



Plastic Laser Sintering System **EOSINT P 800**
Processing High Performance Polymers Operating
at up to 385° C



e-Manufacturing Solutions

The Technology: Laser Sintering - the Key to e-Manufacturing

Laser sintering is well known as the technology of choice for ensuring the quickest route from product idea to market launch. Innovative companies from a broad range of industries are using this technology for e-Manufacturing – the fast, flexible and cost-effective production directly from electronic data for every phase of the product life cycle.

The system: e-Manufacturing with high performance polymers

The system is based on the technically sophisticated and proven EOSINT P 730, and is built up with completely revised modules such as process chambers and removable frame in a way that satisfies the requirements of high temperature processing. High performance polymers are laser sintered at operating temperatures of up to 385° C, which allows the con-

struction of parts with very good performance characteristics. All the conventional advantages of laser sintering are retained. The material used, the necessary temperatures and the resulting product characteristics are, however, at a level decidedly higher

than that found with polyamides. The control of this sandwich construction process was further developed to satisfy the requirements. For example, the heating and cooling are parameterized because the temperature intervals that have to be bridged are

higher. The system is additionally equipped with Online Laser Power Control (OLPC) that monitors the laser power while the system is building. This allows complete documentation of the laser status during operation and foresighted laser maintenance.



*Air duct
Built in EOS
PEEK HP3
material using
EOSINT P 800.
(Project: EOS)*

Thanks to extremely effective insulation, the EOSINT P 800 consumes only slightly more energy than the EOSINT P 730, although the procedure is operated at a temperature level that is considerably higher than that used for laser sintering of polyamides. Because of the modular construction, today's system is already prepared for future innovations that can then be implemented with upgrades.

The material: EOS PEEK HP3, a high-quality material from the polyaryletherketone family, is the first high performance polymer to be selected by EOS for processing on the new system and manufactured in accordance with DIN ISO 9001. EOS PEEK HP3 is a material with outstanding tribological, mechanical, physical and chemical characteristics, and it also satisfies the US UL94-V0 flammability

standard. The material is biocompatible and suitable for sterilization, making it a good choice for diverse and especially demanding applications in such areas as medicine, aerospace and motor-sports. The base product is transformed into powder form in fully quality-controlled steps and prepared for processing on the EOSINT P 800. The laser sintered parts reach tensile strength levels up to 95 MPa and a Young's mo-

dulus of up to 4,400 MPa. The continuous operating temperature lies in the range of 260° C (electrical), 240° C (mechanical-static) and 180° C (mechanical-dynamic), depending on the use.

Technical Data

Effective building volume	700 mm x 380 mm x 560 mm (27.6 x 15 x 22.05 in)
Building speed (material-dependent)	7mm/h (0.3 in/h)
Layer thickness (material-dependent)	typically 0.12 mm (0.005 in)
Support structure	not required
Laser type	CO ₂ , 2 x 50 W
Precision optics	F-theta-lenses
Scan speed during build process	up to 2 x 6 m/s (19.7 ft/sec)
Power supply	32 A
Power consumption	maximum 12 kW / typical 3.7 kW
Nitrogen generator	integrated
Compressed air supply	20 m ³ /h; min. 6,000 hPa (26.2 yd ³ /h; min. 87 psi)

Dimensions (W x D x H)

System incl. switching cabinet	2,250 mm x 1,550 mm x 2,100 mm (88.6 x 61 x 82.7 in)
Control terminal	1,045 mm x 850 mm x 1,620 mm (41.1 x 33.5 x 63.8 in)
Powder conveying system	1,890 mm x 1,350 mm x 1,550 mm (74.4 x 53.1 x 61 in)
Unpacking station	1,600 mm x 800 mm x 1,370 mm (63 x 31.5 x 53.9 in)
Recommended installation space	4.8 m x 4.8 m x 3.0 m (189 x 189 x 118 in)
Weight	approx. 2,300 kg (5,071 lb)

Data preparation

PC	current Windows operating system
Software	EOS RP Tools; EOSTATE; Magics RP (Materialise)
CAD interface	STL (optional: converter to all common formats)
Network	Ethernet
Certification	CE, NFPA

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