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## **Transparent carbon footprint for depowdering: Solukon enhances the Digital-Factory-Tool**

*The sensor and interface kit that Solukon launched almost two and a half years ago, the Digital-Factory-Tool, is a one-of-a-kind tool for comprehensive transparency in automated depowdering. With its new functions, the Digital-Factory-Tool (DFT) now makes it possible to measure the energy consumption and CO<sub>2</sub> emissions of industrial depowdering. With the enhanced DFT, Solukon has acted in anticipation of future legal regulations on measuring CO<sub>2</sub> emissions in machine manufacturing.*

As a pioneer and leading manufacturer in the industrial depowdering sector, Solukon does more than simply manufacture the most innovative depowdering systems on the market. The company also takes comprehensive quality monitoring and the digital integration of the machines into account. To cover precisely those aspects, Solukon launched the Digital-Factory-Tool in spring 2021. The DFT is a smart sensor and interface kit for process validation, quality control and automation integration. It also records all relevant depowdering process data and summarizes the values in a protocol file. Critical limit values can be set for relevant data so that deviations can be directly displayed and assessed. All data collected with the tool can be compiled via OPC UA and then integrated into the control center's digital dashboards.

### **Customer feedback and the desire for true transparency**

A wide range of customers use the DFT: for example, around 85% of SFM-AT350 customers work with the tool and regularly provide feedback on its performance. Their feedback has been integrated directly into the tool upgrade, which Solukon will launch at Formnext 2023. With the upgrade, the Solukon team also seeks to boost data transparency to a higher level: "Our concept of full transparency does not stop at the performance values of the depowdering process. It was important to us to quantify the carbon footprint of automated depowdering," explained Andreas Hartmann, CEO/CTO of Solukon. Solukon has acted in anticipation of future legal regulations here. For example, the U.S. Securities and Exchange Commission (SEC) and the Corporate Sustainability Report Directive of the European Union both stipulate that (publicly traded) companies must disclose their environmental behavior in an annual report or sustainability report as of 2024 or 2025. According to the SEC, emissions that machines generate when they are in use in the respective company are considered CO<sub>2</sub> emissions, which of course includes the emissions generated by automated depowdering.



### **Overview of the upgrades**

With the DFT, Solukon measures the consumption of the following resources and the proportion of manual labor:

#### *Compressed air consumption*

Solukon makes the compressed air consumption per cleaning step transparent with a compressed air counter.

#### *Power consumption*

Effective immediately, users can gain insight into the kilowatt hours of electricity expended per cleaning cycle and since commissioning the Solukon system. Expended kilowatt hours of electricity are a key value for measuring the next, highly relevant value.

#### *Carbon footprint*

The main upgrade in the enhanced DFT: the carbon footprint of depowdering is now measurable. From their energy supplier, Solukon customers find out the value for the CO<sub>2</sub> consumption per kilowatt hour of electricity. There is a variable input field in the upgraded Digital-Factory-Tool for this carbon factor of electricity, as well as the carbon factor of compressed air consumption. With the two values, the DFT calculates the carbon footprint of the depowdering process.

#### *Time recording for manual intervention/finishing*

With the upgrade, it is possible to track the time during which the flap for manual depowdering and finishing via compressed air gun was open. This makes the proportion of manual process steps clearly and immediately quantifiable.

### **Compatibility and market launch of the enhanced Digital-Factory-Tool**

The Digital Factory Tool with advanced features will be available for order at Formnext 2023 and is compatible with Solukon's SFM-AT350/-E, SFM-AT800-S and SFM-AT1000-S systems. At Formnext, Solukon will present the upgrade of the Digital-Factory-Tool in the SFM-AT1000-S. The Solukon team looks forward to welcoming you at booth 12.0, D42.



## **Figures**

Figure 1: The enhanced Digital-Factory-Tool by Solukon

## **About Solukon**

Solukon Maschinenbau GmbH is a German high-quality supplier of powder removal and processing systems for metal and polymer additive manufacturing. Founded in 2015 by Andreas Hartmann and Dominik Schmid, the company, located in Augsburg, has extensive experience in the development of AM systems and related peripheral equipment, and offers a full range of industrial powder processing systems. Since 2022 Solukon offers an intelligent software for automated depowdering of laser-melted metal parts as exclusive licensee, the SPR-Pathfinder®. Solukon products meet the highest functionality and safety standards and are approved for safe and reliable removal of tough-to-handle and reactive materials such as titanium and aluminum.

Solukon is present on four continents. The systems are trusted by leading manufacturers of 3D-printing systems, like EOS, SLM Solutions and AMCM, by institutions like NASA and Cern as well as by companies like Siemens and Ariane Group.

## **Solukon Maschinenbau GmbH**

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