**PARTNERS FOR PARALYMPIC PERFORMANCE: ANDREA ESKAU AND TOYOTA MOTORSPORT GmbH**

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Technology honed in Formula 1 and the Le Mans 24 Hours has delivered a ski sled which has helped take the performance of Andrea Eskau to new heights as she prepares for another gold medal challenge at the Paralympic Games in PyeongChang and Tokyo.

Andrea, who suffered life-changing spinal injuries in a 1998 cycling accident, recently gave a successful competitive debut to her new ski sled, developed by TOYOTA Motorsport GmbH (TMG) in Cologne, Germany.

She returned home the Para Nordic Ski World Cup in Canmore, Canada with two gold medals as her Paralympic preparations began on a high. “I really think we've achieved a superb result,” Andrea said of the carbon fibre ski sled, made from the same lightweight materials used by TMG in its TS050 HYBRID Le Mans race car.

TMG and Andrea have worked together already for five years, including her gold medal-winning performances in Paralympic summer and winter events. The latest chapter of that partnership sees the Cologne-based company creating bespoke equipment for Andrea with the ultimate target of Paralympic gold using TMG technology at TOYOTA’s home Games in Tokyo 2020.

Andrea, who lives close to TMG’s technical centre, home to the TOYOTA GAZOO Racing team in the FIA World Endurance Championship, has a hunger to constantly push the limits and perform better. This motivated her to focus on improvements to her equipment in much the same way a racing driver seeks constant development of his car to improve lap times.

“Physically I quickly developed a high level of performance,” she explains. “But I realized that equipment is immensely important for at such a professional level. At some point you simply cannot go further with pure training. I got to know TOYOTA Motorsport GmbH through a friend and they were unbelievably open-minded to support me with my issues.”

Born on 21 March 1971 in Apolda in East Germany, Andrea is a professional psychologist and was a keen amateur athlete as a young woman, competing in cycling and triathlon events. In 1998, a cycling accident caused a severe spinal injury and left her unable to use her legs.

After first experimenting with wheelchair basketball, she found her sporting passion in road racing and then Nordic skiing, and she explains her sporting origins: “Initially I only bought sports equipment to be more mobile after my accident. After a time, when I felt more comfortable, I started to compete; my first event was the Cologne Marathon but only for fun. I finished third at my first attempt and my ambition in sport was aroused. I wanted to get better. Now I have more than 20 World Championship titles and six Paralympic gold medals.”

For the new ski sled, weight reduction was a major focus and TMG’s designers used advanced carbon fibre lay-up processes to minimize the amount of material needed whilst retaining strength. This achieved an incredible weight reduction of more than 30% which has a direct performance benefit for Andrea as it reduces the mass she propels around the 6km course using her upper body strength alone.

Thomas Linke, part of the team working with Andrea on her new sled in his role as Group Leader Composites at TMG, explains the production process: “The tooling moulds are part of the CAD design and were machined from Ebalta 678 on one of our five-axis milling machines. After machining, the moulds were polished and sealed according to standard procedure for our motorsport parts.

“We placed the calculated pre-impregnated carbon fibre laminate in the moulds. The carbon fibre reinforced plastic lay-up is a typical lightweight motorsport sandwich construction with carbon skins and hexagonal cores. The last stage in production is the curing process in an autoclave where, under atmospheric pressure and temperature, the parts are cured.”

But as well as advanced production techniques, ergonomics and practicality are a vital part of the equation for Andrea, particularly in her specialist discipline, the biathlon, which mixes skiing and shooting in temperatures of potentially -20°C; much colder than those faced by any race cars.

Andrea explains: “Shooting was our main focus when designing the sled. A problem of the previous sled was the uneven floor space. We modified the location of some parts so the skis have much better contact with the ground and also support me when I am shooting when you need a steady base to aim accurately. It's a big handicap if the sled isn’t steady.”

The development process is far from a one-way conversation, with Andrea contributing strongly, as TMG’s project leader Norbert Schäfer says: “Andrea has a very good technical understanding and a lot of ideas, so at each meeting we created good solutions together. Her approach is clearly improvement-related in order to get the most possible performance out of the athlete and her tools, in this case her ski sled. This is exactly how we operate in motorsport as well.”

Together, Andrea and TMG have already reached the first milestones on the journey to PyeongChang and ultimately Tokyo 2020. TMG will follow Andrea’s progress closely over the next months with regular video features.

Rights-free video footage and photographs of Andrea’s story are available at: <https://goo.gl/6WALZc>

**About TOYOTA Motorsport GmbH**

TOYOTA Motorsport GmbH (TMG) has been based in Cologne, Germany since 1979 and built its reputation in motorsport, beginning with two decades of FIA World Rally Championship success. TMG’s facilities and capabilities expanded significantly during its time in Formula 1 (2002-2009). Since the end of that era, TMG has combined works motorsport participation in the FIA World Endurance Championship with research and development support for TOYOTA Motor Corporation and a thriving business as a supplier of high-performance services to the automotive and motorsport sectors. Additionally, TMG has built a growing customer motorsport business covering activities in rally and circuit racing, with all activities inspired by TMG’s vision of *Creating Excitement Through Team Spirit and Advanced Technology*. www.toyota-motorsport.com / [www.facebook.com/toyotamotorsport /](http://www.facebook.com/toyotamotorsport%20/) [@TMGOfficial](https://twitter.com/tmgofficial)

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**About Andrea Eskau**

Born on 21 March 1971 in Apolda in East Germany, Andrea is a professional psychologist and was a keen amateur athlete as a young woman, competing in cycling and triathlon events. In 1998, a cycling accident caused a severe spinal injury and left her unable to use her legs. After first experimenting with wheelchair basketball, she found her sporting passion in road racing with a hand bike. In 2008, 10 years since her life-changing accident, Andrea won Paralympic gold in Beijing, in the road race and defended that title four years later in London, where she also won road time trial gold. At the 2016 Games in Rio de Janeiro, Andrea won a third road race gold. By then, she had become a force in winter sports as well. Her first Paralympic Winter Games medal came in Vancouver 2010 with bronze in the individual sitting biathlon, but she became a double winter sports champion in Sochi four years later in the 6km biathlon and 5km cross-country skiing. [www.andreaeskau.de](http://www.andreaeskau.de)