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Progress you can touch: The "Audi feeling" at one's fingertips

Ingolstadt (ots) -

- Cross-reference: photo was sent via satellite and is available at: http://www.presseportal.de/galerie.htx?type=obs

- The haptics team evaluates the control concepts in new models
  - Assessing subjective impressions in an objective way
  - The main objective is to make life easier for the driver

You could describe Gerhard Mauter as an engineer for the tactile senses, but this would only be a very superficial description of his job at AUDI AG in Ingolstadt, where he manages the "Control Haptics Team", which is usually referred to as "the haptics team" for convenience. Haptics is the science of the tactile sense. There is, however, much more involved than the fact that an Audi is expected to feel good - the work is also about ergonomics and operating logic, light-action controls and how they look, pressing buttons and all the various pulling, pushing, shifting, turning, feeling and touching actions that people perform in cars.

Gerhard Mauter, when asked how one gets a job like this, replies: "It's important to take haptics seriously, and a certain degree of sensitivity is also required. This kind of sensitivity is not really based on physical properties such as the way the fingertips react; it is more of a process of awareness that takes place in your brain." For more than two years, Mauter has been head of the haptics team, which was established in this form in 1995 by the current Chairman of the Board of Management, Dr. Franz-Josef Paefgen, when he was Head of Technical Development at AUDI AG. It is obvious that haptics are taken very seriously at Audi.

Dr. Peter Tropschuh, Head of the Vehicle Concepts Division at Audi, explains: "A car's haptics are of fundamental importance. The haptic impressions decisively influence the customer's purchasing decision. They have to feel comfortable when sitting in an Audi. In order to guarantee this for all our models, we set up the haptics

team."

The team's main goal, which it approaches with all due sensitivity, is to draw up a general haptic concept for each vehicle. To achieve this, it becomes involved in the development of new Audi models at a very early stage. The haptics team evaluates all control elements inside and outside the vehicle during the development process, from the outside door handles to the ignition lock and

from the gear shift and steering-column levers to the electrical switches. The team has even examined the haptic characteristics of the pedals. "After the evaluation process, we make recommendations that the technical or design development departments translate into reality," says Gerhard Mauter.

The team members meet every two weeks to discuss new projects. "Sometimes we start with pictures and sketches and make the first haptic evaluations. Usually, however, a developer presents a component, which we discuss and then evaluate in accordance with defined criteria," says Barbara Hondyk, who is currently the only woman in the haptics team and usually works in equipment product marketing.

The "hard core" of the haptics team currently consists of 16 members from all areas such as component development, controlling, quality assurance, design and marketing. The aim is for the main occupations of the part-time haptics specialists to be as varied as possible in order to simulate a representative cross-section of customers.

It doesn't stop there, though: the haptics team organises several events every year in order to obtain feedback from customers. They include handing out extensive questionnaires to Audi's plant employees when they take delivery of new cars. As these 'guinea-pigs' only evaluate the Audi model range, the haptics team also organises benchmark tests in which Audi products are compared with competitors' products. This is closely related to the comparative tests using external candidates that are carried out by neutral organisations. The results of such tests are also used in development work.

Nevertheless, Gerhard Mauter is aware that "you can't satisfy every customer, but you can maximise customer satisfaction. If we achieve 80 percent, that means we have a very good haptics concept." It is far from easy to achieve figures as high as that. "It is difficult to express haptic qualities in figures and units. Haptic evaluation is very subjective, but our task is to make it objective and more generally applicable."

Meanwhile, the haptics experts at Audi have established specifications that internal developers and suppliers have to comply with. Audi control elements are evaluated according to the following criteria: light action, moderate control movement distances, defined stops, exact guidance, low noise emissions and a definite tactile and acoustic response at the switching point. "Customers want to receive a clear response when activating a function. If they press a button, for instance, how the effort that's needed actually builds up is important. Haptic

response also includes acoustic feedback such as an audible click. The right combination of those two gives customers the certainty that the function has indeed been activated," says team member Torsten Kolkhorst, who works in the steering wheel design area.

Klaus Nonnenbroich, a developer in the cockpit, structure and surfaces area, adds: "A tiny plastic switch located behind a large, rigid surface is a disappointment. It operates under false pretences. The same is true for surfaces - if a surface looks like aluminium, it ought to be aluminium."

If a team member tests a component, he or she has to complete a questionnaire with which its material, shape, location and operating

feel are evaluated. Some of the questions asked, for instance, are: What do you think about the material, the manufacturing quality or the shape? How do you assess the position and ease of access?

The main factors are actuating force and sequence, movement, direction and sound. Another important question is whether the shape of the control element communicates how it is to be operated. Gerhard Mauter describes this as "operating logic" or "blind control".

"We want to make life easier for drivers. The less they are distracted while operating the controls, the better," says Mauter. Customers' expectations also have to be taken account of when designing new control concepts. These are the result of acquired processes and therefore memorised action models. This is why psychological support is required for haptic evaluation. A control process is a complex matter and has to be analysed in detail.

The head of the team explains, "Operating haptics are only perceived unconsciously (with certain restrictions). One could put it this way: if the customer doesn't notice anything particular and feels comfortable in the car, we have done our job well." Team member Frank Knauber, who is in charge of door and side panels in the controlling area, adds, "When the customer notices that every switch and lever in an Audi is in the right spot and the switches respond the way the customers expect intuitively, then we were successful!"

On the basis of existing analyses it is not yet possible to decide whether there are different preferences among individual groups of customers. The head of the haptics team, however, is convinced that "women make more marked haptic distinctions than men", for example. There are also cultural differences. "In some markets, customers are certainly more tolerant towards faults than here in Germany, for instance, says Gerhard Mauter.

Mauter and his colleagues are working toward homogenous haptics for all control elements of an Audi model and a comprehensive general concept - an "Audi feeling" that communicates convenience and comfort to the driver. In view of the high quality claimed for Audi models, everything has to match: the shape of the door handles, the sound of the doors closing, the handwheel for adjusting the back restraints, the indicator lever or the surface quality of the gear lever knob.

At the same time, the Audi feeling cannot be specified so easily, because careful differentiation is necessary when considering all the control elements. You cannot compare the action of a door handle and an indicator lever. "This is due to the technology, the physical facts and the customers' different expectations regarding the control element in question," says haptic team member Ulrich Weiss, an interior designer at Audi.

Haptic differentiation of the individual Audi model lines is even more difficult. Says Gerhard Mauter: "Of course an Audi TT's haptics are slightly firmer, to underline its sports character. The haptic characteristics of our sedans also differ, though this doesn't mean that the haptic quality of an Audi A3 is necessarily worse than that of an Audi A8." Differences occur almost automatically due to the discrepancy in component and development costs. More investment may be made in haptics for a D-segment car such as the A8, for instance. These cars also have more electrical standard features or optional extras, which naturally results in more exclusive haptic characteristics.

Note to editorial staff:

A photo of a haptics test in the driver's area of an Audi TT Roadster is available through obs (dpa).

Text and photos are also available at http://www.audi-press.com under "Topics, features, stories". Until 30 December 2001, the temporary user name is: aupr0152 and the password: lsi351 for accessing the press database. From 31 December 2001 to 6 January 2002, the user name is: aupr0153 and the password: bki032.

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Medieninhalte

"Blind controlÓ in the truest sense of the term: Audi control concepts aim to make life easier for the driver. The less distracted he or she is while operating the controls, the better.