PRESS RELEASE

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Haptic collision avoidance

Nomination for bauma Innovation Award 2022: Assistance system warns against collisions with intuitive joystick vibrations.

- ► Haptic feedback increases safety for operators, machines and the surroundings
- ► Precise surround sensing thanks to ultrasound
- ► Additional automation option: Automated emergency braking for driving applications

The haptic collision avoidance system combines hardware and software modules from the BODAS ecosystem for safer, more economical construction machinery.

With its innovative haptic collision avoidance system, Bosch Rexroth has been nominated for the bauma Innovation Award 2022. On the basis of precise surround sensing using ultrasound, the assistance function warns operators of excavators, wheeled loaders and other construction machinery about imminent collisions. It does so intuitively via vibration on the joystick. The type and intensity of the haptic feedback provide information regarding the distance to the object. If the machine is operated with two joysticks, the system can even indicate the direction from which the object is approaching on the basis of which joystick is vibrating. Unlike with purely visual or acoustic feedback, the operator's attention is virtually unaffected while working. This helps to save valuable reaction time.

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Haptic collision avoidance is proof of how modular assistance systems can increase people's safety and well-being at work. The warning reaches the driver's hands even in noisy environments and without looking at the display.

For higher automation levels, there is also the option of automatic braking via the electro-hydraulically controlled GEMINI power brake valve from Bosch Rexroth. If the warning is not reacted to in good time, the necessary brake pressure builds up automatically.

The assistance system is made up of hardware and software modules from the BODAS ecosystem. Along with the software, these include the USS ultrasound sensors with an intelligent evaluation unit, Sense+ joysticks, DI4 displays and an RC controllers.

For extra practicality, the vibration signal can be varied in terms of intensity and vibration pattern. This allows the distance to a source of danger to be estimated when approaching slowly. If the system is operated with two joysticks, it can even indicate the whereabouts of the object on the basis of different vibrations. In combination with visualization on the BODAS display, the exact position can be determined.

Additional protection thanks to virtual walls

So-called "virtual walls" allow situation-specific workspace monitoring so that excavators, wheeled loaders and other construction machinery can work much more safely and productively. The newly developed software for this provides the flexibility that the user needs to set up specific safety areas. Parameterization can be carried out via the BODAS touch display or with the help of a teach-in function.

Automation Demonstrator at bauma 2022

Visitors to bauma can experience haptic collision avoidance on an excavator arm model as part of the "Automation Demonstrator" in Hall A3, Stand 327 from October 24 - 30, 2022.

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