



TMG EV P002 READY FOR PIKES PEAK CHALLENGE

Monday 17 June 2013

The TMG EV P002 race car is ready to defend its electric record at the Pikes Peak International Hill Climb (30 June) after concluding a successful upgrade and testing programme.

A two-day testing session at Pikes Peak was completed smoothly at the weekend, delivering encouraging results to the team from TOYOTA Motorsport GmbH (TMG) and TOYOTA Racing Development USA (TRD USA).

The test session saw the TMG EV P002 run on half of the track each day, with combined times indicating a time significantly quicker than last year's record.

Multiple Pikes Peak record-setter Rod Millen was at the wheel as fine-tuning was carried out on the balance, braking, traction control and cooling, while tyre choice was also evaluated.

Based on data gained from last year's record run of 10mins 15.380secs, engineers at TMG's electric vehicle technology centre in Cologne, Germany have made enhancements to the electric powertrain.

Motor speed and torque have been increased while the powertrain's operating parameters have been tuned to better suit the challenge of the unique 19.99km (12.42miles) Pikes Peak track. It now delivers 400kW of power and 1200Nm of torque.

Since arriving in the United States last month, engineers at TRD USA have performed aerodynamic and other upgrades to the chassis.

With a three-fold increase in downforce and new carbon ceramic braking system, combined with the electric powertrain upgrades, the TMG EV P002 is now ready to take on the challenge of an increasingly-competitive electric class.

TMG is using its pioneering off-board battery-to-battery charging technology, including Schneider Electric EVlink™ DC Charger, to charge the TMG EV P002 from the mountainside, where there is no reliable connection to the power grid.

Mounted in a TOYOTA Hiace, the TMG DC Quick Charger includes a 42kWh lithium ion battery, which charges directly from the AC power grid. After an overnight charge, it quickly delivers high levels of power to the TMG EV P002 without additional installation or infrastructure.

With varying current and voltage output, the TMG DC Quick Charger is an independent source of power for rapid recharging in any location and it is being used to charge the TMG EV P002 throughout the Pikes Peak event.

Claudia Brasse, TMG Executive Coordinator Strategic EV Development:

"This has been a combined technical effort, with TMG and TRD USA engineers working over the past weeks to generate more performance from the TMG EV P002. Electric powertrain technology is advancing on a daily basis so even as TMG won the electric class last year, we were planning how to generate more performance for 2013. We have met our targets for the powertrain and I'm delighted to hear that our colleagues at TRD USA have extracted additional performance from the chassis. Our development and testing programme has gone well and we have seen once again that the TMG electric powertrain is not only very



powerful, it is also incredibly reliable and durable. Now we look forward to the race event itself, which is another showcase for TMG's electric powertrain technology."

TMG EV P002 Technical Specifications	
Performance	
Top Speed	230 km/h (142mph)
Maximum Torque	1200Nm
Maximum Power	400kW
Maximum Revs	6000rpm
Powertrain	
Electric Motor	2 axial flux
Inverter	2 x TMG inverters
Gear Ratio	3.13
Transmission	Single-reduction gearing
Battery	Lithium ceramic
Battery Capacity	42 kWh
Charging Technology	Off-board DC charging
Dimensions	
Length	4.10m (13 foot 5 inches)
Height	1.04m (3 foot 5 inches)
Width	1.79m (5 foot 10 inches)

TMG DC Quick Charger Specifications	
AC Grid Connection / Input	
Grid Connection	400 V AC CEE 16 A
Nominal input power	6.6kW
DC Vehicle Connection	
Output voltage	400 V _{DC}
Maximum DC output power	25kW
Storage	
Battery	42 kWh, lithium ion
General	
Technology partner	Schneider Electric (EVlink™)
Operating temperature	0 to 40°C
Storage temperature	-30 to 60°C
Protection	Short-circuit protection, output fuse, over-current and over-voltage protection, under-voltage shutdown

About TOYOTA Motorsport GmbH:

TOYOTA Motorsport GmbH (TMG) has been based in Cologne, Germany since 1979 and built its reputation in the World Rally Championship, winning four drivers' and three manufacturers' title during a long participation which ended in 1999. TMG was also the home of Toyota's works Le Mans 24 Hours (1998-1999) and Formula 1 (2002-2009) teams, both of whom achieved pole and podium positions, and a tuning and sports conversion subsidiary (established in 1994). Since 2007, TMG has been a pioneering centre of development for motorsport-related electric vehicle technology and for alternative powertrain and infrastructure integration in general. TMG has already concluded several electric vehicle projects for external clients and is the proud record holder for electric vehicles at the Nürburgring Nordschleife and Pikes Peak International Hill Climb. www.toyota-motorsport.com.



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