Press release

BENTELER uses machine learning for predictive quality control in production

- **BENTELER is participating in the"ML4Pro2" research project led by the internationally renowned Fraunhofer Institute.**
- **The initiative aims to make machine learning available for smart products and production processes.**
- **BENTELER is analyzing data from hot forming presses to detect and avoid quality deviations within the production phase.**

Paderborn/Salzburg, June 14, 2021. When machines learn which production data affect the quality of the product, quality deviations can be completely avoided. This makes production processes even better, faster and more reliable. BENTELER is cooperating on this in the ML4Pro2 research project (Machine Learning for Production and its Products) led by the Fraunhofer Institute for Mechatronic Systems Design. The aim of the project is to make machine learning permanently available for intelligent products and production processes. For this purpose, BENTELER is analyzing data generated during the production of components in hot forming presses.

Detect quality deviations based on temperature changes in the process

BENTELER uses hot forming technology primarily for customers in the automotive industry. The forming presses process sheet metal blanks into high-strength components, for example A and B pillars, frame parts, and cross and longitudinal beams. The quality of the various components is determined, among other things, by how the heat is distributed during the pressing process. Until now, quality control has been carried out at the end of the production process using an optical measuring station.

Now, as part of the research project, the automotive supplier is using a thermal imaging system that records the heat distribution of a component as soon as it leaves the press. This thermographic data is used as part of predictive quality control. The aim is to know in advance, based on the analysis of process heat, whether the pressed parts will meet the required quality – even before they leave the production process.

"Predictive quality is a key objective at BENTELER. Our plan in the research project is to record and analyze the machine parameters of our hot forming presses. For example, we check precisely how temperature and pressure interact. This enables us to develop predictive models. Based on these, we can forecast whether the quality of our products is okay," says Daniel Köchling, Industry 4.0 manager at BENTELER. "In the future, we will be able to react more quickly and change production parameters if necessary. This ensures that the temperature profiles of the components remain within tolerance and that quality improvements are possible during the ongoing process."

About "ML4Pro2":

The ML4Pro2 project (Machine Learning for Production and its Products) started at the end of 2018 and will run until November 2021. The research and development project is funded by the Ministry of Economic Affairs, Innovation, Digitalization and Energy (MWIDE) of the German federal state of North Rhine-Westphalia. Under the leadership of Fraunhofer IEM, a total of ten cooperation partners are participating in the project, which is funded by the "it's OWL" technology network.

Photo and caption:
BENTELER_hot-forming.jpg : As part of the ML4Pro2 research project, BENTELER is working on possibilities for predictive quality assurance of hot forming systems. The company uses these to produce especially light and robust B-pillars, for example, by heating and then simultaneously cooling and pressing.

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About BENTELER
BENTELER is a global, family-owned company serving customers in automotive technology, the energy sector and mechanical engineering. As metal processing specialists, we develop, produce and distribute safety-related products, systems and services worldwide.
In the 2020 financial year, Group revenues were €6.358 billion. Under the management of the strategic holding BENTELER International AG, headquartered in Salzburg, Austria, the Group is organized into the Divisions BENTELER Automotive and BENTELER Steel/Tube. Our around 27,000 employees at 98 locations in 28 countries offer first-class manufacturing and distribution competence – all dedicated to delivering a first-class service wherever our customers need us.
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About BENTELER Automotive
BENTELER Automotive is the development partner for the world´s leading automobile manufacturers. With around 23,000 employees and more than 70 plants in about 25 countries we develop tailored solutions for our customers. Our products include components and modules in the areas of chassis, body, engine and exhaust systems, as well as solutions for electric vehicles.
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