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Audi R18 TDI: Advantage through LED technology

- **Five weeks before the 24 Hours of Le Mans**
- **Full LED headlights for the new LMP1 sportscar**
- **Audi with clear advantage in LED technology**

Ingolstadt, May 5, 2011 – Always be at least one step ahead of the opposition – this is Audi’s motto. This is exactly how the Four Rings brand presented the Audi R18 TDI – the first Le Mans sports car featuring headlights comprising entirely of light emitting diodes. As a result, the Audi drivers have a significant advantage at night during the 24 Hours of Le Mans.

Audi is regarded as a pioneer in the development of LED technology and leads the competition by a large margin in this field. The twelve-cylinder Audi A8 was the first car in the world to go into production with LED daytime driving lights. The Audi R8 is credited with having the first full LED headlights worldwide. Slowly but surely an increasing number of Audi models are offered with full LEDs as an option, as is the new Audi A6.

Audi also forces the new headlight technology in motorsport. The Audi R10 TDI was the first race car with LED daytime driving lights in 2006. The Audi R15 TDI, which broke the 39 year old distance record at the 24 Hours of Le Mans last year, was equipped with a combination of Xenon headlights and LEDs.

Audi goes a step further with the innovative Audi R18 TDI: the new LMP1 is the first Le Mans sports car with full LED headlights. Combined with sophisticated reflector-lens modules, eight high-power light emitting diodes per side provide unique illumination of the race track at night.

“When you’ve driven once with full LED headlights you don’t want to have anything else,” raves Le Mans record winner Tom Kristensen. “The light is stronger and vibrates less than a normal headlight – this is a clear advantage and particularly at Le Mans, a track that has many dark braking points in the night.”



However, not only the greater illumination is an advantage of LED technology. Light emitting diodes are maintenance free and extremely reliable. “The vulnerability to failures is extremely low,” explains Dr. Martin Mühlmeier, Head of Technology at Audi Sport. “To date, we haven’t had a single LED failure.”

Thanks to intensive development of the technology, full LED headlights now also represent a weight saving compared to common headlights – particularly as Audi Sport managed to eliminate the electrical cooling of the light emitting diodes still required in street cars and also found last year in the R15 TDI.

The LEDs in the R18 TDI are cooled by the airflow and still supply enough light even if the cooling airflow is completely cut by dimming themselves automatically. “Our colleagues in production car development are very interested to see how we implement this,” says Christopher Reinke, Technical Project Leader for the Audi R18 TDI. “However, we have the advantage in motorsport that the car spends less time at a standstill. On the highway, the lights mustn’t go out even if the car is in a traffic jam.”

Audi Sport worked closely with the AUDI AG “Light and Sight” section during development of the full LED headlights. The light tunnel in the Technical Development (TE) is available for tests. The Audi R18 TDI is credited with a record: It has the brightest diodes currently in use. These LEDs are currently not registered for road use.

To a limited extent LED technology also requires a completely new approach. The R18 TDI prototype’s main beam, which is comprised of five LEDs per side, is not brighter than the normal low beam. Three extra LEDs create the effect of a high beam by illuminating the track additionally through an individual position of the various reflectors.

Audi is the first automobile manufacturer to also use the diverse possibilities of light emitting diodes as design element. In the R18 TDI the daytime driving light in the left headlight forms a number “1” which is mirrored on the right side. With this, Audi aims to express its position as number one in LED technology. It goes without saying that the knowledge Audi Sport gains at Le Mans with the latest generation full LED headlights flows automatically into production car development – so that the advantage through LED technology remains.



The Audi Group sold around 1,092,400 cars of the Audi brand in 2010. The Company posted revenue of €35.4 billion and an operating profit of €3.3 billion in 2009. Audi produces vehicles in Ingolstadt and Neckarsulm (Germany), Győr (Hungary), Changchun (China) and Brussels (Belgium). Aurangabad in India saw the start of CKD production of the Audi A6 at the end of 2007, of the Audi A4 in early October 2008 and of the Audi Q5 in July 2010. Production of the new Audi A1 has been running at the Brussels plant since May 2010. The Company is active in more than 100 markets worldwide. AUDI AG's wholly owned subsidiaries include AUDI HUNGARIA MOTOR Kft., Automobili Lamborghini Holding S.p.A. in Sant'Agata Bolognese (Italy) and quattro GmbH in Neckarsulm. Audi currently employs around 60,000 people worldwide, including around 46,600 in Germany. Between 2011 and 2015 the brand with the four rings is planning to invest around €11 billion, mainly in new products, in order to sustain the Company's technological lead embodied in its "Vorsprung durch Technik" slogan. By 2015, Audi plans to increase the number of models in its portfolio to 42. AUDI AG will present the full results for the 2010 fiscal year at its Annual Press Conference on March 8, 2011.

Audi has long been fulfilling its social responsibility on many levels – with the aim of making the future worth living for generations to come. The basis for Audi's lasting success is therefore formed by environmental protection, the conservation of resources, international competitiveness and a forward-looking human resources policy. One example of AUDI AG's commitment to environmental issues is the Audi Environmental Foundation.