



BMW Motorsport

24h Spa “dream team”: BMW Motorsport unveils numerous innovative technical features for the BMW Z4 GT3 raced by Zanardi, Glock and Spengler.

Spa-Francorchamps (BE) / Munich (DE), 23rd June 2015. BMW Motorsport has entered the final phase of its very special project: this Wednesday (24th June), BMW works drivers Alessandro Zanardi (IT), Timo Glock (DE) and Bruno Spengler (CA) will join the official test day for the 24 Hours of Spa-Francorchamps (BE) in their modified BMW Z4 GT3.

This year's staging of the traditional 24 Hours of Spa-Francorchamps marks a milestone in motorsport. For the first time, Zanardi, who had both legs amputated, shares the cockpit with other drivers who are able-bodied. The project in this form is unique and very special for BMW Motorsport. Over the past months, a team of up to nine engineers have developed numerous innovative technical solutions that allow all three drivers to optimally race over the 24-hours, and to make the driver changes between one handicapped and two able-bodied drivers in the shortest possible time.

“This project is a really exciting challenge. This is a real first for us and we are all very enthusiastic about this project - the drivers, engineers and everyone at BMW Motorsport,” said BMW Motorsport director Jens Marquardt. “Our engineers have worked intensively and developed a whole series of modifications and features for the BMW Z4 GT3, which have already been well proven at the race track. We are proud of the great work done by everyone involved in that outstanding project, and can't wait to tackle this 24h adventure with Alex, Bruno and Timo.”

Modifications were made in the following areas: pedal box, clutch, steering wheels. In addition, the engineers optimised the seat's position, installed air conditioning and found a new solution regarding the engine software. In total, the development time has been five months.

On 11th and 12th June, the drivers, BMW Motorsport and ROAL Motorsport completed a successful roll-out at Adria Raceway (IT). Last weekend, the next step was taken: Zanardi, Glock and Spengler took part in the 6-hour race of Paul Ricard in Le Castellet (FR) to test the modifications to their BMW Z4 GT3 in race conditions.

Please find details of all the technical modifications and features below.



BMW Z4 GT3 for Alessandro Zanardi, Timo Glock, Bruno Spengler, 24 Hours of Spa-Francorchamps – Technical modifications and features in detail:

Car:

BMW Motorsport used the base chassis raced by Zanardi last year in the Blancpain Sprint Series, but completely revised and optimised it. When rebuilding the car, the engineers used some of the existing components, but most of the parts are new. So, in fact, the BMW Z4 GT3 is a completely new car.

From its basic design, the car is the same as all the other BMW Z4 GT3s in racing. BMW Motorsport just did the modifications which allow Zanardi to drive the car. All other components are as homologated. Modifications were made in the following areas: pedal box, clutch, steering wheels. In addition, the engineers optimised the seat's position, installed air conditioning and found a new solution regarding the engine software.

Pedal box in general:

From right to left, the pedal box contains: the brake pedal for Zanardi, a divider, the throttle and brake pedal for Glock and Spengler and, on the far left, a footrest for Zanardi. The complete pedal box is lower than usual, and this helps Zanardi to brake.

The needs of all three drivers are fulfilled: Zanardi needs to have his pedals as far apart as possible, while Glock and Spengler need them as close together as possible.

Brake pedal and footrest Zanardi:

Last year, Zanardi used a normal brake pedal that was modified with the addition of a bracket. He was braking with the right foot pretty far to the left, so the movement of his hip was far from ideal. This cost some power when braking. Therefore, the engineers were looking for a solution that allows Alex to move his hip in the most natural and efficient way as possible when braking to make full use of the strength of his muscles. In addition, it was important that the brake pedal does not take up too much space, as there are also the pedals for Spengler and Glock, and their throttle should not move too far to the left compared to its usual position.

Because of this, BMW Motorsport came up with the solution of a pin attached to the brake pedal, which allows Zanardi to just slip his prosthetic leg onto the brake pedal. This pin solution has several advantages: it does not take up much space and offers a fixed connection between the brake pedal and Zanardi's prosthetic leg. As Zanardi has only restricted control over his leg, it could happen that the foot moves to the side. This is not possible with the pin; it holds the leg fixed in its position.

Also the prosthetic leg itself has been modified. The upper part, the femur, is Zanardi's normal prosthesis. But he can adapt the lower part, the lower leg. For this, a special foot adapter for the lower part below the knee was developed. The foot is designed to fit on the pin on the pedal and is adjustable.



Next to the brake pedal a side divider was installed. This avoids Spengler or Glock accidentally slipping over onto Zanardi's brake pedal.

On the very left side of the pedal box, the clutch pedal was removed and instead a footrest was installed for Zanardi. This footrest is very important for Zanardi, as it gives him additional support for his left leg and, as a result, he has the full power to brake with his right leg.

The brake itself is activated by the brake pedal for Glock and Spengler. The two different brake pedals are connected. So when Zanardi pushes his pedal, the other one also goes down and activates the brake. Both brake pedals are moving simultaneously. Zanardi's pedal is kept in position by a spring mechanism when he is not in the car.

As Zanardi can apply less power onto the brake than normal drivers, the engineers increased the brake ratio for him step by step. Now his brake ratio is approximately 30 % higher compared to other BMW Z4 GT3 drivers like Glock or Spengler. This allows him to brake with a pressure of around 105bar.

Clutch:

The BMW Motorsport engineers completely removed the clutch pedal from the pedal box and replaced it with a clutch-by-wire-system. The system is controlled with two clutch flippers, similar to the gearshift pedals, mounted to the steering wheel and to the dashboard. This also works perfectly for Glock and Spengler.

Steering wheel Glock/Spengler:

The steering wheel for Glock and Spengler is the standard BMW Z4 GT3 steering wheel, with the following modifications: the steering wheel is now connected by an external cable and the manual clutch has been mounted on one side of the rear of the steering wheel. They can activate it with their hand and start moving again. The paddle shift is standard. Thanks to a black light, the markings are also visible in the dark without the driver being distracted. BMW Motorsport also uses this at other 24h-races.

Steering wheel Zanardi:

Zanardi's steering wheel is completely new, but it is based on the one he used last year. At the back it still has the throttle ring he uses to accelerate. However, the BMW Motorsport engineers did some fine-tuning in order to optimise this system.

Instead of shifting paddles on both sides he now just has a shifting system on the right side. While he is accelerating with the ring he can upshift with the rear paddle, and he downshifts with his thumb.



The buttons and switches on the steering wheel are standard, but some special features were added. Among these features is an LED stripe in the middle. The most important functions are not only shown on the dashboard, but also directly on the steering wheel, for example the shift lights. The positions of the buttons have been adjusted and optimised.

The complete steering wheel is lit from inside, so no black light is needed.

The shape of the steering wheel is similar to last year, but the BMW Motorsport engineers have cut away even more at the bottom. This gives Zanardi even more space for his knees.

Seat / belt:

Last year ROAL and Zanardi invested a lot of time working on the seat and found a solution which works perfectly for Zanardi. This was used as a base for this year. For Zanardi a carbon insert was built, which is firmly connected so it cannot move. The insert is lined and features a lumbar support, which he can pump up on the right side. The actual seat is the combination of the base and Alex' insert. Based on that, the engineers built the seat insert for Timo and Bruno, so at the driver change they just need to put their insert onto the seat.

The BMW Motorsport engineers also optimised the seat's position. Compared to last year, it is completely straight now and the seat has been moved back. A positive side effect is that this gives as much space as possible for the driver change.

Last year Zanardi used a belt that was not a quick-change belt. As this year he needs to do driver changes, the standard GT3-Endurance belt is used.

Engine software:

BMW Motorsport also revised the engine software, as now two accelerator pedal characteristic curves are needed - one from the pedal in the pedal box and one from the steering wheel. The car needs to switch between both of them when the driver changes. The software was revised in a way that it is notified by the change of the steering wheel who is actually sitting in the car. When Zanardi's steering wheel is connected the software automatically switches to his curve.

Air conditioning:

Due to the fact that Zanardi has no legs, his body temperature cannot be regulated normally. So his body needs to be cooled in the cockpit. Last year, he used a cooling system with dry ice, which is not the perfect solution for the requirements of a 24-hour race. So the engineers installed air conditioning as it is used in the BMW Z4 GTE.



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