



## SonicLayer<sup>®</sup> 1600 3D Printing Machine

### FEATURES AND BENEFITS

The system is built upon a commercial off-the-shelf vertical machining center (VMC). All printing and milling functions are integrated into a single hybrid system, including ultrasonic additive head and CNC milling capabilities. The UAM head is located adjacent to the spindle and moves down to engage the workpiece during welding operations. In practice, the weld head is another tool in the machine tool changer.

Ultrasonic Additive Manufacturing (UAM), developed by Fabrisonic, combines a unique room-temperature metal deposition process with the capabilities of traditional CNC milling. Our patented ultrasonic 'print head' is integrated into a 3-axis CNC mill to create a hybrid (additive and subtractive) process. Changing operations from additive to subtractive happen automatically in standard g-code.

### BENEFITS OF UAM

- Protects material properties of incoming feedstock.
- Creates bonds between dissimilar metals without creating intermetallics.
- Embed temperature-sensitive components in solid metal parts.



# SonicLayer<sup>®</sup> 1600

## WELDER WORK ENVELOPE

X-Axis	14.5 in. (368 mm)
Y-Axis	14.5 in. (368 mm)
Z-Axis	17 in. (432 mm)

## MACHINE WORK ENVELOPE

X-Axis	30 in (762 mm)
Y-Axis	16 in. (406 mm)
Z-Axis	20 in. (508 mm)

## SPINDLE

Spindle Power	30 hp (22.4 kW)
Maximum Speed	10,000 RPM
Transmission	Inline Direct-Drive
Spindle Taper	CT 40

## MAXIMUM FEED RATE

X- and Y-Axis (Machining)	650 IPM (16.5 m/min)
X- and Y-Axis (Welding)	200 IPM (5 m/min)
Z-Axis (Machining and Welding)	650 IPM (16.5 m/min)

## MACHINE SPECIFICATIONS

Table Size	36 in. x 14 in. (914 mm x 356 mm)
Table Slots	5/8 in. (15.9 mm) (3 slots)
Spindle Nose to Table Max Clearance	24 in. (610 mm)
Spindle Centerline to Machine Column	16.5 in. (419 mm)
Typical System Footprint	91 in. x 121 in. (2311 mm x 3073 mm)
Overall System Height	109 in. (2769 mm)
Typical System Weight	8000 lbx. (3629 kg)

## POWER AND AIR

Power Requirements	Three-Phase 230 Vac, 50/60 Hz, 70A Breaker
Air Requirements	Single 10 SCFM at 90 PSI Oil-Free Line

## ULTRASONIC WELDING SPECIFICATIONS

Operating Frequency	20 kHz
Sonotrode Width	1.08 in. (27 mm)
Ultrasonic Welding Power	5,000W (Single Transducer) 10,000W (Two Transducers)
Maximum Weld Force	10,000 N

## INCLUDED MACHINE ACCESSORIES

- > 20 Pocket Umbrella Style Automatic Tool Changer
- > 4<sup>th</sup> Axis Foil Feeding System
- > Isopropyl Alcohol Coolant System (1 Gallon Tank)
- > Automatic Oiler System

## OPTIONAL MACHINE ADD-ONS

- > Power Upgrade
- > Workholding Package
- > Milling Starter Package
- > Tooling Starter Pack
- > Onsite or Offsite Training
- > Backup Sonotrode
- > Sonotrode Hardfacing
- > CNC Upgrades

## PRODUCT LINE

SonicLayer <sup>®</sup> 1200	Work Envelope (10" x 10" x 10")	SonicLayer <sup>®</sup> 4000	Work Envelope (40" x 40" x 24")
SonicLayer <sup>®</sup> 1600	Work Envelope (14.5" x 14.5" x 17")	SonicLayer <sup>®</sup> 7200	Work Envelope (72" x 72" x 36")