The foundation for today’s efficient diesel engines was laid as long ago as 1989, when Audi brought diesel direct injection together with turbocharging. Combining outstanding power and performance with reduced fuel consumption, for more than two years, TDI technology has also been a success story in motorsports: in 2006, Audi became the first to win the 24 Hours of Le Mans with a diesel vehicle, the Audi R10 TDI. 2007 and 2008 have seen Audi following up on this success – because if you don’t need to fill up so much, you spend less time in the pit – and wind up in the lead. Needless to say, the expertise and insights gained on the track are carried over into series-production Audi vehicles, where the latest generation of TDI engines with common rail technology ensure outstanding revving power and smooth running while cutting fuel consumption and CO₂ emissions. The continuing development by Audi of this innovative TDI technology in the future will see the company achieving further high-water marks in engine technology. A further milestone is the first-ever use of a TDI engine in a series-production sports car: with an average fuel consumption of just 5.3 litres per 100 km, the Audi TT 2.0 TDI quattro combines superb performance with exceptional efficiency.

Efficiency is not a buzzword for us. It is the result of years of diligent work.

TDI – the most successful Audi diesel technology
Efficiency is a fine argument in favour of the automatic mode of the optional S tronic, which puts the fuel usage potential of the economical TDI and TFSI engines to better use through fewer revs per minute and shorter changeover times. The dual-clutch gearbox means gear changes can be cut to just 0.2 seconds, with no noticeable interruption in driving power. Starting this year, the new 7-gear dual-clutch gearbox has been put to use in selected Audi A3 models. In the Audi A3 1.4 TFSI, it proved possible to achieve a lower level of fuel consumption this way than with manual gear shifting. From autumn 2008, the new gearbox will also feature in the new Audi Q5. In short, a new phase has been reached in the evolution of Audi, characterised by still greater efficiency – plus, of course, the sportiness that’s typical of Audi. After all, the one doesn’t exclude the other.

To reduce fuel consumption, you need to react earlier than others.

S tronic – the dual-clutch gearbox that provides uninterrupted driving power.
Weight reduction is one prerequisite for greater efficiency in fuel usage. The innovative Audi Space Frame (ASF) body concept consists of a lightweight, high-strength aluminium frame structure. This design has made it possible to shed an astonishing amount of weight – in an Audi A8, for example, the potential amount of weight saved is around 140 kg as compared to a conventional steel structure. This on its own means fuel savings of up to 0.3–0.5 litres per 100 km, with a corresponding reduction of around 7.5–12.5 g/km of CO₂. Weight reduction isn't the only area in which we make every single gram count.
Some call it pioneering. We call it our day-to-day business.

The first Audi duo with hybrid drive came out back in 1989.

Speaking of efficiency, Audi had its eye on the hybrid drive quite early – in fact, we were doing pioneering work in this field a good 19 years ago: in 1989, the company presented the Audi duo with an additional electric engine to drive the rear wheels. In 1996, Audi was the first European car manufacturer to mass-produce a hybrid vehicle, the third-generation Audi duo – a distinction it retains to this day. And now, thanks to modern energy storage technology, research by Audi into the hybrid drive continues, meaning that pairing up FSI petrol direct injection units with electric engines will continue to conjure up increased power out of minimised fuel consumption. Further evidence of the rich rewards that come from keeping up research work on a daily basis.
Yet again, we’re ahead of our time. 6 years ahead.

TDI and the ultra-low emission system – the visionary exhaust emission control system.

One of the key requirements in modern vehicle construction is reducing emissions. The solution used by Audi TDI engines is the ultra-low emission system. This exhaust emission control system reduces nitric oxides by up to 90 per cent. The system consists of a catalytic converter, a metering module, the AdBlue tank and an extensive system of sensors. The ultra-low emission system is rounded off with an additional oxidation catalytic converter and a highly efficient regulated diesel particulate filter. This brings it into line both with the Californian LEV II BIN 5 standard – the most stringent exhaust emissions standard in the world today – and with the maximum levels targeted for 2014 by the Euro 6 standard. We prefer to solve problems before they become problems.
Streamlined for efficiency, even in the toughest headwinds.

Audi design – record drag coefficients as standard.

Aerodynamic bodywork and the resulting reduction in aerodynamic drag constitute a significant factor in terms of energy savings. This is why Audi prototypes spend a good 1,000 hours in the wind tunnel, undergoing aerodynamic improvements – hence the distinctive, sporty Audi design, combining reduced aerodynamic drag with low uplift. And since the undercarriage influences overall aerodynamic drag by around 40 per cent, a system of aerodynamically efficient undercarriage parts – the "aerofloor" – has been developed. Just one reason why all current Audi models have an outstandingly low level of aerodynamic drag – the Audi Q5, for example, has one of the lowest drag coefficients in its class, thus producing a further reduction in fuel consumption.
The name of the Audi efficiency programme is hardly a new one: Vorsprung durch Technik.

Milestones in Audi technology.

Audi have never seen any contradiction between efficiency and sportiness. Innovations like quattro®, TDI, FSI, multitronic, S tronic, ASF and our exceptionally aerodynamic design have set key trends throughout the automotive industry. All these innovations add up to an impressive demonstration of how Audi expertise can permanently boost a car's efficiency as an integrated system – while also continuing to build on that sporty performance that's another key Audi hallmark.