

# 918 ICE- COLD

Lapland's magnificent light and bitter cold form the backdrop for traction tests on a slope

*No Porsche is born as a fair-weather car. So the super sports car of the future—the 918 Spyder—also has to prove itself under freezing conditions. Superior suspension technology and finely tuned control systems bring its power onto the ice.*

By Heike Hientzsch  
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**A**rjeplog has made a career for itself. Nobody used to want to come here, and those who were born here wanted to leave. But since the late 1970s, this town in northern Sweden has blossomed into an El Dorado for car testers. While other locations also offer frozen lakes and snow-covered roads, this area in the Lapp hinterlands has based its entire infrastructure on the needs of the automotive industry.

Throughout the test season, which extends from October to March, disguised prototypes of all makes share the roads and tracks. The typical hotel guest and restaurant patron is a development engineer. Everyone is peering across a road or track to see what's on their competitors' plates. That's the way things are in Arjeplog. And that's what you have to know in order to understand what Holger Bartels, who directs the 918 performance team, means when he says that this little town of 2,000 people, located just 35 miles south of the Arctic Circle, is sometimes a little too crowded for him.



Northern Sweden, however, has something that is not found on the less populated test grounds of Finland, namely, mountains. And that's what the 918 Spyder prototypes need to drive up and then down again to demonstrate their traction. A development team consisting of twelve engineers and three of these mid-engine hybrid cars of the future recently spent two weeks in the Swedish province of Norrbotten.

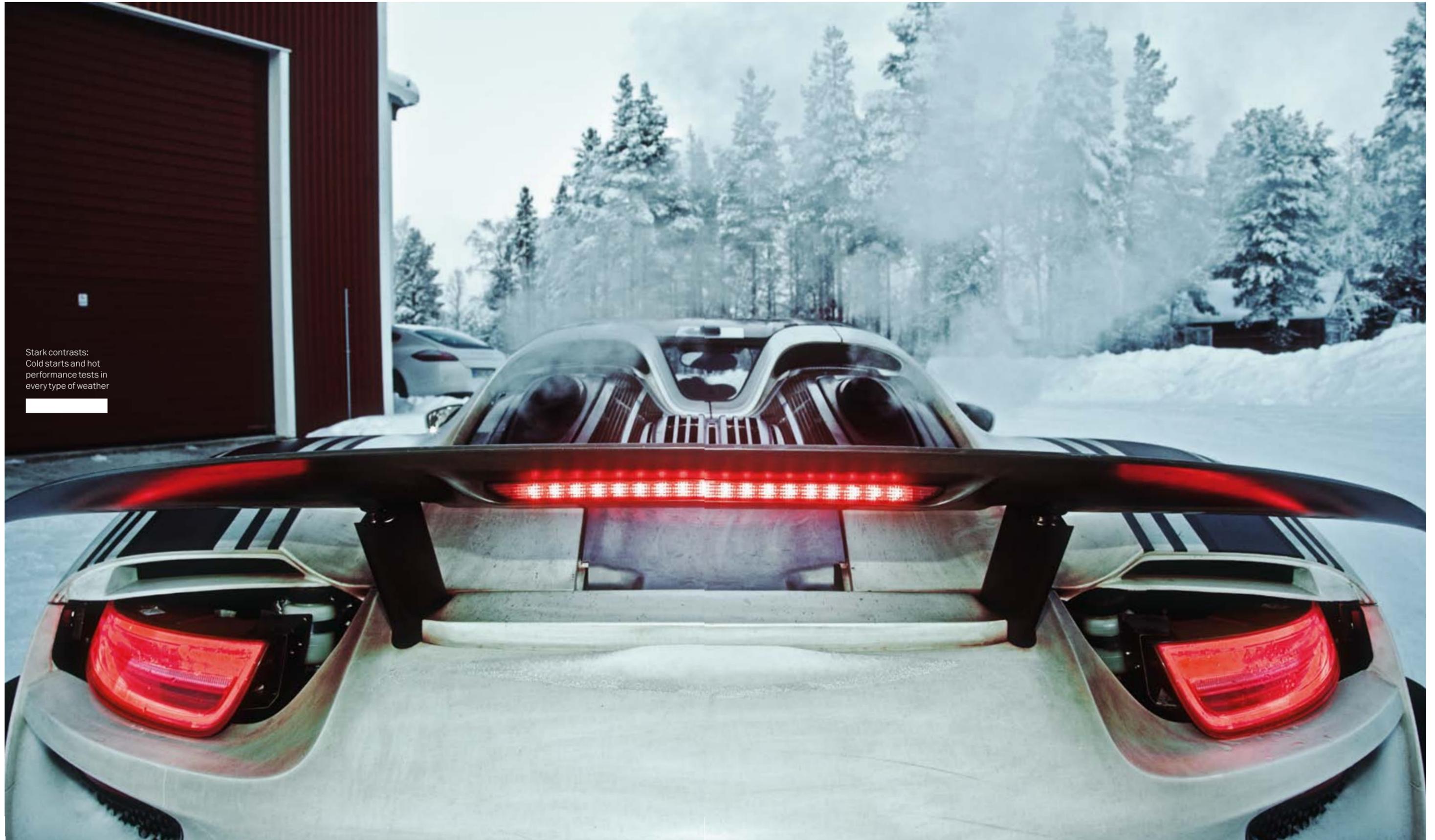
In icy temperatures of 22 degrees below zero, people move a little slowly. Their frozen noses no longer run. But the 918 does. The engineers arrived with a long checklist: all-wheel drive system, control systems, PDK, combus-

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*Appropriate conditions for a Porsche—and for a super sports car of the future. Two weeks of tough tests in Lapland are only one stage in the comprehensive product trials for the 918.*

Sailing on a frozen lake, the prototype in E-mode reaches up to 93 mph





Stark contrasts:  
Cold starts and hot  
performance tests in  
every type of weather

tion engine, front and rear electric machines, electronics, car body, high- and low-voltage batteries, and torque distribution during braking maneuvers.

On top of that, many components appear individually on the list of technical specifications. Does the rear wing extend properly? What effect does the cold have on the seals around the doors? Prototypes are always a rare species. There are only 24 of what are called construction-stage models of the future 918. In order to carry out all of their tests, engineers from the different departments have to pool their resources and share use of the vehicles. The three cars were assigned to the three general areas of performance, driving dynamics, and drive system.

“But it’s not so rigid in practice, of course,” says Bartels. “The teams work closely together, and we also run two shifts.” The drive system people do their cold starts before sunrise; the test cars then heat up over the course of various performance trials; and cold starts are once again on the agenda at night.



The engineers clocked around 2,500 miles on the cars in Sweden. Breakdowns? Negative. “Not a single system failed to function,” reports Bartels. “The preparations these days are so precise that you can nearly take them for granted,” he says. “But that’s the way it should be for the 918, because the car is full of daring and innovative developments.” Every component has to work, including the battery system. “But that alone is not the really exciting part,” the developer hastens to say. “The 918 will be much more than the sum of its parts. What’s exciting is the harmony inherent in the entire vehicle. The perfection of its interactions.”

But does an extreme athlete like the 918 really have to prove all of that on ice and snow? Is the environment even appropriate for this species of car? “Absolutely,” insists Bartels. “It’s wonderful to drive the prototype in these conditions. As easy as a Boxster, but faster.” ABS, EPS, electronically controlled all-wheel drive system, electronically controlled differential lock, PASM, traction management, and PSM combine to ensure that the anticipated 585 kW (795-horsepower) output of this super sports car of the future is applied in appropriate doses to slick surfaces.

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Driving modes E (E-power), H (hybrid), S (sport hybrid), and even R (race hybrid) remain accessible. Snow has acoustic side-effects. It covers the landscape like insulating panels in a sound studio. Everything becomes blunter, but also more sensitive. When the V8 roars in the forests of Lapland like an animal raring to fight, that is the call of the wild. The prototype then sails across a frozen lake again at close to 100 mph in E-mode. With hardly a sound. Uncanny.

The 918 will be a wonderful symbiosis of the most modern drive technologies, including a plug-in mechanism when the car needs charging without the help of the combustion engine or brake energy recovery. Reason and emotion will share the cockpit—as if Dr. Jekyll and Mr. Hyde alternate behind the wheel.

Holger Bartels is proud of the many technical solutions. But above all he wants to dispel the notion that sports cars—and especially super sports cars—are only for summertime excursions. “Many people, even customers, have no idea of how superbly our cars perform in winter. The systems support drivers in any weather conditions. You can drive every Porsche comfortably and safely on snow.” The future 918 Spyder will be more extreme in all respects than other Porsche models. But it will be every bit as solid and reliable.



For the 918 prototypes, the winter did not end with the trip to Sweden. Work went on for another two weeks in Finland. Despite the icy cold, or rather precisely because of it, technical development does not freeze over. Holger Bartels is now forging ahead to Nardò. The focus at Porsche’s own high-speed track in Apulia will be on  $v_{max}$ . The 7.8-mile circuit with its banked curves is custom-made for peak-speed drives and aerodynamic tests. “It’s less a matter of the ultimate downforce,” explains Bartels. “What’s key are the aerostability measurements.” Or in other words: What happens with the on-flowing air during lane changes or when steering in? Chassis sensors register the slightest changes. The 918 Spyder is being created to feature the maximum driving stability. The incomparable experience of driving a Porsche is the result of painstaking data analysis and high-precision mechanical implementation. And superior ease at the wheel never feels artificial or fabricated, but rather entirely natural.

Hot, cold, wet—the United States, South Africa, Scandinavia, Italy, France, and the Nordschleife of the Nürburgring. The super sports car from the production halls of Zuffenhausen has to prove itself on different continents and under all conditions. Constant wetness can best be encountered on the Michelin test course in Clermont-Ferrand. “But it rains here in Germany, too,” says Bartels, as he looks out the window of his office onto the shiny wet asphalt of the obstacle test course in Weissach. This is the home of the development of the 918, in a racing neighborhood. Here is where the future is made. ●



Symbiosis of the most modern drive technologies, including plug-in charging