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## **Software and form of excitation: Solukon launches key upgrades for the SFM-AT350**

*Since its launch in November 2021, the SFM-AT350 depowdering system has developed into a top seller for medium-sized parts. With key upgrades, Solukon has made the best-selling depowdering system in the mid-range segment even smarter and more transparent – and it now cleans even more efficiently. All upgrades will be exhibited at Formnext 2023.*

The SFM-AT350 is the depowdering system for medium-sized parts up to a height of 420 mm and a weight of 60 kg. High freedom of motion, a compact structure with optimized chamber volumes and along with it, a minimal inertization time, are the main features of the system. Solukon customers worldwide appreciate the unique features of the mid-range machine. Immediately after its launch, the SFM-AT350 established itself in the additive manufacturing market and is the top-selling system in its class. At the same time, similarly to metal parts in the large part segment, a trend toward increasingly complex parts is detectable. To continue to be ready for all geometries, however challenging, Solukon continuously develops and refines its systems. With three key upgrades, Solukon has now made the SFM-AT350 even stronger.

### **SPR-Pathfinder® depowdering software for the SFM-AT350**

It is no longer necessary to program complex cleaning sequences for the SFM-AT350. Instead, they can be calculated quickly and easily with the worldwide unique SPR-Pathfinder® software. Around a year ago, Solukon launched the SPR-Pathfinder® – initially for the larger SFM-AT800-S and SFM-AT1000-S systems. Now it is available for the mid-range segment. Based on the CAD file of the build job, the SPR-Pathfinder® calculates the ideal motion sequence in the Solukon system for removing excess powder from complex interior structures.

The calculations of the software are based on a flow simulation that analyzes the part's digital twin. The individually calculated motion sequence is then read by the Solukon system, which in turn runs the programmed paths. This ensures that even the most complex parts with labyrinth-like channels are cleaned – not to mention in record time and without any human programming effort. "Smart, software-supported depowdering is also the key to serial cleaning with the SFM-AT350 and therefore, real serial production," said Andreas Hartmann, the CEO/CTO at Solukon.



### **SFM-AT350-E: New form of excitation for delicate structures**

The SFM-AT350 was not only upgraded on the software side: the form of excitation was also upgraded. In the future, Solukon will offer the depowdering system as the SFM-AT350-E with piezoelectric excitation. Users will have the choice between two completely different excitation forms: the familiar pneumatic form in conjunction with a vibrator and an optional knocker, and piezoelectric excitation.

Since piezoelectric excitation originates directly at the rotary table of the Solukon system, the part can be shifted to the optimal vibration range with high precision. The high frequencies of the electronic excitation are considerably higher than the harmful natural frequency of the part. As the frequency constantly controls and regulates itself the risk of exciting the resonance frequency and damaging sensitive structures is avoided. Consequently, the SFM-AT350-E is the ideal depowdering system for delicate structures made from materials that are difficult to depowder, like copper. Another major advantage of the new form of excitation is its low levels of noise emission. As a result, the SFM-AT350-E is a perfect fit for the naturally quiet 3D printer environment.

“The requirements for depowdering increase as part complexity, material complexity and diversity increase. Growing production quantities are also an influential factor. At the same time, our customers want us to provide systems that are very easy to operate. After experiencing a breakthrough with the launch of our smart SPR-Pathfinder® software, which calculates optimal part motion, we have achieved a further milestone upon launching the SFM-AT350-E: For any depowdering challenge, we can now offer the optimal frequency excitation,” said Andreas Hartmann in summary of the importance of the new machine variant.

To determine whether the SFM-AT350 with pneumatic excitation, a vibrator and a knocker, if required, or the new SFM-AT350-E with piezoelectric excitation is the right machine, Solukon consults closely with interested parties and customers on a case-by-case basis. The following table may provide helpful information.



**The advantages of the variants at a glance**

<b>SFM-AT350</b> <b>With pneumatic excitation</b>	<b>SFM-AT350-E</b> <b>with piezoelectric excitation</b>
reliable cleaning of complex structures	reliable cleaning of complex, delicate structures
optional knocker system for dissolving powder clumps	particularly gentle cleaning through very high and self-regulating vibration
most inexpensive SFM-AT350 variant	low-noise
compatible with SPR-Pathfinder®	compatible with SPR-Pathfinder®

Both the piezoelectric excitation form (the SFM-AT350-E) and the SPR-Pathfinder® are available as options for the SFM-AT350 effective. Users have the opportunity to see the performance of the SPR-Pathfinder® for themselves as part of a 30-day test version.

**New tracking options with enhanced Digital-Factory-Tool**

Just like the SFM-AT800-S and SFM-AT1000-S, the SFM-AT350 and SFM-AT350-E are both available with an enhanced Digital-Factory-Tool (DFT). This enhanced DFT includes several new key features that will be introduced soon in a separate press release.

**Launch of the SFM-AT350-E with SPR-Pathfinder® and enhanced DFT at Formnext 2023**

Solukon is launching the SFM-AT350-E with SPR-Pathfinder® at Formnext 2023. From November 7–10, 2023 at booth 12.0, D42, Solukon is showing how the SPR-Pathfinder® software depowders the most complex geometries in an SFM-AT350. Solukon is also exhibiting the new SFM-PCU powder collection unit with an SFM-AT1000-S.



**Figures:**

Figure 1: The SFM-AT350-E with piezoelectric excitation

**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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