

Desktop Laser Metal Deposition 3D Printer with closed-loop process control



Additec Advances Directed Energy Deposition 3D printing with the μ Printer, a desktop machine capable of producing complex metallic components from both, wire and powder feedstock using Additec's unique LMD-WP (Laser Metal Deposition-Wire Powder) Process. The ability to produce parts from wire feedstock makes operation and material handling very clean, as well as ensuring 100% material efficiency. Being also able to process powder closes the gap to conventional LMD and brings the ability to mix alloys on the fly. Switching between wire and powder is fast, does not require a nozzle change and can be done automatically on the same part. The Process works by having multiple high-power diode laser sources arranged around the central axis of the deposition head. Wire is fed through a central wire guide, while powder is fed through an annular gap nozzle around the wire guide.

Process stability was the most important aspect for the development of the μ Printer. Because wire based coaxial deposition is not as common as powder LMD, we developed our own process control structure, that not only adjusts the processing parameters on the fly, but also measures the height of the individual layers, and adjusts nozzle to part distance automatically. Further, to grant users maximum flexibility, as all process parameters can be set in g-code. To easily change parameters for certain sections of a build, a macro utility is provided. As welcomed side-effect of the closed loop control, the print quality is very high, both in wire and powder mode. The printer can be controlled either via a locally hosted web interface, or through USB.

Despite the compact outer dimensions, the print envelope is 120x160x450mm (XYZ) making the μ Printer useful beyond research applications. The build chamber is fully inert, and the small volume makes filling quick, affordable and safe. In addition to Additive manufacturing, it is also suitable for Cladding and Repair work on small components.

The μ Printer is based on Additec's patented LMD-WP process, launched in 2016. Previously offered as a retrofit package that could be used to turn existing CNC platforms into metal 3D printers or hybrid manufacturing systems. In order to lower the barrier of entry, Additec now offers complete systems, starting with the μ Printer.

Technical Data:	
Dimensions:	390mm (L) x 390mm (W) x 1100mm (H)
Print Envelope:	120mm (X) x 160mm (Y) x 450 mm (Z)
Weight:	Ca. 95kg
Laser Power:	600-1000W
Wire Material:	0.6-1mm Diameter Wire
Powder Material:	45-90 μ m Powder
Electrical:	Single Phase 110v-240v / 32-16A max
Price:	Starting at 90000 USD excl. VAT

For More information, please visit: [www.additec.net/ \$\mu\$ Printer/](http://www.additec.net/μPrinter/)

