



Technology and Innovation Communications

Oliver Strohbach

Tel: +49 841 89-45277

E-mail: oliver.strohbach@audi.de

www.audi-mediaservices.com

www.audi-newsroom.de

Record: Audi RS 5 TDI competition concept drives to record time on the Sachsenring track

- **Audi sets new lap record for cars with diesel engines**
- **Superior technology platform with 435 hp and 800 Nm (590.0 lb-ft)**
- **Electric compressor: overcomes turbo lag, enhances sprint performance**

Ingolstadt/Hohenstein-Ernstthal, June 12, 2015 – Audi has set a new record time on the Sachsenring for cars with a diesel engine. The Audi RS 5 TDI competition concept rounded the 3.6 km (2.2 mi) race course in a time of 1 minute 35.35 seconds. The technology platform draws its power from a 3.0-liter V6 biturbo TDI with 320 kW (435 hp) of power and 800 Nm (590.0 lb-ft) of torque. The highlight is an electrically driven compressor.

The record time was set by race car driver Nicki Thiim as part of Sachsenring Record Day, which was organized by “Auto Bild Sportscars” magazine and the tire manufacturer Michelin. The Audi RS 5 TDI competition concept beat the record time for diesel cars by 1.87 seconds with a time of 1 minute 35.35 seconds; the old record was set in February 2015. In spring 2015, “sport auto” magazine tested the Audi technology platform on the Hockenheimring, and it posted the best lap time in the magazine’s history for a car with a diesel engine.

“I am proud of the excellent performance on the race tracks, because it underscores the leadership claim of Audi in the development of highly efficient and sporty diesel engines,” says Ulrich Weiß, Head of TDI Engines Development at AUDI AG. “We really pulled out all of the stops in developing the Audi RS 5 TDI competition concept – in its lightweight design, chassis and of course its drive system. We exploit the full power potential of the TDI and supplement it with the added thrust of the electric compressor, which we will soon see in a production car model.”

The Audi RS 5 TDI competition concept is based on a technical concept car that we presented in summer 2014 on the 25th anniversary of the TDI engine. Since then, the car was further developed in all disciplines for racetrack duty. The car’s 3.0 TDI biturbo is power boosted to 320 kW (435 hp). Its maximum torque rose to 800 Nm (590.0 lb-ft). Based on this power, the Sport TDI accelerates to 100 km/h (62.1 mph) in just 4.0 seconds and to 200 km/h (124.3 mph) in less than 16 seconds.



A core innovation with this biturbo V6 TDI is that – in addition to its two exhaust-gas driven turbochargers – it also utilizes an electrically driven compressor. This compressor ensures faster buildup of charge pressure at low engine speeds and improves engine response as well as sprint performance significantly. It utilizes a small electric motor with seven kW of power that drives a turbine to a speed of up to 72,000 revolutions per minute within 250 milliseconds; this means that it builds up its charge pressure independent of the energy available in the exhaust gases. Illustrating just how quickly this technology reacts is the fact that a typical exhaust-gas driven turbocharger takes two to three times as long to reach a comparable turbine wheel speed. Thanks to its electrically driven compressor technology, high charge pressure is available quickly in the RS 5 TDI competition concept in any driving situation – a trait that is essential for excellent sporty engine response.

The electrically driven compressor utilizes a 48-volt electrical sub-system as its energy supply source. This auxiliary electrical sub-system is a key component of the Audi electrification strategy. It enables rapid transfer of large amounts of electrical energy, and so it is excellently suited for use with the electrically driven compressor. Both of these technologies will soon go into series production.

The Audi RS 5 TDI competition concept is 241 kg (*531.3 lb*) lighter than the model upon which it is based. Various lightweight design measures have reduced the car's weight: The engine hood consists of carbon fiber reinforced polymer (CFRP), the doors are made of aluminum, and the exhaust system is largely made of titanium. Inside, it features CFRP race bucket seats, and the rear bench seat is eliminated as part of an interior concept that is based on lightweight design. Thin glass and polymer windows are used as well.

The Audi TT clubsport turbo show car, which has generated much excitement, also utilizes the electrically driven compressor for its 2.5-liter five-cylinder TFSI. Information on this is available [here](#).

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In 2014, the Audi Group delivered approximately 1,741,100 cars of the Audi brand to its customers. The company achieved revenue of €53.8 billion and an operating profit of €5.15 billion in 2014. Audi operates globally in more than 100 markets and has production facilities in Ingolstadt and Neckarsulm (Germany), Győr (Hungary), Brussels (Belgium), Bratislava (Slovakia), Martorell (Spain), Kaluga (Russia), Aurangabad (India), Changchun and Foshan (China) as well as Jakarta (Indonesia). The brand with the Four Rings will start producing cars in Curitiba (Brazil) this year and in San José Chiapa (Mexico) in 2016. Wholly owned subsidiaries of AUDI AG include quattro GmbH (Neckarsulm), Automobili Lamborghini S.p.A. (Sant'Agata Bolognese, Italy) and sports motorcycle manufacturer Ducati Motor Holding S.p.A. (Bologna, Italy). The company currently employs approximately 80,000 people worldwide, thereof around 58,000 in Germany. Total investment of about €24 billion is planned from 2015 to 2019 – primarily in new products and sustainable technologies. Audi is committed to its corporate responsibility and has anchored the principle of sustainability for its products and processes in its strategy. The long-term goal is CO₂-neutral mobility.