MOLSHEIM
4/16/2018

"CONNECTED CAR" À LA BUGATTI



- Bugatti telemetry for data analysis unique in a production vehicle
- Bugatti was the first automobile manufacturer to apply telemetry to a passenger car, the Veyron 16.4
- Significant further development of the system for the Chiron[1]
- Customers can now benefit from real-time support via remote diagnosis — as in Formula One or DTM
- Individual support and unrestricted customer satisfaction are top priorities for Bugatti
- Telemetry assists work of Bugatti flying doctors by providing data round-the-clock
- Telemetry made a key contribution to the technical development of the Chiron

When the customer in the Golf region received a call from Molsheim in Alsace, he did not know that the pressure in the front left tyre of his Bugatti Chiron1 was no longer ideal. However, the French super sports car brand's service technician was already fully informed and suggested that he ought to correct the tyre pressure before his next trip with the 1,500 PS super sports car. He could do that despite working almost 6,000 kilometres away from the car. Telemetry is the explanation. With the new Chiron, data is even transmitted on a real-time basis — this feature is normally only implemented on Formula 1 or DTM racing cars. All Bugatti customers can benefit

2026 BUGATTI AUTOMOBILES S.A.S.

from this unique support for their vehicles — but of course only if they give their consent in advance. Hendrik Malinowski, Director of Sales and Operations Molsheim, Bugatti Automobiles S.A.S., explains: ''This is a highly personal concierge service of the type you normally only find in luxury hotels.''

''Our customers have the most demanding requirements for individual support in all areas of their lives. That also applies to their vehicle fleets and automobile collections,'' says Malinowski. ''In this area too, Bugatti goes one step further than other manufacturers. With our telemetry system, we can provide our customers with assistance in all technical matters related to their Bugatti. At any hour of the day and, if necessary, also of the night.''

Bugatti has many years of experience in this field. The super sports car manufacturer already developed this data transmission and analysis system which allows communication between vehicles and customer service for its first modern supercar, the Veyron 16.4. Since 2004, Bugatti has therefore been in a position to monitor the technical status of each individual Bugatti from the company's headquarters in Molsheim.

Norbert Uffmann, who is now responsible for the development of the telemetry system at Bugatti, says: ''At that time, we really broke new ground. Bugatti is the first automobile manufacturer to apply telemetry on a production vehicle. And we are still unique in this respect,'' adds the 43-year-old communications technician, who holds a degree in electrical engineering, with a certain pride. Uffmann has been working for Bugatti's Technical Development Department for six years and played a key role in the further development of the system for the brand's latest super sports car, the 1,500 PS Chiron. He and his team were supported by IAV, Ingenieurgesellschaft Auto und Verkehr, a long-standing development partner of Bugatti located in the North of Germany, which has been involved in the system right from the start.

The Bugatti telemetry system works mainly using mobile radio and monitors the operating status of each Bugatti. It is ''online'' round-the-clock seven days per week — provided that the customer's vehicle is located in an area with mobile phone network.

With the launch of the Chiron, far more data can now be acquired and recorded in a variety of different ways — permanently, temporarily with respect to individual events or limited to certain time periods. The system keeps a close eye on about 10,000 signals from all parts of a car, including engine, transmission, lights, air conditioning and infotainment system. As a new feature on the Chiron, the data is transmitted on a real-time basis, something that is normally only experienced with Formula One or DTM racing cars, where the race team mechanics can monitor their cars from the pits. Live data from any location on earth takes no longer than a text message to reach Bugatti. The Bugatti Flying Doctors do not need to closely watch their monitors. If unusual signals are received from a vehicle, the responsible flying doctor receives a message on his mobile phone.

This way, Customer Service receives the information needed to provide the best possible support for each Bugatti. This includes prompt answers to customers' questions over the phone and long-term assessments of vehicles' behaviour so that the flying doctor can prepare for his upcoming visit to the customer. The highly qualified technicians therefore know in advance which spare parts they need to order, if any, and can immediately place the necessary orders.

Bugatti has three flying doctors, who are responsible for vehicles owned by Bugatti customers in the regions of Europe/Russia, the Middle East and Asia/Pacific, and North America. They are supported by mechanics at the company's headquarters in Molsheim and at the facilities

of Bugatti's 34 dealers and service partners throughout the world. From the moment when a customer takes delivery of a Bugatti, the flying doctor is his direct contact for all technical questions. Often, a close relationship of trust is developed over the years. The flying doctors are available round-the-clock and are ready to board the next aircraft in order to provide customers with the support they need either at the nearest dealer's workshop or at their homes if it is not possible to provide advice over the telephone or the required results cannot be achieved in this way.

The telemetry system allows two-way communication, not only from the Bugatti to the customer service centre but also vice versa. Customer Service can transmit data to the vehicle in order to change configurations or, to a certain extent, to carry out software updates.

This sophisticated technology is not packaged in a particularly spectacular way. The Customer Service laptop "talks" to an aluminium box in the vehicle which is only 140 mm wide, 50 mm high and 100 mm long. Despite its small size and light weight, the box is packed with power, housing eight vehicle networks such as CAN (Controlled Area Network) buses. An on-board network links the various controllers of the vehicle. The control mechanisms, which have greatly increased in number, exchange data as in a telephone conference call. The telemetry box listens in to these communications in an event-controlled way, recording diagnostic information from at least 30 control units in the vehicle and forwarding it in encrypted form to customer service depending on the requests received from Molsheim.

In addition to everyday technical support, the tracking of stolen vehicles is a feature of the telemetry system that is highly appreciated by customers. While owners of a Veyron still had to report the theft of their Bugatti to Molsheim personally in order to activate the stolen vehicle tracking system, the Chiron will draw attention to itself automatically using the telemetry system in situations that are unusual for the car, for example if it is transported by truck.

"Our telemetry system has taken a gigantic leap forwards in almost all respects," Uffmann explains. "We were already able to do a lot for customers in the case of the Veyron," he adds. He says that stolen vehicle tracking is part of the service, adding a spectacular example to the everyday topics. "In some cases, we have even been able to find customers' vehicles before the thieves were able to cross the border."

Following the successful premiere of the telemetry system for customer service on the Veyron, Uffmann discovered another area of application for the system. "Using the experience we had gained with the Veyron, we already used telemetry in the technical development phase of the Chiron. That was a new approach," says Uffmann. This way, it was not only possible to test the individual development phases of the new system rapidly in practice; the vehicle developers were also able to provide active support for the various test drives throughout the world. For example, the prototypes were monitored on a real-time basis from Bugatti's development back office in Wolfsburg. In the case of long-term test vehicles, statistics were prepared and evaluated. This applied both to testing in hot conditions in the USA and to test drives in South Africa. Using this approach, problems could be detected and solved faster. "Telemetry made a key contribution to the development of the Chiron. At the same time, the telemetry system itself was also improved", the engineer reports.

When asked about data protection and security, Norbert Uffmann underlines that this is a top priority. All customers whose Bugattis receive telemetry support have given their consent in advance in the vehicle purchase contract. With only a few exceptions, all owners have given their consent as they see telemetry as the perfect way of providing the all-round service that

they appreciate and enjoy using. Data transmission between vehicle and server is effected with individual security certificates depending on the topic concerned. The security certificates are continually updated in line with the latest Volkswagen Group security standards. In the case of Bugatti, only a strictly limited number of highly qualified employees have access to the data. Access rights are also individually defined depending on the topic and the employees concerned.

''Bugatti's telemetry system is our version of the connected car — exclusive and individual for our customers and saving time and money for our developers,'' says Uffmann. ''This is 'Connected Car' à la Bugatti, and it has already been available for more than a decade.''

---

[1] Chiron: WLTP fuel consumption, l/100 km: low phase 44.6 / medium phase 24.8 / high phase 21.3 / extra high phase 21.6 / combined 25.2; CO2 emissions combined, g/km: 572; efficiency class: G