Pressemitteilung Press Release

State-of-the-art KUKA welding technologies for e-mobility: Major order in the double-digit million range

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Augsburg, June 13, 2024 - KUKA is supporting its customers in the transition to more sustainable mobility with state-of-the-art technology: KUKA is supplying 23 friction stir welding cells with integrated robots for the production of electric vehicles for an automotive customer. It is the largest single order in this area to date.

The FSW cells (FSW stands for Friction Stir Welding) with various technologies and KUKA KR FORTEC robots are integrated into production lines for electric vehicles, where they are used in several production steps: the robots in the cells weld battery trays together and join cooling plates to the battery trays in a second production step. KUKA is also responsible for the entire friction stir welding process.

Many years of expertise for complex tasks

This is an important task, as battery trays play a crucial role in electric vehicles. They must be leak-proof and resilient, support the correct temperature of the batteries and help to prevent the vehicle occupants from being endangered by the battery in the event of an accident. A particular challenge in production is 3D welding, for which robot-based FSW technology is particularly suitable. This also requires complex clamping technology, for which KUKA was able to contribute comprehensive engineering expertise. A tool changer and a cleaning station for the FSW tools are also used for fully automatic operation.

In addition to the modern technical solution, the customer was impressed by KUKA's comprehensive expertise and many years of experience in a wide range of areas, from process technology and engineering to good cooperation with the sales experts.

FSW: Higher quality, more efficient and more sustainable welding

In friction stir welding or FSW welding, a rotating, pin-like tool is guided between the contact surfaces of the component. The frictional heat causes the material to plasticize, and the parts are joined together. Even difficult-to-weld or dissimilar materials such as aluminum can be welded together with magnesium, copper, or steel. This process consumes less energy and material and does not require shielding gas or flux cored wire as in conventional processes.

FSW welding is used in a wide variety of industries that have special requirements for welding seams, be it battery containers, side walls of high-speed trains or tank structures of rockets. In addition to the growth market of e-mobility, the technology is therefore also used in the aviation and electrical industries, for example.

KUKA is working with research partners to further develop the technology: In order to monitor the quality of the weld seams during the process and thus reduce the time and costs of the subsequent inspection, KUKA is working with partners in the AI production network of the University of Augsburg on an AI-based process monitoring system.

KUKA at the Battery Show Europe in Stuttgart

Modern technologies and processes such as friction stir welding are playing an increasingly important role in the complex production of electric vehicles and their batteries. KUKA has been supporting customers here for decades with comprehensive industry and technology expertise. At the Battery Show Europe in Stuttgart, the largest event for battery and electric vehicle technology in Europe, industry experts and leading manufacturers will be talking about the latest developments. KUKA will also be there from June 18 - 20, 2024 in hall 9, booth D20. Further information can be found here.