

*Interview with Michael Helneder from KraussMaffei*

## “Everything Is Aimed at Series Production”

3D printing is becoming established in an increasing number of fields. Not only has the interest of start-ups been raised, but also of established companies. Now, KraussMaffei is the second injection molding manufacturer to enter the field of additive manufacturing. Will that work out?

Premiere nervousness in Düsseldorf, Germany! So far, so good, so stereotyped. Of course, the K is the place to go with novelties and innovations. Therefore, to attract a large number of visitors to an exhibition booth at 16:40 hours on the first day, a company must come up with something special. KraussMaffei did precisely that: They used the exhibition to announce their official entry into additive manufacturing, and presented two 3D printers at one go – the „powerPrint“ FGM system and the „precisionPrint“ SL system. Shortly after the presentation, **Kunststoffe** met Michael Helneder, Head of Customer Success Additive Manufacturing at KraussMaffei Technologies GmbH, for an interview.



Michael Helneder, Head of Customer Success Additive Manufacturing

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**Kunststoffe:** Mr. Helneder, Arburg presented their Freeformer nine years ago. Why did KraussMaffei take so long?

**Michael Helneder:** I wouldn't say that we took a long time, considering that we have used a different approach. For example, our precisionPrint is not a 3D printer for prototyping.

**Kunststoffe:** But instead?

**Helneder:** We have designed the system so that it is possible to automatically produce several empty build plates as well as a fully printed plate. For one thing, this means that we ensure continuous operation. But not only that – from technology to materials, and up to the software, everything is aimed at series production.

**Kunststoffe:** Why didn't you present the two systems at the Formnext, the major trade fair for additive manufacturing, but already three weeks earlier, at the K? Was that the right decision?

**Helneder:** Definitely, in our view. Primarily, we wanted to show that we are a one-stop solutions provider for plastics processing. Something that can only be demonstrated in the intended manner here in Düsseldorf. We don't simply want to address companies who are already using additive processes, but all plastics processing companies for which it could be worthwhile to get started with 3D printing.

**Kunststoffe:** Let's start with the precisionPrint: You say that you have launched a high-performance SL system. What distinguishes it from those of other suppliers?

**Helneder:** Firstly, there is our dual-tank system. We separate building process and building space from handling and component removal. That enables us to speed up the overall process. Secondly, there is the automation system for series production. And finally, the core element: The laser technology we use is extremely fast, precise, and long-lasting.

**Kunststoffe:** What can you say about laser technology?

**Helneder:** Our lasers work with a wavelength of 405 nm. However, we don't have a fixed laser point, but instead, we irradiate dynamically across the full bandwidth in a single movement. This not only leads to higher precision, but also to higher speed.

**Kunststoffe:** For whom is the investment in such a system worthwhile?

**Helneder:** The smaller system is primarily aimed at all companies who already use additive manufacturing, and require smaller parts in large quantities. Hereby, every manufactured part can have individual features, without influencing piece costs or quality. In addition to the systems, we also offer their complete integration. This means training, consultation, material, and component calculation. In this way, we also want to support injection molding companies who have not yet been involved in additive procedures.

**Kunststoffe:** Where would you draw the line? In other words, up to which quantities does additive manufacturing pay off?

**Helneder:** That is difficult to say for our larger printer, because it depends specifically on the component and its geometry. This also applies for our smaller printer, but realistic quantities between 100,000 and 200,000 are possible or more cost-efficient than injection molding.

**Kunststoffe:** Your powerPrint can produce parts with a volume of up to 10 m<sup>3</sup>. Who would be the "ideal" customers for the system?

**Helneder:** Mainly companies in the prototyping and moldmaking business. That is a very traditional field, with a large amount of handcraft work. Another important topic is pipes & fittings, for example. I.e., whenever large-format plastic components must initially not be produced in extremely large quantities. We see potential in this ramp-up phase.

**Kunststoffe:** The system is based on fused granular modeling. Are there also differences here compared with other printers in the market?

**Helneder:** Instead of using standard extruders, we developed them specifically for the powerPrint. Hereby, we were able to resort to the know-how of our extrusion experts. In order to reduce the weight that the robot must move during printing, we opted for a lightweight extruder. It has a material output of ten kilograms per hour. For the market launch, we will also have an extruder for 30 kilograms per hour. Moreover, the extruder is fitted with a controller that optimizes the material output, which has a considerable influence on component quality.

**Kunststoffe:** Is there a "hidden" temperature concept?

**Helneder:** The system is fully enclosed, which enables us to maintain temperatures up to 60 °C. It is passively heated by means of the waste heat from table, extruder, and components. This permits a homogeneous temperature setup.

What's more, the printing table has 16 zones and is heated to 140 °C. And we can also control the heating zones individually.

**Kunststoffe:** What is the advantage of that?

**Helneder:** For example, if I have a smaller part, I don't have to heat the entire table. Nonetheless, I can still work energy efficiently, and simultaneously cut costs. And thanks to the closed system, it is also possible to produce fully filled and partially filled parts.

**Kunststoffe:** Let's talk about the materials. Which plastics can your systems work with?

**Helneder:** With our large 3D printer, the powerPrint, we use thermoplastic granulates – including recycled material. The main focus is on technical plastics. And most of them are reinforced, e.g. with glass, carbon or mineral fibers. Typical materials are PET-G, ASA, PA6 or PP.

**Kunststoffe:** And with the precision-Print?

**Helneder:** Here we use special photopolymer resins, which cure under UV light. For the market launch, we have focused on three groups: elastic, soft materials, e.g. for shoe soles, a technical material for the electronics field, plus a material

for medical technology applications.

**Kunststoffe:** Nonetheless, KraussMaffei primarily continues to be a machine manufacturer, who knows how to handle large quantities and high power. What are the advantages for customers?

**Helneder:** What distinguishes us, is that we are able to assess the break-even between 3D printing and injection molding transparently and independently. When, in our view, does it make sense for a customer to get involved with additive manufacturing? And when is it more cost-efficient and advisable for him to change to classical injection molding?

**Kunststoffe:** When will the new systems be available?

**Helneder:** Market launch for the powerPrint is early in 2023. The precisionPrint will be introduced initially for beta customers during the new year, and then launched on the general market towards the end of 2023.

**Kunststoffe:** The smaller printer doesn't seem to be quite ready ...

**Helneder:** The system is in an advanced stage. Basically, we only have to get coordinated with several customers. That's important for us. We don't want to introduce a system to the market that doesn't satisfy all the expectations. ■

*Interview: Melanie Ehrhardt, editor*

*"We not only supply the systems, but also their full integration."*

Michael Helneder

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