

## **BHTC focuses on intuitive operation**

### **Climate comfort without distraction**

#### **Climate control specialist optimizes man-machine communications**

*Lippstadt / Frankfurt, September 2007.* Operating the air-conditioning system is still taking the driver's attention off the road for too long: that is the result of a study commissioned by BHTC and conducted by the Technical University of Munich. If the driver wishes to move the air distribution to his body and feet, for example, then he fixes his eyes on the climate control panel as often as twelve times, and this can add up to a total of eight seconds – time in which the driver is detracted from what is happening on the road. BHTC's aim is to significantly reduce this amount of time. Operation of the climate control panel of tomorrow must be intuitive – and that is what the engineers in Lippstadt intend to achieve.

#### **Reduction of complexity**

"To make the operation of a control panel intuitive first and foremost means reducing the level of complexity," says Dr. Bernd Stich from BHTC's advance development department. Sequential control steps, for example, should be avoided as much as possible. If all the functions are readily available and direct feedback of the parameter settings takes place, then the driver will have less distraction. Intuitive operation is supported by a sensible layout of the relevant control elements: logically, therefore, this means that buttons for activating air distribution to the head, the body or feet should be arranged vertically.

BHTC has achieved an optimum in terms of intuitive operation by using rotary knobs instead of rows of buttons, for example, and a pull-down menu to set the temperature, because these can be changed more quickly, more precisely and more intuitively.

#### **Confidence in automatic control**

Why does it always take so long to change the settings of the climate control system? In most cases, it is due to lack of confidence in or understanding of how the

system works. "Normally, with air-conditioning systems you only have to change the temperature and select automatic mode. That provides passengers with ideal control over the climate inside the car," explains Johannes Gremme, Head of Software Applications. Unfortunately, the driver frequently thinks he has to lend the automatic control system a hand. First of all he manually changes the air distribution and blower speed. A frequent result of this is an unpleasant draft. Next come the jets, which are then closed by hand – all operations that are unnecessary and take the driver's eyes off the road ahead, and in most cases don't achieve the desired result.

### **Comfort and intuition: climate styles**

To provide the driver with a high level of climate comfort using an automated system, and to eliminate as much distraction as possible, BHTC has developed the concept of so-called climate styles. In this case, the user – preferably before starting the trip – can select the type of climate control desired from three style designations "soft", "medium" and "strong". This eliminates the need to change individual parameters; the user simply selects the climate style he prefers and leaves the rest to the preset controls.

### **Pictures instead of words**

Perception research has shown that symbols or visual displays are much better perceived and understood by the user than cryptic abbreviations. For this reason, BHTC is working on the visualization of the settings and climate styles in such a way that the user will be able to identify them quickly and clearly. This happens even faster, the more the driver feels familiar with the product, i.e. his car and his climate control system. This works best by associating terms with emotions that work intuitively. Descriptions such as "soft", "comfort", "sport" or images such as "Indian Summer" or "Cool Breeze" communicate intuitively an overall sensation of a specific climate – and they do it much better, of course, than technical abbreviations like "Auto" could ever do. Alexander Waldeyer from the advance development department: "Our aim is that the driver likes using the systems and that they meet his every-day needs."

Intuitive operation at a glance:

- β Have confidence in automatic control
- β Avoid sequential control steps
- β Make all functions readily available
- β Provide immediate feedback
- β Sensible and ergonomically designed layout of relevant control elements
- β Rotary knobs instead of buttons for changing settings
- β Elimination of abbreviated terms
- β Visualization of climate conditions and control steps

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