the most eroded gravel ascents without a problem... On twisty roads, thanks to its low centre of gravity and wide cross-country handlebars, it even puts the assembled big bike league firmly in the shade. In terms of handling it is unbeatable in this weight class... From standstill to 100 km/h in 3.9 seconds, or up to 160 km/h



in a mere 10.6, it will remain hot on the tail of any large-engined sports tourer... With the new Boxer generation and associated frame technology, BMW in the guise of its R 1100 GS enters dimensions hitherto unfamiliar to big endurance tourers."

### Farewell to the twin-valve Boxer

Aside from the euphoria surrounding the success of the new generation of Boxer engines, the end of the old air-cooled, twin-cylinder horizontally-opposed engine was being heralded. This engine design, which had since 1923 been inseparably linked with BMW motorcycles, was in the long term no longer able to meet the more stringent restrictions on noise and exhaust emissions. Thus at the 1994 IFMA, BMW introduced

months, 3,003 units left the Berlin factory. The last R 80 GS Basic and thus the last of BMW's twin-valve Boxer-engined machines came off the line on 19th December 1996. The motorcycle with the chassis number 0267503 was handed over in a formal ceremony to the BMW Mobile Tradition collection by the then head of the motorcycle division, Dr Michael Ganal, who is today a member of the Board of Management of BMW AG.

On the 75th anniversary of BMW motorcycles in 1998, a jubilee model appeared with special paintwork and luxurious accessories. In September 1998, at the INTERMOT in Munich, the R 850 GS was launched as the little brother to the 1100. The engine was already familiar from the R 850 R Roadster of 1994, and except for the bore, reduced from 99 mm



Head of BMW Motorrad at the time Dr Michael Ganal takes the last twin-valve off the assembly line on 19th December 1996.

after a gap of 13 years, it again entered a works team for the Paris-Dakar Rally. This time, the four-man team were not riding big Boxer machines but single-cylinder motorcycles based on the F



The BMW R 1100 GS special model to mark "75 Years of BMW Motorrad" in 1998.

a Classic Edition of the successful twin-valve engine. The GS Special, in elegant black with silver transfers, continued to be built until January 1996. At that point the era of BMW's twin-valve Enduro models appeared to have finally come to an end. Yet BMW went back to work and produced the R 80 GS Basic. With its 19.5-litre tank and white paintwork it was outwardly reminiscent of the original G/S of 1980, albeit fitted with second-generation Paralever technology. In a few short

to 87.8 mm, was almost identical to the 1100 power unit. It developed 70 bhp (52 kW), but was also available in a downrated 34 bhp (24 kW) version for first-time driving licence holders. The BMW R 850 GS was only produced for three years, and in 2000 it was replaced in the range by a single-cylinder model, the F 650 GS.

### Historic triumph in the desert

Back in 1998, BMW had celebrated a comeback in cross-country sport when,

650. Their expectations were deliberately modest: the main objective was to finish the course. But the results nevertheless proved disappointing, with a mere 35th place to add to the record. The following year the factory focused on its strengths and took a more professional approach to the "Dakar" challenge. The major competition that year came from Austria: 75 riders, nine of them from the works team, were riding KTM's. No fewer than 12 service trucks



were there. Yet the small BMW team – again comprising just four works riders – held their own against these superior forces: Richard Saint, who had only joined the team in 1999, won the motorcycle class to give BMW its fifth victory in this event after the successes of Auriol and Rahier in the 1980s. Furthermore, the fact that all four of BMW's starters completed the course was proof of the reliability of the single-cylinder endurance bike – and of course the excellence of the riders.

In the year 2000, BMW entered six motorcycles: in addition to four single-cylinder models there were once more

BMW also took 2nd, 3rd and 4th places. Among three single-cylinder models Jimmy Lewis had ridden his Boxer into third position.

### The F 650 GS

When BMW introduced the F 650 GS in January 2000, this victory was still fresh in people's minds. The triumph gave an additional boost to the launch of the F 650 GS in Malaga, which coincided with the arrival of the Dakar convoy in Cairo. In its styling the F 650 GS leaned heavily on the design of the Boxer-powered Enduro models, but under the fairing was a complete reworking of the F 650 "Funduro". The most impor-



Riding to victory in the 1999 Granada-Dakar: Richard Saint on his F 650.



Desert sands: Andrea Mayer on a BMW F 650 in the 1999 Granada-Dakar.

two Boxers on the starting line. The two R 900 RRs had been built by HPN, and their high-revving 900 cc power unit developed 90 bhp at 8,200 rpm. That year BMW celebrated a historic triumph in Dakar when not only Richard Saint managed to repeat his success, but

tant modifications were those to the four-valve engine. For the first time on any single-cylinder motorcycle engine, BMW had fitted digital electronics, which controlled the ignition and fuel injection – the old F 650 still had carburetors. The F 650 GS was also the first single-cylinder motorcy-

cle to come with a three-way catalyst. This meant that BMW was once more a pioneer in the field of environmental protection, for in 2000 BMW was the only manufacturer whose entire range was fitted with the most effective form of exhaust gas cleaning.

The F 650 GS was introduced in two variants: the F 650 Dakar came on the market at the same time as the basic model and was conceived for more intensive off-road use. Apart from the special paintwork, the most striking features which picked it out were the hand protectors and windshield, of the kind seen on competition machines. The chassis was appropriately adapted; the suspension play on both wheels was increased to 210 mm (compared to 170 mm front and 165 mm rear on the F 650 GS). The 19-inch front wheel was replaced by a 21-inch one. This gave the "Dakar" some 45 mm additional clearance. The concept of the "small" Enduro caught on, and by the end of 2000 over 18,000 F 650 GS units had been manufactured.

### Model development with the Boxer GS

After six years and over 40,000 sales, the R 1100 GS was replaced by the R 1150 GS. Output was increased by 5 bhp, and in the range between 3,000 and 6,500 rpm torque was consistently in excess of 90 Nm, which gave the R 1150 GS superior acceleration in all riding situations. The output was now delivered to the drive shaft through a six-speed gearbox; the sixth gear was designed as an overdrive, which provided greater comfort and low fuel consumption at high speeds. From 2001 onward the sixth gear could also be ordered in a sports ratio.

The chassis and frame were subject to numerous detailed modifications, begin-





Richard Sainct in the 2000 Paris-Dakar-Cairo Rally.

ning with the improved Telelever fork, through a shorter Paralever suspension arm, to an optimized rear-end frame. In addition there was a reworking of the design, which set the R 1150 GS apart from its predecessors in terms of appearance as well. With the R 1150 GS, BMW asserted its lead in the class of big endurance tourers and was able to keep ahead of its competitors, who were also crowding into this lucrative market segment.

#### The ultimate GS for adventure and global touring

For globetrotters BMW brought out a new model in the spring of 2002, which they named the R 1150 GS Adventure. In doing so, BMW not only offered a comprehensive range of special equipment and accessories, but also modified the standard features. Thus the suspension play was enlarged by 20 mm on each wheel, to 210 mm at the front and 220 at the rear. On the rear wheel a suspension strut with travel-dependent damping was used, built by Showa. The suspension base was adjustable at the front with a hook spanner and at the rear with a hand wheel. The front wheel was fitted with the EVO brake introduced 12 months previously, and as an option BMW offered the integral ABS anti-locking system in a partially integrated version. As on all GS models the system could be deactivated.

The engine was taken over from the R 1150 GS unchanged, though it was also suitable for normal-grade petrol. With this BMW met a request from many long-haul travellers, who often had difficulty in tracking down super-grade petrol in the



Paris-Dakar 2001: John Deacon of BMW Motorrad Team Gauloises on an R 900 RR.

more remote corners of the world. For this the rider required an encoding plug which activated a modified ignition map. As a special option it was possible to order an extremely high-ratio first gear for riding over difficult terrain. The sixth gear was no longer an overdrive on production models but was also set at a higher ratio.

Further modifications were principally designed to enhance the comfort of the rider: for example, the windshield and front mudguard were lengthened and widened, ensuring better protection for the rider from wind, weather, spray and mud. Hand protectors and protection from handlebar jolt were standard, and the protection under the engine was also strengthened. In place of the 22-litre fuel tank, customers could opt for one holding

30 litres. Adequate stowage space was provided by a set of aluminium cases specially designed for the Adventure. Two side cases and a top case together provided 105 litres of space. There was even a big cylinder protection bracket, a protective grille for the headlamp, and a fog lamp, also with a protective grille.

With these special accessories BMW could once again claim to be a system provider and could offer the globetrotting community "one-stop shopping" for a complete solution.

#### New benchmark: the BMW R 1200 GS

While the Adventure still remains in the range, the R 1150 GS was replaced in 2004 by the R 1200 GS. The new model was a surprise with its weight of 225 kg, which represented a saving of 30 kg compared with the R 1150 GS. However, this low weight was not achieved through compromises. On the contrary: it surpasses its commended predecessor in every respect and sets new standards in terms of agility, handling and reliability.

With a capacity of 1,200 cc the Boxer engine is once again the largest ever fitted in an endurance machine. With an output of 100 bhp (74 kW) and a maximum torque of 115 Nm, the current GS guarantees a supreme power curve and sufficient pulling power at all engine



Paris-Dakar-Cairo 2000: Jimmy Lewis rides the Boxer to place 3.