

# Continental Develops Motorsports Brake Control System for Exclusive Bugatti Bolide Hypercar



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Bugatti Bolide is a 1,600-horsepower hypercar engineered exclusively for the track

- Continental's "Motorsports ABS Kit" enhances stability and traction control for superior handling
- Brake control system enables better vehicle control, even for less experienced drivers
- Continental Engineering Services has been a long-standing project partner for Bugatti

Frankfurt, Germany, November 6, 2024. An impressive order for an exceptional vehicle: Continental has developed an electronic brake control system for the Bugatti Bolide, a hypercar featuring an anti-lock braking system (ABS), electronic stability control (ESC) and traction control system (TCS), based on the

Motorsports ABS Kit by Continental Engineering Services.

This motorsports brake control system makes the 1,600 hp racing car controllable for professional racing drivers and enthusiasts alike. The Bugatti Bolide is an extremely powerful racing car from the hypercar manufacturer which is approved only for the racetrack. Originally conceived as a concept vehicle based on the Bugatti Chiron production model, the Bolide is now being built in a limited run of 40 units, with the first deliveries scheduled before year-end.

Continental's internal development and engineering service provider, Continental Engineering Services (CES), and Bugatti have been cooperating on advanced developments for several years, particularly for the Bugatti Chiron and Bugatti Veyron models. The current project stands out due to the development and integration of hardware and

software components because racing cars not approved for road use are primarily optimized for top performance and do not usually feature this type of complex driving dynamics system.

Christian Willmann, Bugatti's chief engineer for the Bolide, explains:

Never before has an ESC system been combined with carbon-carbon brakes – until now. With the Bolide, we've achieved this breakthrough, creating a solution based on Continental's motorsport brake control system that surpasses our expectations in performance, stability, and safety. Continental's Motorsports ABS makes the Bolide even more exceptional.

We're extremely proud that we were able to push boundaries with Bugatti in this extraordinary project,

adds Volker van Lier, head of the Chassis & Brake Systems business unit at CES.

Developing brake control technology for a hypercar is an exclusive discipline in which Continental Engineering Services has a great deal of experience. Making a racing car controllable not just for professional motorsport racers, but for all drivers, was a particularly interesting challenge for us.

The challenge: to make a 1,600-horsepower hypercar controllable for anyone

CES was able to contribute its many years of experience both from its work for Bugatti and in the field of motorsports to this sports car project. The development service provider has previously developed brake control systems for the Veyron and Chiron production hypercars (the Bolide is based on the Chiron platform). Additionally, CES provides a foundational Motorsports ABS for all its motorsport clients, which has now been adapted and enhanced with new functionalities specifically for the Bugatti Bolide.

In developing the customized product, the CES Motorsports team tackled the challenge of making a vehicle with outstanding driving dynamics controllable for any driver. The vehicle's acceleration and braking forces needed to be precisely managed to ensure safe steering and handling, despite its 1,600 hp. Vehicle dynamics control systems make this possible. The traction control system regulates the

1,600 hp output to deliver maximum propulsion in every scenario. The anti-lock braking system ensures the best possible braking performance regardless of external conditions, while the electronic stability control maintains vehicle stability, even during complex maneuvers.

An exclusive vehicle of this type, deliberately not developed for use on public roads, must simultaneously meet the high demands of professional racing drivers while remaining safe for inexperienced motorists. The solution was a brake control system that allows individual driving dynamics functions to be activated or deactivated as needed. One of the advantages in this development was the involvement of a Continental Engineering Services engineer who is also an active racing driver with a racing license. Working alongside the manufacturer's factory drivers, he helped fine-tune the control systems specifically for racetrack performance.

The Bolide's brake control system provides five different driving modes for the anti-lock braking system and for the combination of electronic stability and traction control. These modes range from pure racing mode to gradual activation of the driving dynamics control and extensive use of electronic assistance. Driving characteristics can be adjusted directly on the steering wheel, depending on the track, weather conditions and tire status. If brake balance between the front and rear axles is adjusted, CES' flexible system handles these changes seamlessly. This makes it possible to achieve outstanding braking performance at all times – regardless of whether the tires are cold or optimally warmed up after a few laps on the racetrack.

### Software expertise paired with motorsport know-how

The extreme physical forces common in motor racing proved to be a particular challenge. Braking the 1,600 kg sports car generates decelerations of up to 2.5 g more than twice the maximum deceleration of a road-legal vehicle. The aerodynamic downforce at high speeds also had to be factored into the control strategies of CES's motorsport brake control system: the 380-km/h vehicle places more than double load on the wheels at high speeds as when stationary. To meet these extreme requirements, the experts at CES had to adapt and expand the in-house software package for the basic Motorsports ABS – the control function algorithms were enhanced in order to tame the Bolide's extraordinary dynamics. Thanks to these

optimizations, the systems were also able to fully develop their impressive performance as they interact with racing components such as the carbon-carbon brake system and special endurance slicks.

Although at first glance the brake control system seems inconspicuous, it is capable of maneuvering a 1,600 hp hypercar safely through tight hairpin bends and precisely controlling the brake pressure, even at top speeds of up to 380 km/h, all this while also weighing less than two kilograms and being no larger than a brick. Speed was also of the essence during development: CES was able to develop the exclusive control system within just a year, from the initial meeting to the final driving test.

Media Spokesperson and Topic Manager User Experience

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