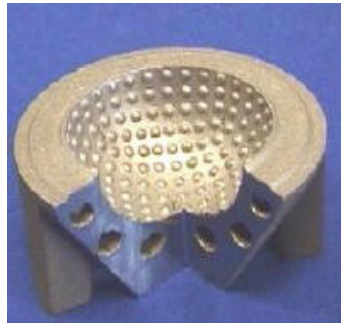


DMLS (Direct Metal Laser-Sintering) is the newest service offered by Dinsmore and Associates for additive manufactured parts in pure metals. The application spectrum of DMLS ranges from prototypes to series products and end parts. Metal parts of the most complex geometries are built layer by layer, directly from 3D CAD data, fully automatically, and without any tooling.



The parts have excellent mechanical properties, high detail resolution and a very good surface quality. The process melts the metal powder entirely, creating a fine, homogeneous structure.

DMLS enables the formation of cavities and undercuts which, with conventional methods, can only be produced with great difficulty, if at all. Therefore, the technology is ideal for applications which require maximum individuality – for example when building customized implants.

A wide variety of materials can be used, ranging from light alloys via steels to super-alloys and composites.

New Perspectives in Manufacturing with DirectPart

Tools for die casting of zinc, magnesium or aluminum can also be produced quickly and efficiently with DMLS. This is of particular interest in product development, as conventional die casting tools are very expensive.

The DirectPart function can create prototypes, series production parts or even spare parts, whether the requirement is to deliver a functional metal prototype within one day, or to economically manufacture hundreds of individualized implants in bio-compatible alloy each week.

FOR MORE INFORMATION CALL 714.641.7111

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DirectPattern

The application spectrum of DMLS ranges from prototypes to series products and end parts. Metal In addition to DMLS, pattern-based casting methods for the generation of metal parts can also be supported. In this case, the laser-sintering system produces a lost pattern, typically in polystyrene. The final product is produced in the subsequent casting process. Laser-sintering thus helps to shorten the entire production time and to reduce costs. Laser-sintered models are suitable for plaster casting, plaster investment casting and ceramic shell casting. By combining laser-sintered models with ceramic shell casting, you can obtain complex, metallic cast parts within only a few days.

DirectCast

DirectCast describes the direct laser-sintering of sand cores and molds. Dinsmore & Associates build highly complex and filigree cores and moulds directly from foundry sand. They are used for the production of high-quality castings in series quality. On the one hand, Control Valve complex and filigree cores and moulds directly from foundry sand. They are used for the production of high-quality castings in series quality. On the one hand, the technology achieves excellent results in light-weight constructions with aluminum and magnesium. On the other hand, new applications for cast iron and steel open up. Laser-sintered cores do not require mould draught angles. This leads to improved properties of the cast parts, especially where hydraulic components are concerned. Laser-sintered cores and conventionally produced moulds, assembled together to a single core package, make DirectCast especially profitable for the production of cast parts in small series.

Rapid and High-Performance Tooling with DirectTool

DMLS is well known as a leading technology for toolmaking, an application known as DirectTool. Tools can be created with high accuracy and surface quality.

Tool inserts are built overnight or even in just a few hours. Also the freedom of design can be used to optimize tool performance, for example by integrating conformal cooling channels into the tool. Increasingly, both strategies are combined to create improved performance in shorter time.

DirectTool is best known for plastic injection molding. However, the technology is also used for other tooling types including blow molding, extrusion, die casting, sheet metal forming etc.

The Process

In this process, powdered metal is sintered at 20-micron layers, which are traced in the X and Y-axes before the build tray lowers 20 microns. The recoater then sweeps over a new layer of powder 20 microns thin, allowing a new layer to be sintered on the already built layer. Though layers are sintered, it actually requires support structures, a requirement also found in the SLA process. Support material is the actual sintered metal. Parts require a variety of post processes, including heat treating, support removal, shot peening and more.

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DMLS allows complex parts to be built in days versus weeks, and is quickly replacing the need for expensive fourth and fifth axis machining or investment casting.

Capabilities

- Rapid injection mold tooling
- Rapid metal parts
- Extremely fine detail resolution with 20 micron layers (0.0008") and "dual spot" laser to achieve feature details down to 0.203mm (0.008")
- Highly accurate (+/-0.001"/inch)(0.0254 mm)
- Multiple alloys, including super alloys such as CoCr and Stainless 17-4 PH
- Fully dense parts using CoCr and 17-4 Stainless

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