

Injection molding machine for processing small polymer quantities

Arburg Allrounder 320S 500-150

Clamping force [kN]	500
Max. shot weight [g/PS]	65
Max. injection pressure [bar]	2.210
Max. processing temperature [°C]	350

Hydraulic two-component injection molding machine with automation cell

KraussMaffei KM200-1000 C2

Clamping force [kN]	2.000
Max. shot weight [g/PS]	476
Max. injection pressure [bar]	1.940
Max. processing temperature [°C]	375

Hydraulic injection molding compounder for the direct processing

KraussMaffei KM3200-24500 MX IMC

Clamping force [kN]	32.000
Max. shot weight [g/PS]	9.700
Max. injection pressure [bar]	1.843
Max. processing temperature [°C]	375



Thermoplastic 2D tape laying system

Dimensions of the system (L, W, H)	L=2100 mm B=1200 mm H=2100 mm
Max. deposition area	500 mm x 700 mm
Maximum speed of the linear axes	1 m / s
Manual adjustment option of the Z-axis	

Thermoplastic 3D tape laying system

Robot workspace footprint (L, W, H)	L=2800 mm B=2800 mm H=2100 mm
Deposit area approx.	1000 mm x 1000 mm x 700 mm
Maximum speed	< 0,5 m/s



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Lightweight and sturdy

Thermoplastic light-weight solutions for industrial applications

Polymer processing according to your Requirements

Are you looking for capacities in injection molding and thermoplastic lightweight construction design? Do you need additional scientific expertise in polymer processing and the development of thermoplastic lightweight structures?

At the Fraunhofer Pilot Plant Center for Polymer Synthesis and Processing (PAZ), we focus on the development of application-specific thermoplastic compounds, organosheet and tape integration, as well as prototypic components, with particular consideration of the effects of processing on the resulting material and component properties.

We offer you:

- Extensive technical capabilities for rapid tool sampling
- Production capabilities at pilot scale
- Complex evaluation and simulation of components, processes, and materials
- Prototypic process and component development

Cooperation opportunities and range of services

Prototyping and process development

Process and component development

- Development of composite sandwich structures and lightweight components
- Component design optimized for plastics and fiber composites
- Simulation of processes and structures
- Process development for injection molding and thermoforming processes
- Development and implementation of automation solutions with robotic gripper systems
- Development of injection molding screw profiles and processing parameters

- Determination of the influence of process parameters on local component properties
- Improving material and energy efficiency
- Injection molding gate optimization, wrinkle reduction and defect removal

Part sampling and production of pilot series

Manufacturing of pilot and small series

- Component production under industrial conditions
- Automated processes and component removal
- Production documentation

Sampling and follow-up sampling

- Process capability studies
- Quality inspection, documentation, and optimization approaches
- Requalification
- Initial series production
- Pilot series

Test samples and material characterization

Test specimen and experimental structures

- Standardized test specimens and test plates
- Fiber composite test structures
- Injection molding test structures

Material characterization

- Mechanical and thermomechanical properties
- Rheological properties
- Thermoforming and draping behavior of textile and tape composites
- Melting and crystallization behavior
- Shrinkage and warping
- Environmental conditioning resistance
- Microstructure-property relationships



Technical equipment

Servo-hydraulic two-platen injection molding machine for organosheet processing

Engel Duo 8160/900	
Clamping force [kN]	9.000
Tie bar spacing [mm]	1.170 x 1.000
Min./Max. mold installation height [mm]	500 / 1.100
Max. mold mass [kg]	13.000
Mold mounting area [mm]	1.550 x 1.520
Max. mold size [mm]	1.520 x 1.170
ENGEL IR oven, max. component dimensions [mm]	1.250 x 1.250
Screw diameter [mm]	105
Max. processing temperature [°C]	350

- Horizontal system (corresponding to a conventional injection molding machine)
- Automation cell with movable IR oven and dual robot gripper handling for organosheet and organosandwich processing
- 2 x 6-axis robots: easix KR50 R2500 and KR120 R3500 for cold and hot handling

Servo-hydraulic two-platen injection molding machine for vertical processing of organosheets

Engel V-Duo 8160/700	
Clamping force [kN]	7.000
Tie bar spacing [mm]	1.100 x 960
Min./Max. mold installation height [mm]	450 / 1300
Max. mold mass [kg]	8.000
Mold mounting area [mm]	1.000 x 1.440
ENGEL IR oven, max. component dimensions [mm]	1.000 x 1.600
Screw diameter [mm]	105
Max. processing temperature [°C]	450

- Vertical system (utilizing using gravity for organosheet thermoforming), including hot runner deflection plate
- Automation cell with IR oven and robot gripper handling for organosheet and organosandwich processing
- MuCell package (physical foaming)
- Injection-compression molding package
- Processing of high-performance thermoplastics