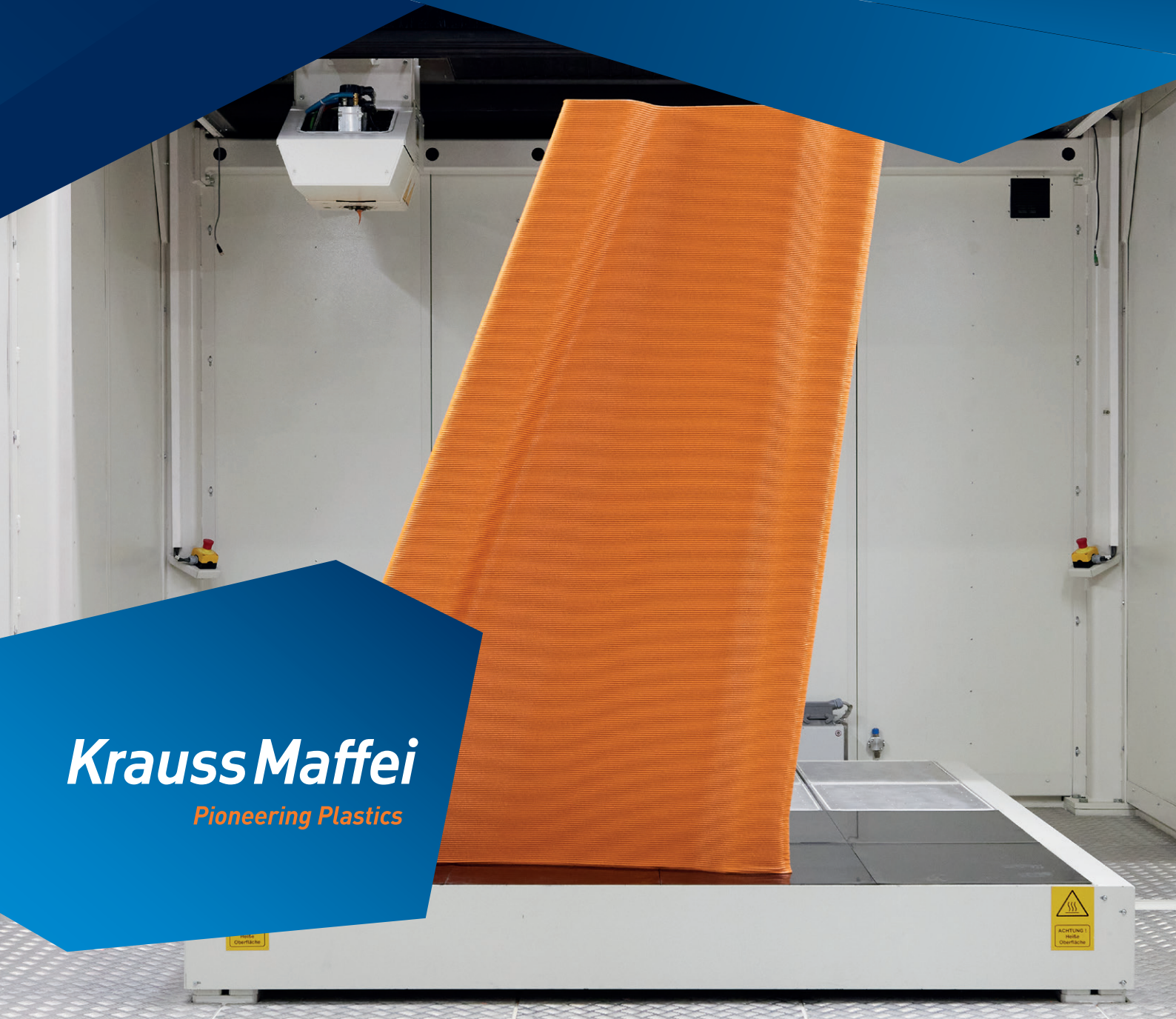
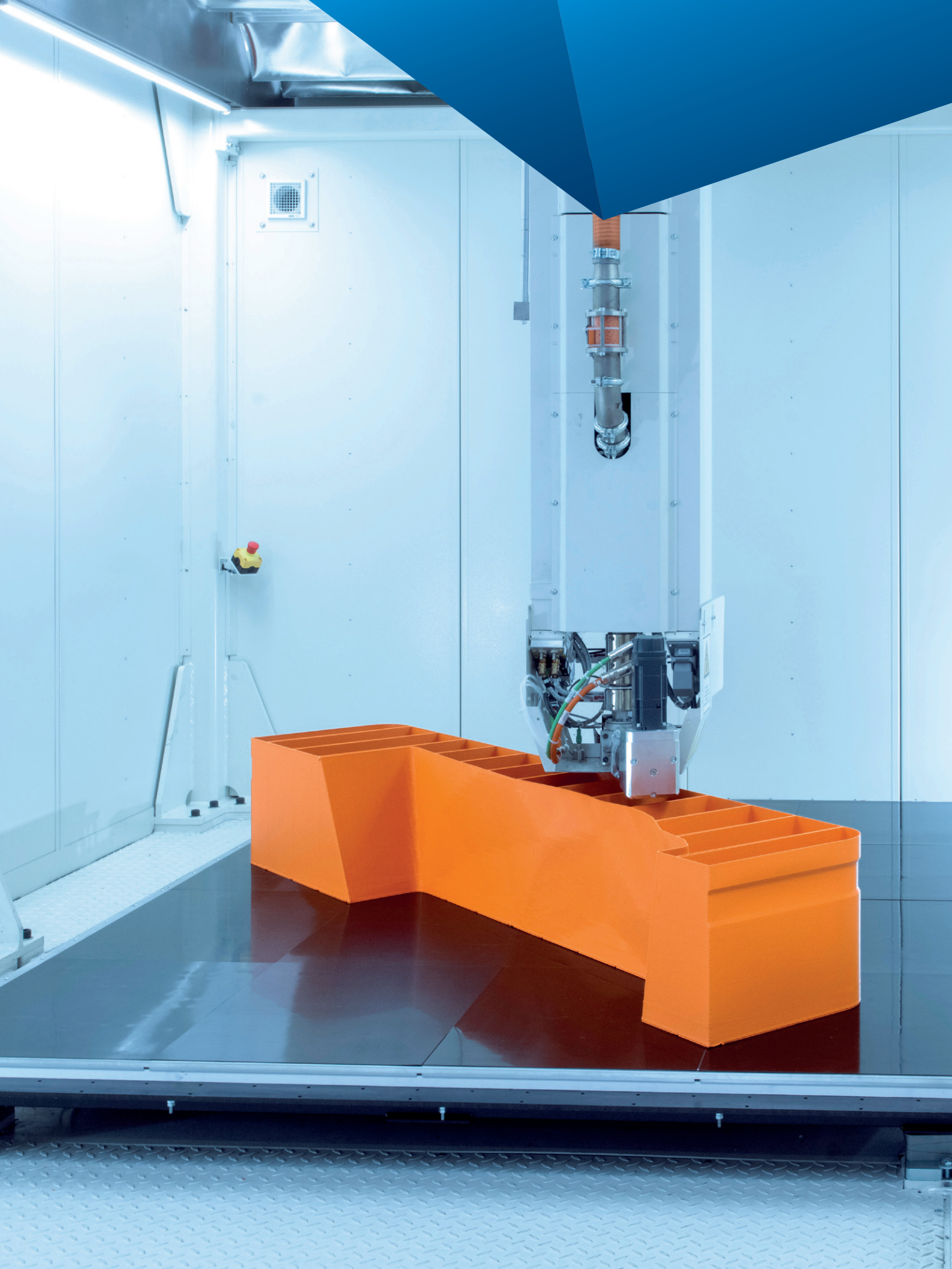
BOOKLET APPLICATIONS

ADDITIVE MANUFACTURING



KraussMaffei

Pioneering Plastics



WE ARE BRINGING ADDITIVE MANUFACTURING
ALL THE WAY TO INDUSTRIAL SERIES PRODUCTION

What sets us apart? Our decades of experience in mechanical engineering have given us a wealth of cross-technology expertise in plastics processing and guarantee the industrial mechanical engineering standard in 3D printing as well.

Our systems set themselves apart with an automated end-to-end process—always with the goal of a high quality print at the first time. This way, we always guarantee the best cost per part and high quality assurance across the entire printing process. Furthermore, as a one-stop solution provider, we offer our customers everything from a single source—from solution-oriented consultation to our global service network. Additive manufacturing at KraussMaffei means more than endless flexibility.

powerPrint Plus –
Granulate-based large-scale 3D printer

The powerPrint Plus prints large-size components to an industrial standard—in a way that is cost-effective, design-independent and results in uniform product quality. The granulate-based large-scale 3D printer provides high process stability with a thermally insulated, closed build chamber with efficient thermal management. The industrial system design ensures a high degree of work safety. The customized extruder is likewise outstanding: fast, cost-effective processing of a wide variety of materials creates maximum productivity.

YOUR BENEFITS

- High quality assurance and high productivity thanks to automation
- Fast overall turnaround time with automated printing process: less than 1 week for data preparation, printing and post-processing
- Cost-effective production through reduction of manual work and use of cost-effective materials

powerPrint Plus and powerPrint Flex
MOST IMPORTANT TECHNICAL DATA

Additive manufacturing process	Fused Granular Fabrication (FGF)
Maximum component size	2.0 x 2.5 x 2.0 m (xyz)
Type of build chamber	Thermally insulated and closed build chamber
Material	Fiber-reinforced or virgin thermoplastics
Temperature of the extruder	Up to 400 °C
Maximum discharge rate	70 kg/h
Nozzle diameter	From 2 to 20 mm, in 2 mm steps
Printing bed	Heatable up to 180 °C with 16 printing plates fixed by a vacuum. Printing bed has 16 zones with variable heating
Machine footprint	6900 mm x 5100 mm x 6400 mm
Component removal	By crane with open roof or forklift

Materials	**Application**
ABS (GF or CF)	Technical material with very good printing and machining properties and low temperature resistance. Ideal for easy and cost-effective production of molds and tools.
PEI (CF)	High performance material with exceptional thermal and chemical properties ideal for high temperature applications .
PETG (GF & CF)	Versatile and strong material with excellent printing and machining properties at low cost. Ideal for cost sensitive production of design and end-use parts.
PC (CF or GF)	Highly technical material with advanced mechanical and thermal properties with a high chemical resistance. Ideal for engineering applications with mid temperature processes and high mechanical pressure.
PP (GF or CF)	Lightweight polymer with high chemical resistant and good mechnical properties. Ideal for end-use parts where the use of Polyolefins is required.

powerPrint Plus
PRINT ON DEMAND

Our Print on Demand-Service makes it possible to print large components to individualized requirements. We offer our customers consultation, print preparation and post-processing. In addition to specific evaluation criteria, e.g. for the material to be used, engineering and weight, the following requirements must be taken into account:

Requirements and selection criteria
- Dimensions: 0.5 x 0.5 x 0.5 m to 2.0 x 2.5 x 2.0 m
- Overhangs: angles of max. 30°
- Wall thicknesses: min. 3 mm up to max. 32 mm
- Thermal requirements up to max. 140 °C

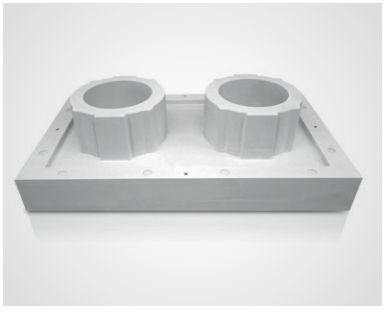
Build-up strategy: filling or infill

Fully filled or with infill
- 3D mold can be implemented
- High variation of applications possible
- High material consumption

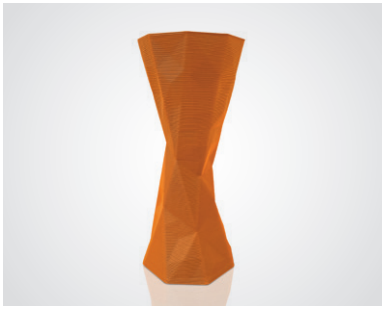
Multi-walled with stiffening
- Efficient material consumption
- Fast set-up
- Easy adaptation to mechanical requirements

Single-walled
- Low material consumption
- Fast set-up
- Cost-effective production of components

Multi-walled with stiffening



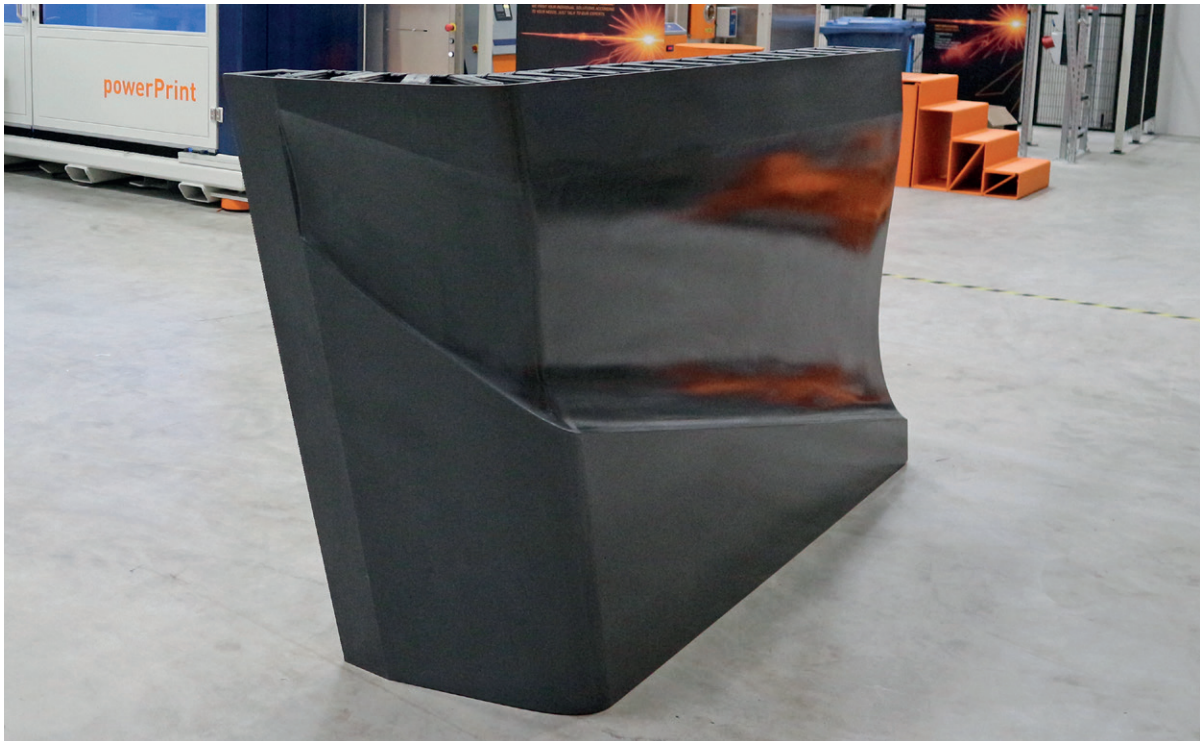
Fully filled or with infill



Single-walled

Applications

LAYUP TOOL FOR WINGLET



Key facts

– Dimensions: 2250 x 550 x 1180 mm
– Weight: ca. 220 kg
– Printing time: 28 h
– Material: ABS with 20 % carbon fiber

YOUR BENEFITS

- **High precision and custom fit: Accurately designed to match winglet specifications, ensuring exact alignment and superior build quality**
- **Reduced production time by 50% and costs up to 40%: Cuts down manufacturing time and expenses compared to traditional tooling methods, streamlining the layup process**

Applications

MOLDING TOOL FOR A FLYING WING

Key facts

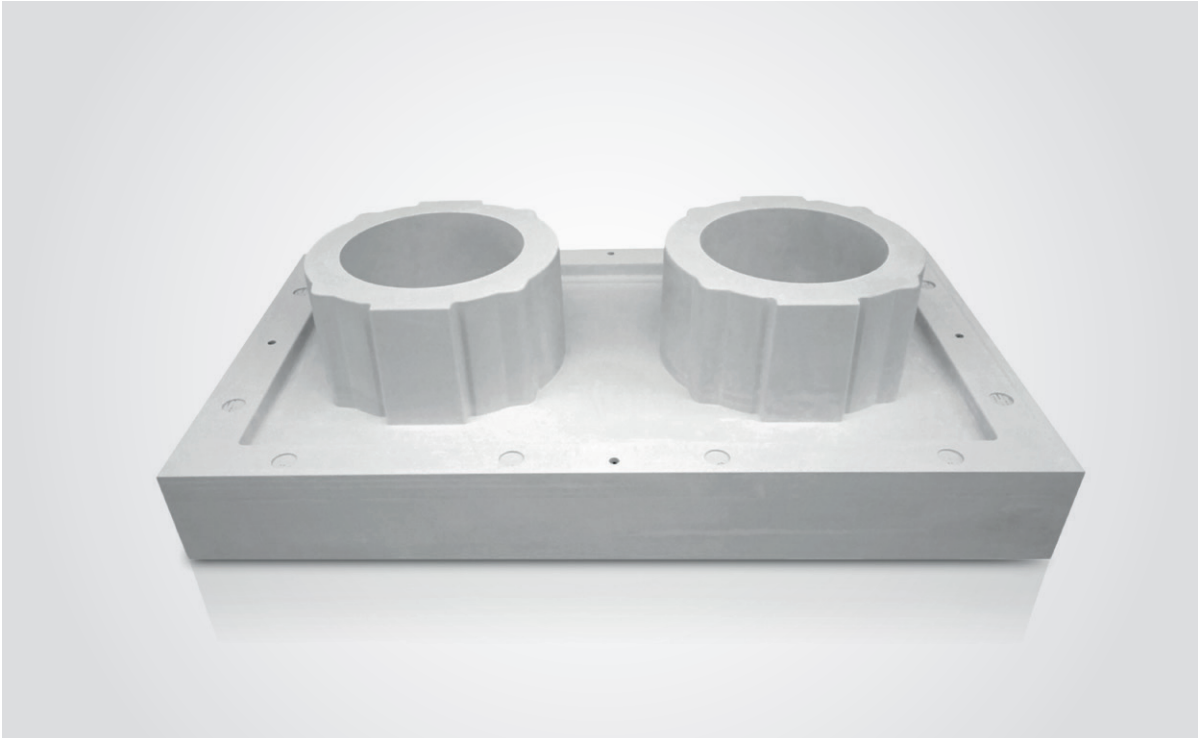
– Dimensions: 1250 x 410 x 1850 mm
– Weight: approx. 300 kg
– Printing time: 30 hours
– Printing strategy: multi-walled print with stiffening
– Material: recycled PETG with 30% glass fiber

YOUR BENEFITS

- Acceleration of flying wing development due to shorter delivery times of the molding tool with lower costs at the same time
- Reduction of project duration by at least 50% with simultaneous cost reduction of at least 40%

Applications

FOUNDRY MODEL FOR SAND CASTING



Key facts

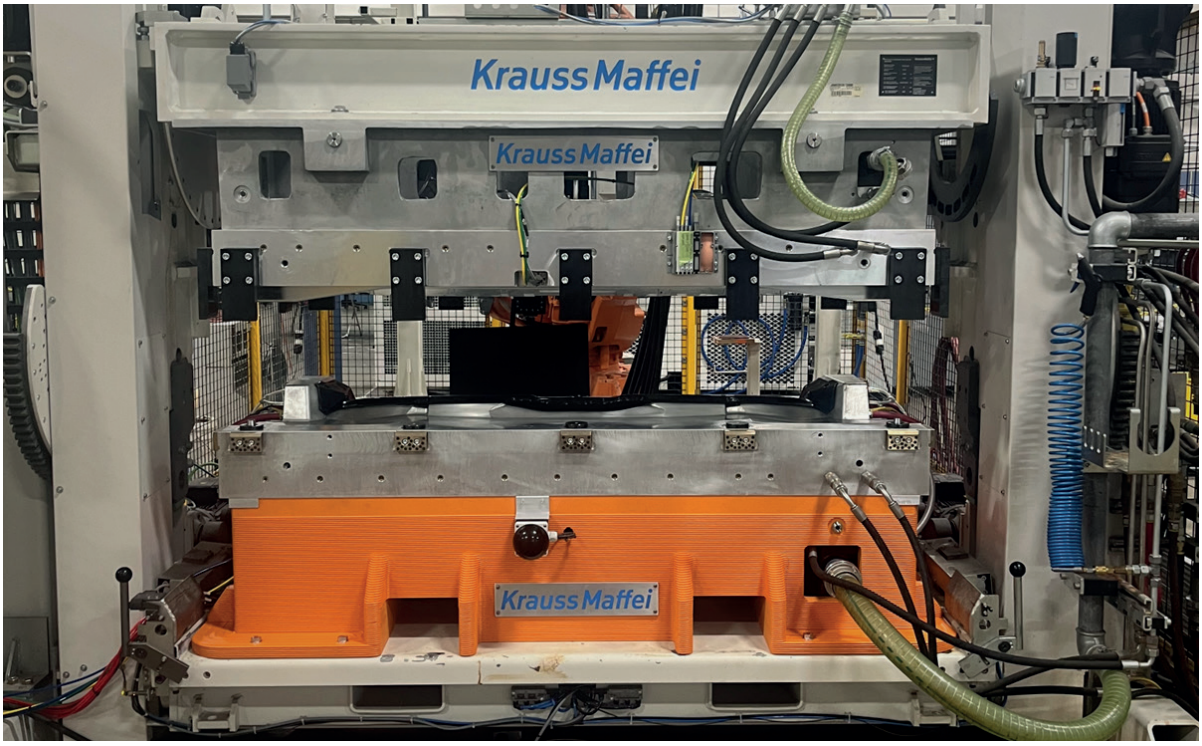
– Dimensions: 1600 x 900 x 500 mm
– Weight: ca. 120 kg per cylinder
– Printing time: 11 h 45 min per cylinder
– Printing strategy: fully filled surfaces with infill
– Material: Recycled PETG with 30% glassfiber

YOUR BENEFITS

- **Automated manufacturing of foundry models for sand casting**
- **Cost reduction of up to 30%**
- **Reduction in the proportion of manual activity of >70%**

Applications

TOOL RISER FOR INSTRUMENT PANEL FOAM TOOL



Key facts

- Dimensions: 1158 x 2040 x 410 mm
- Printing time: 14 hours 22 minutes
- Weight: 275 kg
- Material: Recycled PETG with 30% glassfiber

YOUR BENEFITS

- **Over 70% cost savings and 50% reduction in milling time: Significantly lowers production costs and halves milling times compared to traditional methods**

Applications

EXTRUDER SCREW TRANSPORT AIDS

Key facts

– Dimensions: 2036 x 198 x 230 mm
– Weight: 100 kg
– Printing time: 11 hours for 3 pieces in one printjob
– Material: ABS with 20% carbonfiber

YOUR BENEFITS

- **Extended durability and enhanced handling: Offers a service life of at least 2 years (compared to 6 months for conventional wooden versions) with improved ease of use and maintenance**

Applications

STANDING TABLE PRINTEDDESK COLLECTION

Key facts

– Dimensions: 1970 x 700 x 1100 mm
– Weight: ca. 60 kg
– Printing time: 10 hours
– Printing strategy: combination of fully filled floor and single-walled printing
– Material: Recycled PETG with 30% glassfiber

YOUR BENEFITS

- **The high flexibility in design makes it possible to manufacture individualized furniture components**

Applications
STANDING VASE

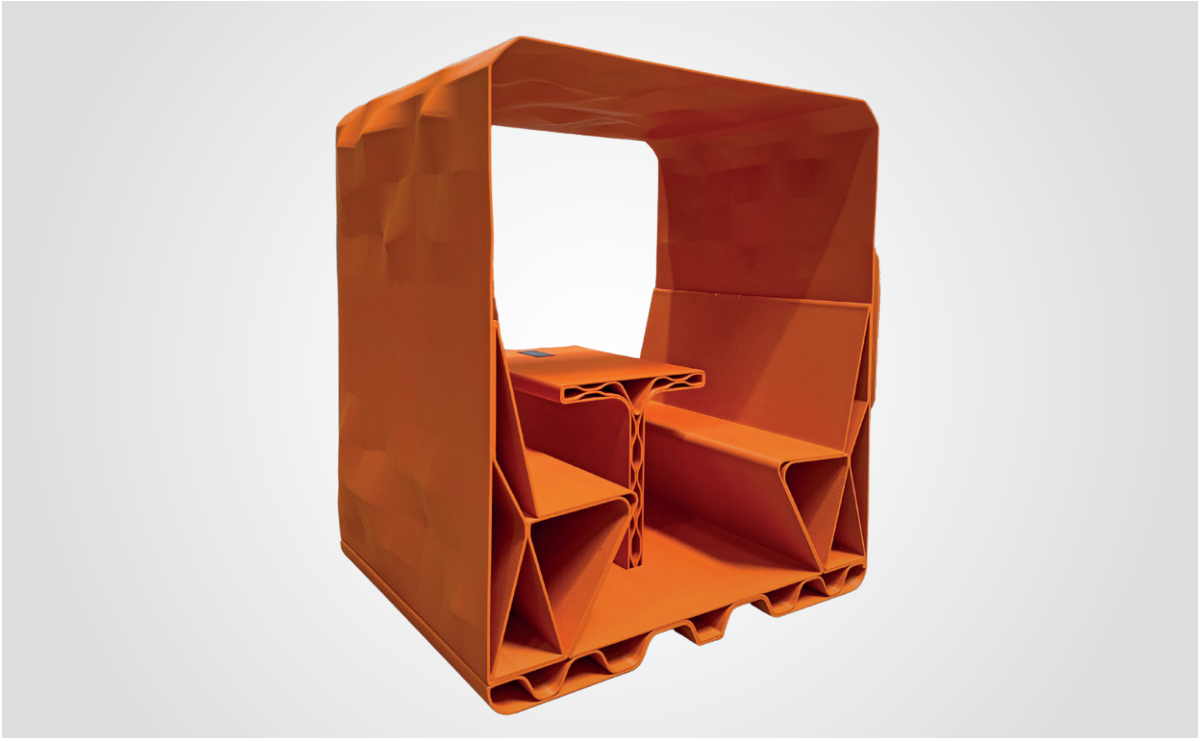
Key facts

– Dimensions: 550 x 549 x 1001 mm
– Weight: ca. 16 kg
– Printing time: 10 hours
– Material: Recycled PETG with 30% glassfiber

YOUR BENEFITS

- Hollow standing feet for an interior, protected cable duct
- Process-typical strands for one-of-a-kind design
- Fast delivery time
- Low manual effort due to automated AM process

Applications
MEETING BOX



Key facts
– Dimensions: 2000 x 1600 x 2100 mm
– Weight: ca. 660 kg
– Printing time: 33 hours
– Material: Recycled PETG with 30% glassfiber

YOUR BENEFITS

- **Seamless integration and mobility: Designed with built-in seating, table, power supply, and transport guides, all printed in a single manufacturing step with minimal manual work for assembly, making it highly functional and easy to relocate**

Applications

3D PRINTED RTM-MOLD FOR AEROSPACE

Key facts

– Dimensions: 450 x 350 x 1475 mm
– Weight: 90 kg
– Printing time: 18 h
– Material: PolyCore PC-7413 with 20% carbon fiber

Applications

BRANCH LINE FOR PIPE & FITTING

Key facts

– Dimensions: 850 x 420 x 1000 mm
– Weight: ca. 120 kg
– Printing time: 32 h
– Material: PP with 30% carbonfiber

YOUR BENEFITS

- **Precision customization and improved flow: Tailored to exact specifications, optimizing fit and flow for complex piping layouts**

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ADDITIVE PRODUCTION

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