



LENS[®] 860 HYBRID OPEN ATMOSPHERE SYSTEM

Larger Work Envelope & Higher Power Bring More Capabilities for Affordable, High Quality Metal Hybrid Manufacturing.



LENS 860 HY OA System. An additive only open atmosphere model, LENS 860 AM OA, is also available.

The LENS 860 is the newest model in the affordable Optomec Hybrid system line-up. With an 860x600x610 mm work envelope the system enables additive and subtractive manufacturing of mid-size and large parts. The LENS 860 Open Atmosphere System utilizes Optomec industry proven LENS Print Engine technology seamlessly integrated into a CNC platform upgraded with a Class 1 Laser Safe enclosure. The LENS 860 can be configured with a high power 3 kW fiber laser reducing manufacturing time for building, repairing or coating parts.

Built on a rugged CNC platform, the system features a 8 tool ATC and an 8,000 or optional 25,000 RPM spindle for machining operations. The base LENS 860 system is 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 for additive and subtractive metal processing. The system is ideally suited for processing stainless and tool steels, nickel based alloys, cobalt, tungsten and other non-reactive metals.

A Siemens controller manages the system's additive and subtractive functions through an easy to use HMI. Powerful Optomec software enables multi-axis build strategies that combine additive and subtractive operations in a single tool path program. Optional material starter recipes and unparalleled customer service and support round out the LENS 860 Hybrid Open Atmosphere System.

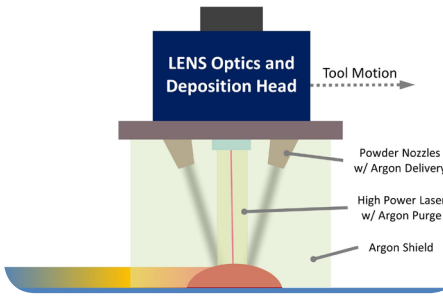
LENS 860 HY OA FEATURES

- ▶ Large Build Volume – process larger parts
- ▶ Rugged CNC Base – affordable system platform
- ▶ Full CNC Machining Capability – finished parts in one set-up
- ▶ Full LENS Additive Capability – industry proven technology
- ▶ Up to 5 Axis Motion – for complex parts/repairs
- ▶ High Power Laser – faster processing
- ▶ Closed Loop Controls – part to part consistency
- ▶ Common materials: Inconel Alloys, Stainless Steels, Cobalt, Tungsten

LENS APPLICATIONS

- ▶ Hybrid Manufacturing
- ▶ Finished Functional Prototypes
- ▶ Repair damaged/worn parts
- ▶ Restore mis-machined components
- ▶ Remanufacturing of legacy parts

Laser Engineered Net Shaping



How the LENS Process works:

The Optomec Machine Tool Series Open Atmosphere system is housed in a Class 1 chamber so that all laser hazards are contained within the enclosure. 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.

A curtain of argon gas provides additional shielding for the local build area. Tool-paths created from standard G & M codes or from a CAD model instruct the LENS machine how to build the part. Material starter recipes provide pre-qualified LENS processing parameters to print a variety of commonly used powders including 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 in any other manner.

LENS 860 HYBRID OPEN ATMOSPHERE SYSTEM

	SPECIFICATIONS	LENS 860 HYBRID OA SYSTEM	LENS 860 AM OA SYSTEM
AUTOMATION PLATFORM	Additive Mode XYZ Travel (mm)	598x600x610	860x600x610
	Subtractive Mode XYZ Travel (mm)	860x600x610	NA
	Table Size XY (mm) / Payload (kg)	1000x600 / 600	1000x600 / 600
	Positional Accuracy (mm)	± 0.005	± 0.005
	Positional Repeatability (mm)	± 0.003	± 0.003
	Rotary Table A Axis (Optional)	Removable	Removable
	Additive Mode XYZ Travel (mm)	598x600x610	860x600x610
	Subtractive Mode XYZ Travel (mm)	860x600x610	NA
	Table Ø (mm) / Payload (kg)	220 / 200	220 / 200
	Trunnion (Optional)	Removable	Permanent
	Additive Mode XYZ Travel (mm)	598x600x400	860x600x610
	Subtractive Mode XYZ Travel (mm)	860x600x519	NA
	Maximum Workpiece Size Ø, H (mm)	120 x 400	120 x 400
	Maximum Workpiece Weight (kg)	30	30
	Rotary Axis "C" (degrees)	360	360
	Tilt Range "A" axis (+/- degrees)	-30 / +115	-30 / +115
CNC Controller	Siemens 840D	Siemens 840D	
Touch Probe	Option	Option	
System Approx weight (kg)	5960	5960	
System Dimensions (mm)	4068x2735x2660	4068x2735x2660	
LENS DEPOSITION	CDRH Class 1 Laser Enclosure	Standard	Standard
	Interlocked Front Door Access	Standard	Standard
	Standard Powder Feeders	Up to 4	Up to 4
	Laser Power Standard (W)	500 - 3000	500 -3000
	Closed Loop Process control	Option	Option
	2.5D Tool Path Software	Option	Option
5 Axis Tool Path Software	Option	Option	
MACHINING	Tool Changer	16 Tool Carousel	NA
	Tool Taper	CAT 40	NA
	Spindle (rpm)	8,000	NA
	Spindle Center Distance to Column Surface (mm)	700	NA
	Spindle Nose to Table Surface (mm)	120-730	NA
	Spindle Motor Peak (W)	7000	NA
	Spindle Torque (Nm)	95	NA

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>.



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