

Worldwide innovation: Newly developed ultrasonic sensor makes Industry 4.0 safe

Together, Mayser and KUKA present a reliable solution for Cobot tool safety for a KUKA LBR iiwa

Lindenberg/Ulm 14.12.2016 – Automated production will become even faster, more efficient and more interconnected in the future. To this end, Mayser develops holistic solutions that allow safe collaboration between humans and robots. The worldwide innovation of ultrasonic safety is another important step on this journey. Together with KUKA, who are well known for their custom automation solutions, an advance development has been realised using this functionally reliable ultrasonic sensor to provide protection from a KUKA LBR iiwa's sharp tool in the Cobot environment. This development is unique on the market.

The requirements of reliable workpiece safety or tool safety are high. The effect of force and pressure on a human who touches the mandrel on a gripper or cordless screwdriver exceed the maximum permissible limit value for the ISO/TS 15066 standard. The screwdriver protection must therefore be contactless. At the same time, the automatic operating process must not be impaired.

Detection using transducers arranged locally on the robot

Mayser's and KUKA's collaborative solution is based on using ultrasonic sensors. The new development *ultrasonic safety* contactlessly detects both humans and non-conductive objects, regardless of dirt, extraneous noise, air flows and moisture. The special characteristics of Mayser's ultrasonic sensors are the two very small ultrasonic transducers that are flexibly and geometrically positioned independent of the electronics. They can be placed directly on the robot or grabber and extensively and reliably monitor their surroundings. The transducers can also be locally arranged. The sensors take

measurements in an elliptical sound field and detect even the smallest objects. A teach-in function also enables the system to learn the complete measuring environment as a standard environment. The system thus only responds to deviations from the target state.

Personnel safety thanks to 100% reliable ultrasound

The reliable ultrasonic sensor is a unique development globally as it is approved for personnel safety thanks to its two channels. This was crucial for KUKA to get involved in the joint advance development with Mayser regarding tool safety for a KUKA LBR iiwa.

More efficiency due to higher speeds and cycle times

The two transducers of *ultrasonic safety* create two protection fields around the robot. The larger protection field allows faster movement by the tool arm. If the screwdriver comes close to a workpiece, the smaller protection field is activated. The robot movement then slows down so that a person can be detected in time and thus to exclude any contact with the tool. Collaboration between robot and humans is possible without any danger.

Employees benefit from better ergonomics

Mayser's and KUKA's solution for the KUKA LBR iiwa provides a complete system for making Cobot workplaces safe and thus improved ergonomics for employees. These can be effectively supported for difficult work. Higher robot speeds and cycle times are also possible. Thanks to the certification of the failsafe, dual-channel *ultrasonic safety* according to ISO 13849-1:2015 category 3 PL d, the global novelty is approved for personnel safety from February 2017.

Characters: 3.427

About Mayser

Mayser is an international Company Group currently operating at five locations in Europe and the USA. The company develops and produces high-quality products, systems and solutions in the areas safety

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technology, foam technology and moulding as well as headwear. The origin of the company goes all the way back to the year 1800, where everything started with the hat. Today Mayser has 700 employees and an excellent reputation in safety and foam technology in many industries, including automotive, mechanical engineering or local public transport.

Image material:

Image 1



The advance development for the tool tip protection of a KUKA LBR iiwa was presented for the first time at Motek 2016 at the KUKA stand. Thomas L. Zawalski (Managing Director of Mayser) and Henning Borkeloh (KUKA Systems division manager) personally demonstrated how much trust they have in their own technology.