



## LENS<sup>®</sup> 500 HYBRID OPEN ATMOSPHERE SYSTEM

Value Leading Machine Tool for Hybrid Additive and Subtractive Metal Processing.



LENS 500 HY OA System. An additive only open atmosphere model, LENS 500 AM OA, is also available.

The LENS 500 Hybrid Open Atmosphere System sets a new price to performance standard for combining additive and subtractive manufacturing in a single machine tool. The system utilizes Optomec industry proven LENS Print Engine technology seamlessly integrated into Class 1 Laser Safe CNC platform. The system is ideally suited for processing stainless and tool steels, nickel-based alloys, cobalt, tungsten and other non-reactive metals.

Built on a rugged cast iron CNC platform, the system features high precision ball screws, spindle, and ATC for precision machining operations. Additive functionality is enabled with integrated Optomec LENS technology including Steadyflow™ powder feeders, water-cooled LENS processing head with interchangeable powder delivery nozzles, and SmartAM™ closed-loop controls. A high power fiber laser and advanced Siemens controls complete the system.

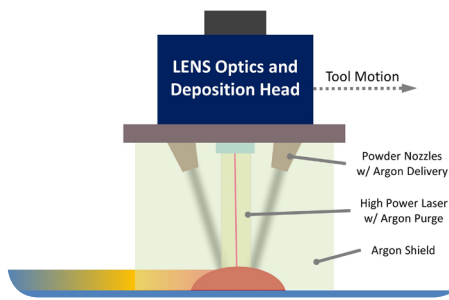
### LENS 500 HY CA FEATURES

- ▶ Cast Iron CNC Platform – affordable rugged base
- ▶ 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
- ▶ Fiber Laser – high performance/reliability
- ▶ Closed Loop Controls – part to part consistency
- ▶ Common materials: Tool and Stainless Steels, Inconels, Hastelloy, Stellite, Tungsten Carbide

### LENS APPLICATIONS

- ▶ Hybrid and/or Additive 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 500 HYBRID OPEN ATMOSPHERE SYSTEM

SPECIFICATIONS		LENS 500 HYBRID OA SYSTEM	LENS 500 AM OA SYSTEM
AUTOMATION PLATFORM	Additive Mode XYZ Travel (mm)	350x325x500	500x325x500
	Subtractive Mode XYZ Travel (mm)	500x325x500	NA
	Table Size XY (mm) / Payload (kg)	600x300 / 200	600x300 / 200
	Positional Accuracy (mm)	± 0.005	± 0.005
	Positional Repeatability (mm)	± 0.0025	± 0.0025
	Rotary Table A Axis (Optional)	Removable	Removable
	Additive Mode XYZ Travel (mm)	200x325x500	350x325x500
	Subtractive Mode XYZ Travel (mm)	350x325x500	NA
	Table Ø (mm) / Payload (kg)	170 / 100 with Tailstock	170 / 100
	Trunnion (Optional)	Removable	Permanent
	Additive Mode XYZ Travel (mm)	350x325x300	500x325x450
	Subtractive Mode XYZ Travel (mm)	500x325x300	NA
	Table Ø (mm)	120	120
	Maximum workpiece size Ø, H (mm)	177x300	177x450
	Maximum workpiece weight (kg)	35	35
	Rotary axis "C" (degrees)	360	360
	Tilt range "A" axis ( +/- degrees)	± 110	± 110
CNC Controller	Siemens 828	Siemens 828	
Marposh Touch Probe	Option	Option	
System Approx Weight (kg)	2500	2500	
System Dimensions (mm)	1650x2050x2050	1650x2050x2050	
LENS DEPOSITION	CDRH Class 1 Laser Enclosure	Standard	Standard
	Interlocked Front Door Access	Standard	Standard
	Powder Feeders	Up to 4	Up to 4
	Laser Power Range (W)	500 -2000	500 -2000
	Closed Loop Process Control	Option	Option
	2.5D Tool Path Software	Option	Option
	5 Axis Tool Path Software	Option	Option
MACHINING	Tool Changer	8 Tool Umbrella Type	NA
	Tool Taper	CAT 40	NA
	Spindle (rpm)	8,000	NA
	Spindle Center Distance to Column Surface (mm)	381	NA
	Spindle Nose to Table Surface (mm)	76 - 584	NA
	Spindle Motor Peak (W)	5600	NA
	Spindle Torque (Nm)	47.4	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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