

How Porsche Penske Motorsport prepares for the classic in Daytona

22/01/2025 Porsche Penske Motorsport faces its first race of the 2025 season this weekend (January 25-26). The 24 Hours of Daytona serves as the season opener for the IMSA WeatherTech SportsCar Championship. Competing as defending champions, the factory team brings two Porsche 963 hybrid prototypes to the Daytona International Speedway, aiming to demonstrate their prowess as true all-rounders in motorsport.

The Daytona International Speedway, known as the “World Center of Racing,” hosts the iconic season opener of the North American IMSA series. Prototypes and GT cars tackle roughly 80 percent of the 2.5-mile NASCAR oval. With full-throttle sections exceeding 80 percent of the lap, top speeds in excess of 320 km/h are reached on the Speedway straights. After crossing the start-finish line, cars turn sharply left into the tight infield section, entering a completely different world. Here, maximum braking performance, downforce, and optimal traction are key – presenting significant challenges to the experienced engineers at Porsche Penske Motorsport, who must tune the Porsche 963 for two vastly different sections.

“Daytona demands an unusual compromise in vehicle setup that would not work at many other tracks,” explains Brandon Fry, Lead Race Engineer for Porsche Penske Motorsport in the IMSA WeatherTech SportsCar Championship. “On the oval sections, we’re hitting speeds unparalleled anywhere else in the IMSA season. Meanwhile, the infield corners are as tight as a street circuit.” The Porsche 963 must excel on every part of the 5.73-kilometer course. Achieving an optimal balance of top speed, braking stability, traction, and tire management requires extensive preparation, starting well before test sessions.

“We conduct detailed simulations to find the ideal setup,” says Fry. For high speeds, minimal drag, low ride height, and a stable aerodynamic platform are essential. However, Daytona’s unique layout imposes significant limits in all three areas. Generating downforce is critical for braking and navigating the two "Horseshoe" 180-degree turns and the high-speed “Kink” in the infield. This contrasts with the goal of reducing drag. Similarly, a soft suspension setup benefits braking and traction in tight corners but has adverse effects in the steeply banked 31-degree curves of the oval.

“As much as we’d love to maximize speed on the oval, one thing is crucial: your car must excel in braking and traction in the infield. That’s where lap time is made, not on the straights,” says reigning IMSA champion and last year’s Daytona winner Felipe Nasr. The Brazilian Porsche works driver adds: “A car well-suited for the slower sections also improves tire durability because you're sliding around less.” Fry emphasizes another key point: “The finish line is on the high-speed section of the track. It's imperative that no car overtakes you at the last moment simply due to higher top speed. That's a scenario we cannot allow.”

The tire conundrum: which compound is faster and when?

Daytona’s legendary circuit presents unpredictable challenges throughout the 24-hour race. Teams and drivers must continually adapt to new hurdles. One major factor is Daytona's dramatic temperature fluctuations. The race starts at 1:40 PM, often under intense sunshine in Florida, the “Sunshine State.” Asphalt temperatures can quickly rise above 40 degrees Celsius. By the following day's finish at the same time, temperatures are usually similar, but conditions differ: after hours of racing, the racing line is rubbered in, offering significantly more grip, while off-line areas become littered with dirt, debris, and rubber marbles. Between these extremes, nightfall at around 6:00 PM brings rapid cooling, with track temperatures plummeting due to the Atlantic coastal winds.

“When temperatures drop below 15 degrees Celsius and continue to fall, the point eventually comes where the softer tire compound becomes the better option,” explains Fry. Porsche’s partner Michelin supplies spec tires for the GTP top class, offering two options: a medium compound for warmer conditions and a soft variant for cooler phases. IMSA regulations define a time window for using the soft compound, but teams aren’t obligated to switch. Performance isn’t the only factor influencing tire selection.

“While the soft tire performs better at lower temperatures, it’s also noticeably more fragile. With soft

rubber, it's not just about extracting performance but also managing it over a stint," Fry reports. In-depth analyses and simulations guide these critical decisions. Soft tires excel during the first laps after a pit stop, warming up quickly and providing optimal grip earlier. However, this compound tends to degrade faster, leading to slower lap times toward the end of a stint. Which option is better overall? This also depends on driver experience and race conditions.

"The challenge is adjusting to changing conditions every time you leave the pits. Drivers who can quickly exploit the tire's potential on the out-lap have a clear advantage and can gain one or more positions early on," explains Nasr. "When you leave the pits on cold, fresh tires, you're thrust into the mix of various classes. During this phase, even slower class cars may brake better and have better traction. Keeping situational awareness is critical – and far from easy."

Daytona's 24-hour rush hour: drivers establish agreements

A total of 61 cars will start the 2025 Daytona race across four classes. The Porsche 963 competes in the fastest GTP category against other hybrid prototypes for the overall victory. Meanwhile, four Porsche 911 GT3 R cars will race in the two GT classes. Performance-wise, the LMP2 class lies between the two. This year, Porsche Formula E works driver António Félix da Costa joins the LMP2 grid. The 24-hour race involves constant encounters between cars with widely varying speeds, demanding maximum concentration from all drivers. Is this always maintained? Not entirely. Fatigue and exhaustion during the twice-around-the-clock event lead to small lapses in focus as time progresses.

"Experience makes all the difference in such situations," says Nasr, who shares the No. 7 Porsche 963 with Britain Nick Tandy and current WEC Drivers' World Champion Laurens Vanthoor from Belgium. "Drivers who've raced at Daytona often know exactly when and where it's wise to back off. It's not always about full attack," says Nasr, specifically referencing tricky encounters with other cars in the fast oval sections. "It gets hectic there, even if it doesn't seem so from the outside. Overtaking traffic requires split-second decisions – almost every second. With over 60 cars on track, there's always something happening."

Spotters assist drivers in safely navigating traffic: "Inside, inside, still there … clear!" These calls from spotters positioned on the main grandstand roof greatly help drivers steer through the intense competition over 24 hours. In the banking, the oval's steep turns, a rule of thumb applies: "Slow is low." Slower cars stick to the lower line, while faster ones use the outside lane to overtake. "This isn't an official rule but a kind of gentleman's agreement among drivers," says Nasr, who notes that this code of conduct is reiterated in drivers' briefings before the race. "It all sounds reasonable, but it doesn't always work perfectly. We close in on GT cars so quickly in these sections that some drivers in those cars aren't yet in position. You have to be extremely cautious."

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Video

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