Press Release

Artificial Intelligence (AI) award for Friction Stir Welding

Grenzebach and Software Partner Weidmüller proud to receive special digitization award from the Konradin Media Group.

Continuously improving product and process quality at the highest level and receiving information early on for preventive maintenance: For the Artificial Intelligence (AI) supported real-time quality control during Friction Stir Welding (FSW) for industrial production, Grenzebach and software partner Weidmüller were recognized by the technical journal "elektro Automation". Both companies received the special digitization award 2019 from the Konradin Media Group. "Together with data specialists from Weidmüller, our process specialists developed a customized solution for users of the Friction Stir Welding technology. The award is a token of appreciation for our joint efforts to make data on-site usable in various ways", says Christian Herfert, Head of Friction Stir Welding Technology at Grenzebach.

Real-time look at welding process

The FSW technology creates long-term, solid, media and pressure-tight connections. Friction Stir Welding operates without molten material and therefore prevents pores and hot cracks - a big advantage compared to traditional welding processes, especially with light metals, such as aluminum and its alloys. Critical for the welding seam and surface quality with Friction Stir Welding is the regulation of process parameters, most importantly the contact pressure. With the sensor technology of the welding head, the contact pressure is reported back in a highly dynamic manner to the machine and process control, and with the single axes forms the force control loop of the lead machine. "The competencies of Grenzebach and Weidmüller intertwine in a way so we can offer FSW users AI-assisted real-time quality inspection opening new avenues to quality assurance in industrial series production", says Herfert. It facilitates the monitoring of procedures which could not be done before with non-destructive testing. The innovative tool now directly looks into the friction process and identifies the load on the tool and machine. With the collected data, the quality of the seam can also be evaluated on the inside. Predictive Maintenance is an additional benefit. Precisely calculated tool changing intervals show potential for cost saving and resource efficiency.

Real values added due to digitalization

This application is an ideal example for Grenzebach's commitment to create real values added with digitalization. The AI-assisted procedure of FSW technology leads to a clearly structured and quickly comprehensible illustration for the manufacturing and maintenance team. Quality assurance of the welding process is independent and reliable with AI support, which can completely replace the downstream inspection steps. Furthermore, this procedure supplies the basis for digital product information – a fundamental contribution to make all steps of the value-added chain traceable.

Cooperation for customer use

The solution created in cooperation between Grenzebach and Weidmüller can be implemented with individual applications on the digitization platform SERICY, de-

veloped in-house at Grenzebach. "The Automation Award is a great recognition for the joint cooperation between Weidmüller and Grenzebach to make data on-site at the customer's plant as useful and efficient as possible. The award for the AI application shows that cooperation for the benefit of the customer is in tune with the times", says Frédéric Erben, Head of Corporate Strategy & Communications at Grenzebach.

The way to the reference data record

The Industrial Analytics software from Weidmüller evaluates process data via the sensor technology integrated in the welding head to learn more about the process behavior. Data records of more than 100 welded seams were analyzed and evaluated with intelligent data analysis methods providing significant reference data record. An essential factor was the competence of the FSW experts from Grenzebach, specifically their know-how in regards to the Quality Standard of welding seams.

Visit us at Euroguss to meet the awarded experts

The Automation Award was presented beginning of December in Leinfelden-Echterdingen at the Konradin Media Group. If you would like to meet the award winners, come see us mid-January at the Euroguss in Nuremberg. The Grenzebach experts will be in hall 8 at booth 331 from January 14 - 16.

Automation Award for AI used in Friction Stir Welding (seen from the left):
Markus Denzin, Sales Director Region South at Weidmüller; Michael Corban, Editor-in-Chief elektro AU-
TOMATION / KEM Konstruktion at Konradin; Frédéric Erben, Corporate Strategy & Communications at
Grenzebach
Source: Grenzebach

Grenzebach is a world-wide leader specializing in the automation of industrial production lines. By providing services encompassing the entire life cycle of a project, Grenzebach's tailor-made automation solutions have a positive impact globally in glass and building material manufacturing as well as intralogistics. Many years of experience, continuous development, and sustainable support services are what makes Grenzebach one of the most preferred partners world-wide. 3000 installed lines in 55 countries prove that the Grenzebach name stands for quality and reliability. Amazingly, 90 percent of Grenzebach's products are for export which reflects that the medium sized family-owned company from Hamlar is a global player in the industrial automation.