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“Individual players win games, a team wins championships,” as the saying goes in sports. This notion also holds true in the philosophy of Audi. It helps ensure that Audi employees will consistently turn “Vorsprung durch Technik” into reality in the coming years at 17 locations in 13 countries. After all, in an industry where the playing field is the entire world and time is a crucial competitive advantage, nothing is more important than perfect team play between all areas.

The fascination of procurement.

TEXT: Boris Ziefle

ILLUSTRATION: Lukas Bischoff

Using the Audi RS5 TDI concept as an example, a car that combines a biturbo engine with an electrically driven compressor, we demonstrate how team play delivers innovation. This includes team play between the various Audi departments as well as early, close cooperation with suppliers.

It all started with the goal

of improving substantially the spontaneity of boost pressure buildup and of increasing the engine's power output. At the same time, the aim was also to reduce fuel consumption and CO₂ emissions. The V6 3.0 TDI engine obtains its power from the boost pressure that the biturbo builds up. This depends on the energy in the exhaust gas.

The Audi developers came up with the idea of using an additional electrically driven compressor to speed up the boost pressure buildup in the customary biturbo. The result: **direct response and high torque even at low engine speeds.**

This innovative concept from the engineers posed a real challenge for Audi

Procurement personnel: **How can I source a technology that does not exist yet and is still at the development stage?** We take a look behind the scenes of procurement and show how the electric biturbo made its way into pre-production. Over the next few years, the idea is then to fit several model series with this technology in series production.

TIME TO MARKET

01 // Advanced development started in Neckarsulm four years ago. In this process, time is a decisive competitive advantage. Direct paths were needed, coupled with exacting quality requirements. All the strengths and expertise had to be bundled. Procurement and Technical Development exchanged ideas several times a week to come up with solutions quickly. Quality Assurance, Logistics and Controlling were also actively involved from the outset. **Genuine team play that allows everyone to work together fast.**



02 // The challenge: to facilitate exclusive innovations for Audi and integrate these worldwide into our models. **The tool:** strategic supplier integration. Early integration into the product creation process gives rise to transparent and trusting partnerships between Audi and its suppliers. With this global cooperation, Audi is laying important foundations for tomorrow's business.



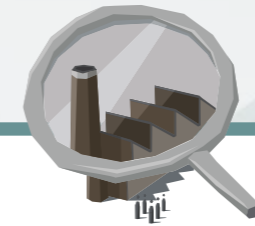
03 // Which supplier is suitable for developing the electrically driven compressor together with Audi through to series production and will ultimately be able to manufacture it cost-effectively? Within the Audi Group, the search for the needle in the haystack began for the **Regional Offices** distributed around the world. After all, the more complex a component is, the more requirements the future supplier will also need to meet.



04 // Mechanical know-how relating to the conventional compressor and expertise in electric drives – you seldom find these two areas of expertise under a single roof. The Audi Procurement team checked one parameter after another, whittling down the potential suppliers all the time. At the end of the screening process only a handful of potential suppliers remained.



05 // Procurement visited each of the individual potential suppliers to clarify key issues: Can the supplier implement the project? Are their production facilities state of the art? Is the production plant large enough to supply the volumes needed for series production in the future? Does the supplier have scope to expand further? But above all: **Do they have the same quality standards as the premium brand Audi?**



07 // The supplier had been specified, the budget too. Experts from Procurement, Quality Assurance, Logistics and Production now defined precise processes. The **Production Readiness Team** accompanies the supplier from the moment the contract is awarded through to series production. The philosophy entails being the on-site coach for the supplier. It is here that the final questions were clarified: How can Audi help ensure smooth production?



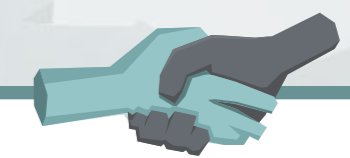
08 // The next challenge: startup of production for the pre-series, an important step in enabling the start of series production in the next few years. While development on the part of the supplier took place predominantly in France and the United Kingdom, Poland was the production location. **International networking worked.** In the intercultural mix of people, countries and languages, everyone pulled in the same direction. **That's European-style team play.** Respekt. Respect. Szacunek.



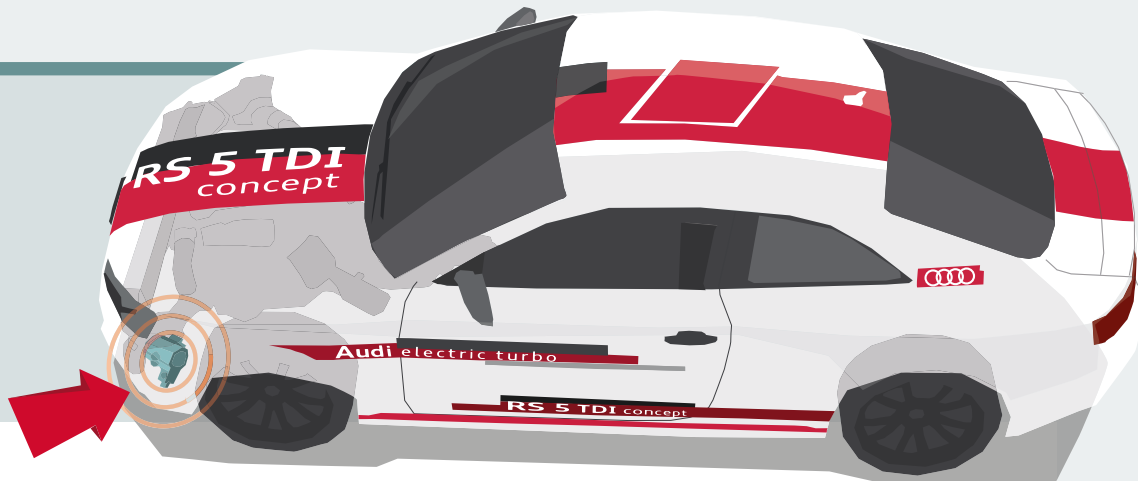
06 // Attention now turned to the details: meetings followed by conference calls and then by on-site visits. The know-how was decisive: Suppliers that had looked very closely at the component requirements and therefore could envisage a shorter implementation time frame enjoyed a clear advantage. Then an important milestone: **The decision was made.** From that point on, the selected supplier would support the development of the electrically driven compressor for the turbocharger concept of the future.



09 // Goal achieved: The finished component is a real revolution and is expected to go into series production in 2016. As the inventor of the TDI engine for cars, Audi is also adding a new dimension in terms of sportiness and efficiency with the electrically driven compressor. This will also be a viable solution for gasoline engines in the future. **Made possible by innovators. Or to be more precise: by a team of innovators.**



ILLUSTRATIONS: Lukas Bischoff



The electric V6 biturbo in the Audi RS 5 TDI concept produces 283 kW (385 hp). The electric compressor quickly provides high torque when starting off. If the driver stays on the accelerator, it takes roughly four seconds to reach 100 kilometers per hour. Boost pressure is available immediately after each gearshift thanks to the intelligent interplay between the two turbochargers and the electrically driven compressor.

The most impressive feature is the rapid, virtually seamless development of power at low engine speeds. The strengths of the electric biturbo come into their own precisely where they are most effective in everyday driving. The turbocharger eliminates the need for frequent downshifting, keeping engine speeds low. Sporty drivers will really appreciate the passing power and immediate delivery of power when exiting a curve. The electric biturbo is powered by a separate 48-volt power supply together with its own, compact lithium-ion battery in the trunk. A DC/DC converter provides the connection to the 12-volt electrical system.

Team training.

To prepare the Procurement team for the challenges of global procurement, Audi is adopting a radically new approach as part of its commitment to training, consisting of a tailor-made advanced course. The Technische Hochschule Ingolstadt (THI) developed the part-time **MBA course in Procurement Management** in close cooperation with Audi Procurement. The first Master of Business Administration candidates started the course on July 11, 2014, including nine employees from the Volkswagen Group. The respective Group brands assume the course fees for their employees and grant them time off for the classroom-based components. In addition to providing detailed knowledge of procurement management, a stay abroad also offers intercultural experiences.