CLASSIC SYSTEM SERIES

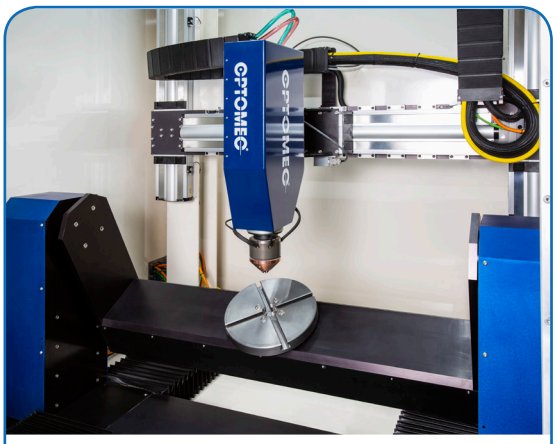
OPTOMEC®
Production Grade 3D Printers... with a Material Difference

LENS®800 AND LENS 600 ADDITIVE MANUFACTURING CONTROLLED ATMOSPHERE SYSTEMS

Modular and Configurable, The Next Generation of Industrial Metal Additive Manufacturing

For over two decades, LENS technology has set the standard for high quality Industrial metal additive manufacturing. The all new LENS 600 and LENS 800 Atmosphere Controlled systems build on that proud heritage with state of the art advancements. At the heart of LENS Additive Manufacturing systems is the new configurable LENS Deposition Head (LDH) consisting of two main modules. The laser beam processing module provides interchangeable optics enabling a wide range of in focus spot sizes and is water cooled for high power applications. The powder delivery module incorporates an interface mechanism enabling fast change-over of powder delivery nozzles to easily switch the process from precision deposition to cladding applications.

LENS CS 800 CA SYSTEM



LENS CS 800 CA WITH TILT ROTATE TABLE

The LENS 800 and LENS 600 Additive Manufacturing systems offer hermetically sealed chambers and closed loop atmosphere controls protecting the build environment from moisture and oxygen contamination down to less than 10 ppm to meet industry's most demanding metal additive manufacturing applications. Both LENS systems are designed to maximize the LENS process build envelope while minimizing chamber volume and system footprint. The base LENS machines are equipped with a 3-linear axis motion system, but optionally can be delivered with a user interchangeable rotary table and/or tilt-rotate trunnion for 4 and 5 axis operations. The Siemens motion controller provides an easy to use push button HMI and utilizes industry standard G&M codes to drive the system. Optional material starter recipes, closed loop process controls, thermal imaging, 5 axis tool path generation software, and unparalleled customer service round out the LENS 800 and LENS 600 Additive Manufacturing Controlled Atmosphere offering.

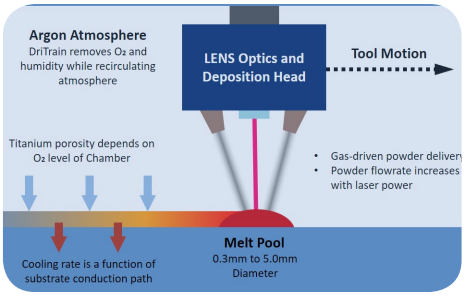
LENS 800 and LENS 600 FEATURES

- Modular Deposition Head – application configurable
- Water Cooled- high power operation
- Interchangeable Automation – application configurable
- Closed-loop controls – precision process control
- Full software suite – generate toolpaths rapidly
- Full atmosphere control – superior material quality
- Common materials: Inconel Alloys, Stainless Steels, Titanium Alloys

APPLICATIONS

- Repair of worn components
- Rework of mis-machined components
- Modification of tooling for re-use
- Remanufacturing
- Wear resistant coatings
- Advanced product development
- Short run production

Laser Engineered Net Shaping



How the LENS Process works:

The LENS process is housed in a chamber which is purged with argon such that oxygen and moisture levels stay below 10 parts per million. This ensures there is no impurity pickup during deposition.

The LENS Deposition head delivers the laser and powder to the deposition zone. Metal powder is conveyed through nozzles to the focal point of the laser creating a melt pool. Argon gas is used to deliver the powder and protect the melt pool from contamination.

Toolpaths are generated from a CAD model and instruct the LENS system to build the part using standard G & M commands. Material starter recipes provide pre-qualified LENS processing parameters to print a variety of commonly used powders including Titanium, Inconel, and Steels. The part is built layer by layer under the control of software that monitors a variety of parameters to ensure geometric and mechanical integrity. When complete, the part is removed and can be heat-treated, Hot-Isostatic Pressed, machined or finished.

LENS 800 AND LENS 600 ADDITIVE MANUFACTURING CA SYSTEMS

	SPECIFICATIONS	CS 600 AM CA	CS 800 AM CA
AUTOMATION PLATFORM	XYZ Travel (mm)	600x400x400	800x600x600
	Table Size XY (mm) / Payload (kg)	1100x450 / 150	1300x650 / 150
	Positional Accuracy (mm)	± 0.020	± 0.025
	Positional Repeatability (mm)	± 0.003	± 0.003
	Rotary Table A Axis (Optional)	Removable	Removable
	XYZ Travel (mm)	600x400x400	800x600x600
	Table Ø (mm) / Payload (kg)	180 / 100	180 / 100
	Trunnion (Optional)	Permanent	Permanent
	XYZ Travel (mm)	600x400x400	800x600x600
	Table Diameter (mm)	250	250
	Maximum Workpiece Size Ø, H (mm)	600x400	800x600
	Maximum Workpiece Weight (kg)	22	22
	Rotary axis "C "(degrees)	360	360
	Tilt range "A" axis (+/- degrees)	± 110	± 110
	CNC Controller	Siemens 840D	Siemens 840D
	Marposs Touch Probe	Option	Option
	System Approx Weight (kg)	2500	3000
	System Dimensions (mm)	2800x2700x2450	2997x2840x2662
LENS DEPOSITION	CDRH Class 1 Airtight Enclosure	Standard	Standard
	Antechamber Ø (mm)	375	375
	Pneuma Seal Door with Glove Access	Standard/ 2 Glove Ports	Standard/ 3 Glove Ports
	Oxygen/Moisture Level (ppm)	10	10
	Gas Purification and Recirculation System	Standard	Standard
	Standard Powder Feeders	Up to 4	Up to 4
	Laser Power Standard (W)	1000 - 2000	1000 - 3000
	Closed Loop Process Control	Option	Option
	Thermal Imaging Pyrometer	Option	Option
	2.5D Tool Path Software	Option	Option
	5 Axis Tool Path Software	Option	Option

ABOUT OPTOMEC

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.

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