



Insight: Designing the Bugatti Bolide

MOLSHEIM 03 12 2020

EXTREME, UNCOMPROMISING, CONTEMPORARY. WHAT SHAPES THE DESIGN OF THE MOST RADICAL HYPER SPORTS CAR IN RECENT BUGATTI HISTORY?

Take a look at the creative force that powers Bugatti, and it is immediately obvious that a team of exceptionally talented designers are committed to a legacy of design excellence. This ambition is built on the incredibly rich history of Bugatti's acclaimed racing heritage of the glorious 1920s and 1930s, while looking ahead to experiments that push the boundaries of technical innovation. As the most extreme vehicle concept in the French luxury brand's recent history, the design journey of the Bugatti Bolide¹ – aligned with the company's core values of *excellence, courage, dedication* – is an inspiration in its own right.

Bugatti's design ethos 'Form follows performance' for the Bugatti Bolide, the new hyper sports car that answers one of the great 'what if?' questions. What if Bugatti built a radically light vehicle around its iconic 8.0-litre W16 engine without any limitation as regards the weight-to-power ratio. The result is the most extreme, uncompromising, fastest and lightest vehicle concept in Bugatti's modern era, with Molsheim's famed W16 engine producing 1,850PS^o and delivering performance akin to a Formula 1 car. Its top speed is well above 500 km/h without any compromises in maximum handling and maximum agility.

As a binding force behind one of the most ambitious experiments of Bugatti, designer Nils Sajonz was an integral part to the creation of the French luxury brand's newest hyper sports car. Already instrumental in the design of a number of limited-run models before working in the team that shaped the Bugatti Bolide, Sajonz helped bring to life phenomenal flagship models such as the Divo², revealed in 2018, the one-off La Voiture Noire³, in March 2019 and the Centodieci⁴, in August of the same year. It is the hard work, maturity and tenacity that Sajonz gave to the design of the Bolide, while working in a team of five, that rewarded him with the recent promotion to Head of Special Projects at Bugatti Design.

"Working to design the Bugatti Bolide was a phenomenal experience," said Nils Sajonz, Head of Special Projects at Bugatti Design. "The Bolide is an outpouring of expression from our design team. We recognised that a track-focused hyper sports car represents the best next step for Bugatti, and the Bolide embodies an outstanding example for our design guiding principles. It is extreme, it is radical and it is contemporary, everything that Bugatti stands for. Bugatti never stands still and we are always searching for the next rousing goals."

Sajonz joined the Bugatti design team in 2015, starting as an intern, and even wrote his university thesis on a Bugatti design study for autonomous racing. The designer's experience in developing limited-run, concept and creative experiments makes him perfectly suited for the position of Head of Special Projects, taking charge of forthcoming studies to continue Bugatti's unrivalled take on hyper sports car design. Supporting projects such as the Centodieci, Divo and La Voiture Noire gave Sajonz a first-hand view of what it takes to design the world's most powerful, most luxurious and most exclusive hyper sports cars. Sajonz will report directly to Achim Anscheidt, Director of Design.

The design language of the Bugatti Bolide shows a clear X signature from every perspective.

Committed to a Bugatti legacy of exceptional design

“It is important for Bugatti to have many individual talents contributing towards the ultra-luxury and uniqueness that our customers as well as Bugatti enthusiasts have always associated with our brand. The Bugatti design team is underpinned by a unified group of exceptionally talented car designers who all are committed to a rich brand legacy, living up to our brand values,” said Achim Anscheidt, Design Director at Bugatti. “The development of the Bolide signals the ongoing ambition of Bugatti to lead in innovation while linking to our past, and Nils was central to this. Nils is a supremely talented designer and has already proven to be an extremely valuable member of our creative team.”

On the heritage of Bugatti design, Sajonz said: “Ever since I was a young boy, design and the beauty of things have shaped my life. The heritage of the Bugatti brand is not lost on me and I take great inspiration from the history of the celebrated racing cars such as the Bugatti Type 35 and Type 57SC Atlantic. You can see the racing heritage of Bugatti with subtle hints in the design of all our cars and now in the Bolide. It is important that future special projects retain the design identity of the brand, which is simply unrivalled.”

The Bugatti Bolide – a track-oriented thoroughbred of modern times

The experimental study of the Bugatti Bolide is a track-oriented hyper sports car featuring a W16 engine derived from series production as powertrain combined with a minimal body for maximum downforce. The Bolide features an incredible weight-to-power ratio of 0.67 kg per PS, made possible by the combination of the W16 engine with 1,850 PS and a vehicle weight of just 1,240 kilograms^{°°}.

The selection of materials and production processes used with the Bolide represent a bold step forward for what is currently feasible and what will be possible in the future in hyper sports car design. A worldwide innovation is the morphable outer skin of the intake scoop on the roof, which provides active airflow optimisation. If the vehicle is driven at a slow speed, the surface of the scoop remains smooth. In contrast, a field of bubbles bulges out when driven at fast speeds. This reduces the aerodynamic drag of the scoop by 10 percent and ensures a 17 percent reduction in lift forces. The dramatic effect of the overall proportions is made clear with an overall height of only 995 millimetres – the same as an historic Bugatti Type 35.

On the groundbreaking design of the Bolide, Sajonz added: “Many of the design features of the Bolide are as important as a central style point as much as they are functional. The appearance of the Bugatti Bolide invokes the so-called X-planes of aviation history and shows a clear X signature from every perspective. This also heralds back to Bugatti’s track-bred heritage, with the X signature present on the front of the Bolide representing the taped ‘X’ that historic racing cars would use to cover headlights, preventing the spread of glass in the event of an accident. But these themes are consistent and contribute towards the overall dynamics and performance of the Bolide, which is unrivalled.”

The Bugatti team developed a light monocoque made of carbon around the drive. The integral front end joined to it is also made of high-strength carbon fibres, as are the fully aerodynamically effective underbody and the monocoque itself. The single-fibre tensile strength of the fibres used is 6,750 newtons per square millimetre, the single-fibre stiffness is 350,000 newtons per square millimetre. These represent figures that are only reached in the aerospace industry.

Instead of water-to-air intercooling, the Bugatti Bolide has air-to-air intercooling with water pre-cooling for optimal performance on the racetrack. The two water coolers, which are arranged in front of the front axle, provide a more effective radiator system in terms of flow than is customary even in Formula 1. Newly developed and hybrid carbon titanium turbofan radial compressors ventilate and cool the high-performance ceramic racing brake system.

[°] Using 110 octane racing fuel; Engine output with 98 octane fuel at 1,600 hp.

^{°°} The weight specification is based on the theoretically possible dry weight.

¹ BOLIDE: Fuel consumption, l/100km: this is a concept study and therefore not subject to Directive 1999/94/EC.

² DIVO: WLTP: Fuel consumption, l/100km: particularly high 43.33 / high 22.15 / medium 18.28 / low 17.99 / combined 22.32; CO₂ emissions, combined, g/km: 505.61; efficiency class: G

³ LA VOITURE NOIRE: This model is not subject to Directive 1999/94/EC, as type approval has not yet been granted.

⁴ CENTODIECI: This model is not subject to Directive 1999/94/EC, as type approval has not yet been granted.