



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



# 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 <sub>2</sub> , 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 <sup>3</sup> /h; min. 6,000 hPa (26.2 yd <sup>3</sup> /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  |

EOS GmbH  
Electro Optical Systems  
Corporate Headquarters  
Robert-Stirling-Ring 1  
82152 Krailling/Munich  
Germany  
Phone +49 89 893 36-0  
Fax +49 89 893 36-285

Further EOS Offices

EOS France  
Phone +33 437 49 76 76

EOS Greater China  
Phone + 86 21 602307 00

EOS India  
Phone +91 44 39 64 80 00

EOS Italy  
Phone +39 02 33 40 16 59

EOS Korea  
Phone +82 2 63 30 58 00

EOS Nordic & Baltic  
Phone +46 31 760 46 40

EOS of North America  
Phone +1 248 306 01 43

EOS Singapore  
Phone +65 6430 05 50

EOS UK  
Phone +44 1926 67 51 10

[www.eos.info](http://www.eos.info) • [info@eos.info](mailto:info@eos.info)

Think the impossible. You can get it.

