idw - Informationsdienst Wissenschaft
Nachrichten, Termine, Experten

Pressemitteilung

Fraunhofer-Institut für Schicht- und Oberflächentechnik IST
Dr. Simone Kondruweit

18.03.2024
http://idw-online.de/de/news830425

Forschungs- / Wissenstransfer
Elektrotechnik, Informationstechnik, Maschinenbau, Werkstoffwissenschaften
überregional

Sensory tool inserts enable real-time quality control during injection molding

The economical and ecological manufacturing of components using injection molding requires a high level of process reliability. This requires precise recording and monitoring of relevant parameters such as temperature and pressure curves. At Hannover Messe from April 22 – 26, 2024, the Fraunhofer Institute for Surface Engineering and Thin Films IST will be presenting real-time data acquisition directly during the running process using integrated and wear-resistant thin-film sensors. The special feature here is that the tribologically resistant multifunctional sensor systems are deposited directly on the tool surface, enabling measurement in the main load zones.

One example is the development of a multifunctional thin-film sensor system that is applied to an exchangeable mold insert. A specially adapted sensor design with 13 measuring points allows spatially determined measurement of the entire flow front. The thermoresistive sensors are distributed in such a way that they represent the component geometry in terms of measurement.

The measurement data obtained is read out in real time by an electronic unit specially adapted to the sensor system and processed directly. Faults and potential weak points can therefore be detected immediately and corrections and adjustments can be implemented quickly. Machine learning algorithms implemented on an edge device also enable the component quality to be reliably determined. The results of the data analysis are output as a color signal on the system even before the mold has reopened after the injection process.

At the Hannover Messe, the Fraunhofer IST will be demonstrating real-time data acquisition with a sensory mold insert directly on site at the joint Fraunhofer stand in the Smart Structures and Lightweighting area (Hall 2, Booth B24). A demonstrator will be used to simulate the injection process and thus reproduce the injection molding process.

URL zur Pressemitteilung: https://www.ist.fraunhofer.de/en/press-media/2024/sensory-tool-inserts-enable-quality-control-during-injection-molding.html?utm_campaign=Sensorik-KSS_I

Tool inserts with thin-film sensors for injection molding.
Ulrike Balhorn
© Fraunhofer IST