

# FAST. AUTOMATED. COST-EFFICIENT.

## STEREOLITHOGRAPHIC 3D PRINTING FOR INDUSTRIAL ADDITIVE MANUFACTURING



***KraussMaffei***  
*Pioneering Plastics*

# PRECISIONPRINT PRECISE AND COST-EFFICIENT 3D PRINTING

precisionPrint is a system based on stereolithography for industrial additive manufacturing. This laser system enables printing of extremely high-precision products in very high quality, at high speeds and at low cost. These advantages provide innovative added value in industrial, medical and sports applications, to name just a few.

## Typical applications

### Service Providers



(e.g. prototypes, short runs, spare parts)  
Manufacturing on an industrial scale. Regardless of the number of units, precisionPrint enables cost-efficient manufacturing and generates efficiency and process reliability in professional applications.

### Sports & Leisure



(e.g. shoe soles, helmets, glasses, bicycle seats)  
Mass customization: The products can be adapted individually, providing comfort and convenience in everyday life.

### Dental & Medical



(e.g. individualized components for hearing aids, prosthetic devices)  
In medical applications, additive manufacturing delivers high-quality, high-precision products that support the health of each individual.

### Electricals & Electronics



(e.g. connector housings, cable guides)  
Highly dimensionally stable precision parts for the cost-efficient production of short runs or customized solutions, as well as spare parts.

## WHAT IS STEREOLITHOGRAPHY?

Stereolithography is an additive manufacturing process that enables high-resolution printing of products using a UV laser. This provides advantages such as high detail accuracy as well as the ability to create smooth surfaces.

Liquid photopolymer resins are used for manufacturing.

Depending on the requirement, transparent, translucent or opaque products can be produced in many colors with a high-quality matte or glossy surface. Products can be flexible (as in the case of shoe soles, for example) or highly precise, highly rigid and temperature-resistant (as required in the E&E industry).

# PRECISIONPRINT THE HIGHLIGHTS

## Additive Manufacturing Mass Production

With our automated 3D printing process, you can reduce the need for constant human assistance, significantly enhancing the reliability of your production line.

- Ideal for the medical, sports and E&E industries
- Cost-efficient mass production of smaller parts
- High resolution and surface quality

## Max. resolution across the entire build plate

We break free from the limitations of small-scale 3D printing, offering the maximum build size without sacrificing precision and speed.

- Dynamic resolution with 18 to 80 microns
- Layer resolution 25 to 250 microns
- up to 90 m/s scan speed

## Industrialized Additive Manufacturing

Fully automated industrial production systems help ensure that all steps are coordinated, with smooth transitions from one to the next.

- Magazine towers for build plates reduce manual labor and maximize the system's efficiency
- Industrial-grade, long life lasers and high-quality components bring industrialization to Additive Manufacturing
- Build volume (mm): 250 x 250 x 400

## Scalable End-to-End Process

Scalable end-to-end process for series production enables high process reliability.

- Dedicated post-processing for optimum part quality
- User interface for fast orientation and easy operation
- User-friendly, ergonomic HMI design



**FAST. AUTOMATED.  
COST-EFFICIENT.**

STEREOLITHOGRAPHIC 3D PRINTING FOR  
INDUSTRIAL ADDITIVE MANUFACTURING



***[kraussmaffe.com](https://www.kraussmaffe.com)***

PRODUCTIVE. EFFICIENT.  
RELIABLE.

POWERPRINT FOR INDUSTRIAL, LARGE-SCALE  
ADDITIVE MANUFACTURING



**KraussMaffei**  
*Pioneering Plastics*

## AREAS OF APPLICATION OF POWERPRINT

### Additive production on a large scale

powerPrint is a multi-talented technology. It is setting new benchmarks for efficiency and cost-efficiency in many industries and applications, and helps shorten production sequences. powerPrint makes the typical advantages of 3D printing available for large parts as well. In addition to "vase" mode, completely filled and partially filled structures can also be produced.

### Typical applications

#### Molds (e.g. iron casting)

Cost-effective and fast alternative to conventional manufacturing processes for molds.

#### Moldmaking (e.g. autoclaves)

Many industries require molds for lightweight composite products, which are used in autoclave or vacuum infusion processes and other technologies.

#### Pipes and fittings (e.g. manhole shafts)

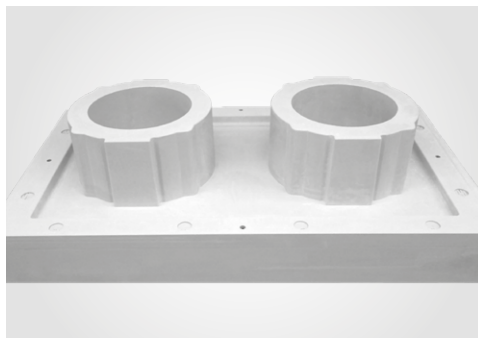
Mass customization and single part manufacturing have cost-effective advantages, e.g. for fittings for manhole shafts and components for the water supply.

#### Facade panels (e.g. in interiors)

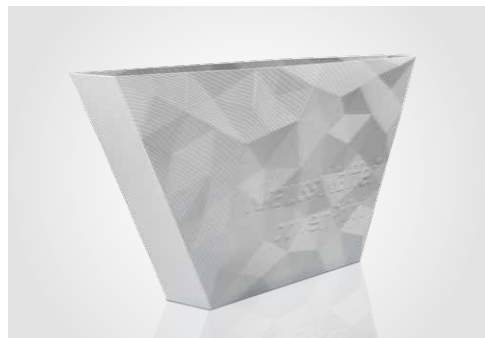
Acoustically and functionally integrated elements create new, sustainable solutions in architecture thanks to unique design options.

#### Prototype construction and functional parts

We support you during project and part selection, from the idea to the finished product.



*Printed casting model made of glass-fiber-reinforced PET. The material enables excellent post-mold processing and high surface quality after the milling process.*



*Custom interior architecture element produced through additive manufacturing.*

# POWERPRINT – INDUSTRIAL ADDITIVE PRODUCTION IN LARGE FORMAT

For large-format additive manufacturing, powerPrint is the reliable and fast industry solution for efficient production of near-end-shape components. powerPrint is an extruder-based system for processing thermoplastic granulates.

powerPrint features short set-up times and a high output capacity with fast printing speeds. This means short throughput times, even for large, complex components.

powerPrint processes a wide range of fiber-reinforced thermoplastic granulates. As a result, optimal component properties are achieved at affordable material costs. The path from design data to the finished component is short. powerPrint uses data from common slicing software.

## **The highlights at a glance:**

- Maximum construction volume up to 10 m<sup>3</sup>
- Simple implementation for large, complex structures
- Efficient production of final-shape and near-final-shape components in high quality: “First time right”
- Cost-effective and fast alternative to conventional production
- Easy access to the space and direct parts removal by crane

# TRANSPARENT TECHNOLOGY

## FASCINATING TOUR OF THE POWERPRINT

### Large-format components

The specially developed granulate extruder allows for efficient production of components with a volume of up to 10 m<sup>3</sup>. The maximum space is 2 x 2.5 x 2 m.

### High-performance extruder

With melt flow control for a higher production speed, high part quality and precise material output in continuous operation.

### Non-stop operation

Material drying is connected with the material supply by a vacuum supply system. This allows for continuous production without intervention by an operator.

### Heated vacuum printing table

16 individually controllable zones allow for optimal use of the space. Depending on requirements, multiple mounting surfaces can be configured with a pre-settable printing table temperature. Max. printing bed temperature 180 °C.







### Printing with proven linear robots from KraussMaffei

The extruder is guided precisely by proven linear robot axes. This enables a high production speed and exact printing of components. Linear robots from KraussMaffei are designed for continuous use in industrial production environments. Automatic lubrication increases the availability and reduces maintenance work. Max. travel speed 300 mm/s

### Easy parts removal

The roof of the powerPrint folds and is pushed back automatically to demold the finished components. Unobstructed access to the pressure chamber from above and from the front allows for easy demolding of finished components using a gantry crane.

### Heat-resistant enclosure

powerPrint prints in an enclosed pressure chamber. For a suitable printing environment even for challenging materials, it is designed for temperatures of at least 60 °C. This creates the optimal production conditions for premium-quality products.

### Flexible engineering

Easily accessible – Automatic material feed

# PRINTCORE EXTRUDER

## HIGH PERFORMANCE IN CONTINUOUS OPERATION

The heart of powerPrint is the high-performance Printcore extruder. Available with a maximum output capacity up to 30 kg per hour, it also meets the highest requirements in an industrial environment. The robust design is designed for continuous operation. Reliability, maximum availability and uniform performance over the service life set the design apart.



*The high-performance printCore extruder is the key component of the powerPrint system.*

### **YOUR BENEFITS:**

- Active, adjustable cooling
- High wear resistance
- Customer-specific screw design
- Melt flow control for higher production speed and part quality
- Extruder temperature up to 350 °C – for thermoplastic composites
- Nozzle sizes 2-20 mm

### **Easy control and operation**

powerPrint is operated using a clearly arranged user interface based on HTML5. A large display designed for use in industrial environments offers the operator full access to an overview of the most important parameters for the print job and system settings. The control system works with standard slicer output files. This makes data preparation and print file creation easy. Another plus is that the data transfer from the pre-process system can be done wirelessly or via USB.

### **Comprehensive service**

powerPrint is a true KraussMaffei product. Users can rely on our global service network and sophisticated and digital ServiceSolutions. Corresponding powerPrint data interfaces ensure maximum machine and customer benefits.



## MATERIAL VARIETY FOR QUALITY COMPONENTS

powerPrint works with a large variety of materials. This is what makes it possible to produce premium-quality components at affordable costs. High-performance thermoplastic and fiber-reinforced materials are processed.

<b>ABS</b>	Highly technical material with glass or carbon fiber reinforcement with good mechanical and post-production capabilities.
<b>PA</b>	Carbon fiber reinforced nylon offers balanced properties with high strength and enables a wide range of applications.
<b>PET</b>	Versatile and strong with excellent printing and post-production capabilities. High impact strength and dyeable. With glass fiber and carbon fiber reinforcement.
<b>PLA</b>	Easy-to-print material for low requirements with various fiber reinforcements or wood/plastic composites. Suitable for one-off products, e.g. furniture.
<b>ASA</b>	A durable and UV-stable material with excellent surface properties for many applications and an alternative to ABS. Processing with natural and synthetic reinforcements.
<b>Custom mixtures – TPU, PP, etc.</b>	Special material requirements are developed together in customer projects and tailored to the process and product.

# PRODUCTIVE. EFFICIENT. RELIABLE.

POWERPRINT FOR INDUSTRIAL, LARGE-SCALE  
ADDITIVE MANUFACTURING



***[kraussmaffe.com](https://www.kraussmaffe.com)***