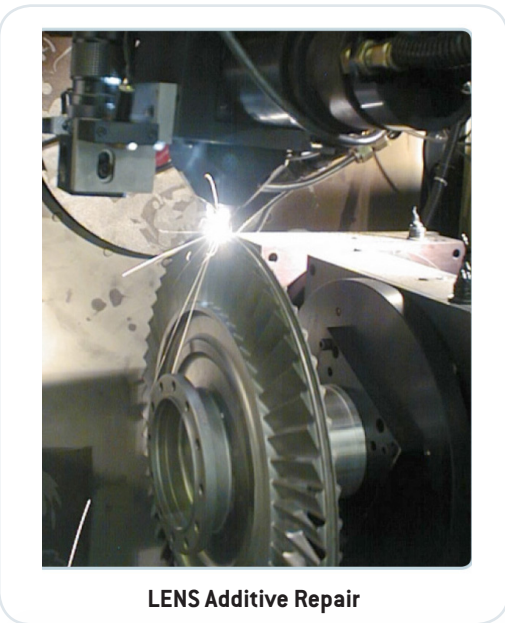




LENS[®] PRINT ENGINE

Add Laser Deposition Capability to Virtually Any CNC Machine Tool

The LENS Print Engine provides Optomec industry proven metal 3D Printing technology in a modular form and makes it available for integration with other metal working platforms such as mills, lathes, robots, custom gantries, or table systems. Now metal deposition and machining can be performed in the same system allowing you to leverage capital assets and accelerate implementation of additive technology through an HMI already familiar to your machinists.



The modular LENS Print Engine component capabilities include:

- Optomec LENS deposition head with 4-tip print nozzle
- Proprietary SteadyFlow™ powder feeders
- SmartAM™ closed loop melt pool control
- Tool path generation software
- Material Starter Recipes
- Fiber laser power up to 2 kW

Combined with a CNC machine tool, the LENS Print Engine simplifies metal fabrication applications such as net shape rapid prototyping, hybrid manufacturing, full production, in-situ repair, manufacturing rework, application of wear or corrosion coatings, and more.

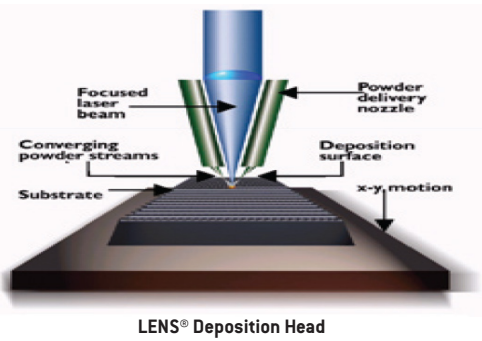
FEATURES

- ▶ Industry-leading Deposition Heads
- ▶ Best-in-Class Powder Feed System
- ▶ Industry Proven Control System
- ▶ Toolpath Generation Software
- ▶ Support for fiber-delivered lasers, including IPG

APPLICATIONS

- ▶ Net Shape Rapid Prototyping & Manufacturing
- ▶ Hybrid Manufacturing
- ▶ Manufacturing Rework
- ▶ In-situ Repair
- ▶ Cladding/Surfacing, Including Corrosion and Wear Resistance

Laser Engineered Net Shaping



How the LENS Print Engine works:

LENS Print Engine systems utilize a high-power laser together with powdered metals to build fully dense structures directly from a 3-dimensional CAD solid model. The CAD model is automatically sliced into a tool-path, which instructs the LENS machine how to build the part. The part is constructed layer by layer under the control of software that monitors a variety of parameters to ensure geometric and mechanical integrity. The LENS Print Engine is housed in any suitable machine tool – a CNC mill, a lathe, a vertical or horizontal machining center, a robot, gantry, or any other suitable motion package. Optomec's LENS Print Engine Control System provides full industrial CNC control of both the LENS Print Engine components and the machine tool itself. Add appropriate safety systems, Optomec's applications knowledge and process support, and a full system can be implemented in almost any CNC machine tool.



Defense Housing
Fabricated by LENS/CNC Process



Compressor Blade
Repaired by LENS System

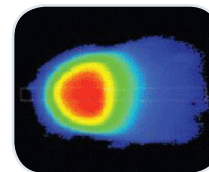


Exhaust Duct
Fabricated by LENS System

LENS Print Engine Example Installations

Deposition Head	LENS deposition head with 4-tip print nozzle
Laser	IPG fiber laser from 500 W to 2 kW other fiber delivered lasers
Powder Feeder	SteadyFlow Powder Feed System, up to 4 powder feeders per LENS Print Engine System
Toolpath Generation	Art-to-Part Toolpath Software Conversational Toolpath Generation utilities
Controller	Customer supplied CNC controller, such as Siemens, Fanuc...etc.
Motion	Vertical or horizontal machining center, custom gantry, robotics.
Process Parameters	Full training in process, operation and maintenance
Key Process Variable Monitoring	SmartAM closed loop process controls for layer to layer & part to part consistency
Material Recipes	Starter recipes for key materials and features from proven Optomec applications research
Support	Full Optomec applications and service support

LENS Print Engine - For Structural Metals



ABOUT OPTOMECC

Optomec® is a privately-held, rapidly growing supplier of Additive Manufacturing systems. Optomec's patented Aerosol Jet Systems for printed electronics and LENS 3D Printers for metal components are used by industry to reduce product cost and improve performance. Together, these unique printing solutions work with the broadest spectrum of functional materials, ranging from electronic inks to structural metals and even biological matter. Optomec has more than 300 marquee customers around the world, targeting production applications in the Electronics, Energy, Life Sciences and Aerospace industries. For more information about Optomec, visit <http://www.optomec.com>.



Optomec Inc.
3911 Singer Blvd. NE
Albuquerque, NM 87109 USA

Tel: 505-761-8250
Fax: 505-761-6638
E-mail: sales@optomec.com