



# PIONEERS IN THE RACING LAB

SPORTS

**THE 911 GT3 R HYBRID RACING CAR IS THE FLAGSHIP OF THE INNOVATIVE CAMPAIGN KNOWN AS "PORSCHE INTELLIGENT PERFORMANCE."**

WITH A SENSATIONAL APPEARANCE AT THE LEGENDARY 24-HOUR RACE ON THE NÜRBURGRING, THIS HIGH-PERFORMANCE NEW DEVELOPMENT FEATURING A MAJOR ADVANTAGE IN FUEL EFFICIENCY WAS RECENTLY RESPONSIBLE FOR A TRUE HISTORIC MOMENT.

By Reiner Schloz Photos by Frank M. Orel

At five in the morning in the Porsche pit, everyone was still in a state of high excitement. Shoulder to shoulder, the engineers, technicians, and mechanics were gazing spellbound at the monitor. The lap times and positions it showed gave cause to hope for a sensation. Fourteen hours after the start of the 24-hour race on the Nürburgring, the Porsche 911 GT3 Hybrid was still in the lead. More than that, as the monitor indicated, lap by lap it was building its lead.

It is no great surprise to see a Porsche out in front in the day-and-night chase on the legendary Nordschleife, or "North Loop." For the last four years, vehicles from the

911 GT3 R model family have celebrated overall victories at this event, the largest in the world with over 200 cars at the start. But it is different with the GT3 R Hybrid. Even in Porsche's victory-crowned motorsports department, this racer with a special hybrid drive is considered first and foremost a research car. "We want to learn with this car," says Porsche Head of Motorsports Hartmut Kristen, "and we're learning every day."

Ever since the automobile industry has been consumed by the discussion of alternative drives and lower fuel and emissions levels, Porsche has been resolutely propagating its message: If you apply an intelligent approach to the

TENSION IN THE PIT LANE, PURE AMAZEMENT: ENGINEERS, TECHNICIANS, AND MECHANICS STARE SPELLBOUND AT THE MONITOR AT FIVE IN THE MORNING. LAP TIMES AND POSITIONS GIVE CAUSE TO HOPE FOR A SENSATION. THE GT3 R HYBRID IS STILL OUT IN FRONT AFTER 14 HOURS—AND IS EXTENDING ITS LEAD LAP BY LAP.

Scenes from the pit lane: The 911 GT3 R Hybrid is the center of interest; driver Jörg Bergmeister (left, top left photo, checking the telemetric data with Jens Maurer in the Porsche truck) and project director Daniel Armbruster (top right photo, with headphones) keep a sharp eye on the progress of the race





**Advantage Porsche Intelligent Performance:**  
A pack chases the 911 GT3 R Hybrid; preparations are underway for the next refueling stop in the pit (top left)

demands of the future, you can use alternative drives to increase driving pleasure all the more. Porsche Intelligent Performance is what the company calls its campaign to make cars both powerful and fuel-efficient at the same time. And this is just what the racing department was waiting for, not only in the opinion of Hartmut Kristen. As he notes, "Once again we have the chance to show what we can do, and to provide initial answers."

That is why the GT3 R Hybrid was entered in the race. "We want to infuse hybrid technology with emotion, and to gather experience," says Dr. Daniel Armbruster, who, as head of motorsport development systems, is the project director for this racing car equipped with a special Performance Hybrid drive. It uses neither batteries nor accumulators. Juice is provided by an electric flywheel mass battery, whose rotor stores brake energy mechanically in the form of rotational energy at 40,000 rpm—and feeds it when needed to the two electric motors on the front wheels with 60 kW (82 hp) each. The additional 164 horsepower is available to drivers for up to eight seconds at the touch of a button when accelerating out of curves or



when passing. Instead of settling for "only" the 480 hp of the combustion engine, the GT3 R Hybrid can accelerate in crucial moments with up to 644 hp—without using a drop more fuel.

Porsche developed the flywheel mass battery together with the experts from the Williams Formula One racing team. As Daniel Armbruster explains, "We didn't want to buy a black box; we wanted to be involved in developing it. So the system's entire software, for example, is from us." When the GT3 R Hybrid starts running its laps, every movement is recorded by a computer. All the telemetric data are fed into the processor, a system adapted from

that used to measure data for the RS Spyder racing car. Even Williams's Formula One driver Nico Hülkenberg was delighted by the test-drives, remarking that "the 911 is scarcely inferior to a Formula One car, especially in slow curves." Entered for test purposes, the Hybrid took third place and sixth place in its first two racing appearances in the long-distance championship on the Nürburgring. Porsche factory driver Jörg Bergmeister was always one of the drivers. And now, after a good number of test and racing kilometers, like all the pioneers he feels he is involved in the development of this innovative vehicle: "One feels very close to this car. It's beautiful to see and experience how it continues to develop." ▶

The handicap that the GT3 R Hybrid carries on its way to victory is part of the concept behind the racing lab on wheels. Two additional cooling systems—water for the electric motors, oil for the flywheel—add considerable weight. “When all the data have been analyzed,” Armbruster speculates, “we’ll surely dispense with one of these systems. Then the car will be lighter and even better.” Additional special features include a complicated braking system that gives drivers an unusual braking feel. “That’s because the electric motors immediately go into action,” says Bergmeister, “but you quickly get used to it.”

The most enjoyable part for the drivers is the boosting process, which is when the electric motors kick in during acceleration. This feature has such a daunting effect on the competition that the GT3 R Hybrid received the authorization to start the 24-hour race with 25 kilos (55 lbs.) of additional weight. But that did not change the strategy. At lap lengths of over 25 kilometers (15.5 miles), the Hybrid has to refuel every ten laps, whereas the competition has to do so every eight laps or at most every nine. Viewed from a long-distance perspective, this difference means that the GT3 R Hybrid can make at least two fewer refueling stops—which saves approximately six minutes. And that is quite a lot.

So they stood in the pit and were amazed—at five in the morning, and then still at one in the afternoon. The GT3 R Hybrid was out in front. Jörg Bergmeister, Richard Lietz, Marco Holzer, and Martin Ragginer circled the course, lap after commanding lap. A slow puncture, a speed penalty, minor problems with the steering, a fabulously fast repair job carried out on the torn exhaust manifold—nothing could hold up the racing lab. Yet that was not enough. After 22 hours and 15 minutes, the “horrific second” (Armbruster) arrived: engine damage—and the end of the race, so close to the finish. The engineers, technicians, and mechanics who had given their all fell back onto their chairs, stunned. Porsche’s CEO Michael Macht spoke words of encouragement to the pioneers in the pit. “Porsche hybrid technology has clearly demonstrated its potential in one of the toughest races in the world,” he said. “This will not be the last appearance of a hybrid racing car. We are going to further develop this innovative system.” Research and Development Director Wolfgang Dürheimer also went on the offensive. “We are racers, and not easily discouraged.” Daniel Armbruster was convinced that “for more than 22 hours, we made everyone believe in Porsche Intelligent Performance.” Driver Jörg Bergmeister, who had heard a “loud noise in the rear,” was able to smile again: “We drove the future.” ◀

**Encouragement for the disappointed pioneers in the Porsche pit: Despite the car’s departure from the race, Porsche CEO Michael Macht is excited about the performance of the hybrid racing car (left, top photo far left); Research and Development Director Wolfgang Dürheimer (right, top photo center left) consoles Jörg Bergmeister**





**LAST EXIT FOR THE NÜRBURGRING:** Driver Roland Asch prepares for the start (top photo)—and drives on the roads of Germany

# DARING RAID BY THE “STREET BOYS”

SPORTS

**BIG SURPRISE IN THE PORSCHE PIT:** EXPERIENCED DRIVERS TAKE A COMPLETELY UNEXPECTED 13TH PLACE AT THE 24-HOUR RACE ON THE NÜRBURGRING WITH A STREET-LEGAL 911 GT3 RS.

By Reiner Schloz Photos by Frank M. Orel; Porsche

When it was all over, they slapped themselves on the thigh and had every reason to toast their success. Visibly pleased, Roland Asch announced, “We are the ‘street boys.’” He and racing driver and TV host Patrick Simon (both from Germany) as well as journalists Chris Harris (Great Britain) and Horst von Saurma (Germany) had just driven to 13th place at the Nürburgring—with a street-legal 911 GT3 RS. For Asch, this clearly showed that “the GT3 RS is the best sports car in the world.”

The 911 that the quartet drove from the 42nd starting position to 13th place was unique in the large starting field. The car was the only entry with road authorization and a license plate, which read “S-GO 2400.” Shortly before the race, the four had driven the Porsche from Zuffenhausen to Nürburg and out onto the Nürburgring. And then they tacked on the 24 hours. They wanted to test how viable this road-going vehicle is under the toughest of conditions. That was something completely new, even for an experienced driver like Roland Asch. “The interior is unusually quiet and somewhat more comfortable for the driver,” he reports, “and the car just ran like clockwork.” The mechanics also had their fun with this car’s appearance in the race. And above all, not much work. During the race the only thing they had to take care of was the scheduled replacement of the front brakes. Otherwise they could concentrate in the pit on changing the tires, cleaning the windshields, and refueling. And that once every eleven laps—a much lower frequency than for the competition. As Asch notes, “One can’t hope for more from a sports car.” Porsche’s Research and Development Director Wolfgang Dürheimer was justifiably proud of the “street boys.” As he noted, “They’ve provided an impressive demonstration of the performance this car is capable of, and which is available to all customers at their Porsche Centers.”

Developed in Weissach, the 911 GT3 RS is powered by a 3.8-liter six-cylinder boxer engine with 450 horsepower. The factors that make it viable for the racing course include a shortened gear ratio, dynamic engine bearings, and aerodynamics designed resolutely for downforce. The only parts that had to be installed for the car’s appearance on the Nürburgring were a different cage and a different seat, for safety reasons. The fact that the race left its marks on the car had more to do with the competition, by the way: the driver’s door and sill were dented in a jostling incident, and the front turn-indicator glass was shattered. But under the hood everything was fine. Which is why Roland Asch still had not had enough after 24 hours. “Let’s change the tires again,” he said, “and then we’ll drive the car back home.”

## TECHNICAL SPECIFICATIONS 911 GT3 RS

<b>Displacement:</b>	<b>3,797 cc</b>
<b>Power:</b>	<b>331 kW (450 hp)</b>
<b>Maximum torque:</b>	<b>430 Nm</b>
<b>Top track speed:</b>	<b>310 km/h (192 mph)</b>
<b>Acceleration:</b>	<b>4.0 seconds (0–100 km/h; 0–62 mph)</b>
<b>Engine:</b>	<b>Six-cylinder flat engine</b>
<b>CO<sub>2</sub> emissions:</b>	<b>309 g/km</b>
<b>Fuel consumption (NEDC):</b>	<b>City: 19.4 l/100 km</b>
	<b>Highway: 9.6 l/100 km</b>
	<b>Combined: 13.2 l/100 km</b>

Technical details may vary from country to country.