

## PRODUCTION EQUIPMENT

### Additive Manufacturing

- 1 **MarkForge Mark Two 3D Printer.** Onyx glass filled nylon with continuous carbon, Kevlar and glass fiber layup.
- 1 **MarkForge Metal X 3D Printer, Wash 1 and Sinter 1.**

### CNC Milling Machinery

- 1 **Matsuura H+300 PC11 Horizontal Mill.** 20 hp, 20,000 rpm spindle. 20x20x20" axis travel, 11-pallet flexible cell system, 240 tools. Renishaw MP700 part probe and tool probe with break detection. State of the art in production automation for horizontal machining - designed for low labor lights out operation!
- 1 **Matsuura H+300 PC5 Horizontal Mill.** 20 hp, 15,000 rpm spindle. 20x20x20" axis travel, 5-pallet flexible cell system, 240 tools. Renishaw MP700 part probe and tool probe with break detection.
- 1 **Makino a51-A60 Horizontal Mill.** 30 hp, 12,000 rpm spindle. 22" x 22" x 20" axis travel, dual 400mm pallet changer.
- 1 **Kitamura HX-250iF Horizontal 5-axis Mill.** 10 hp, 15,000 rpm spindle. 12" x 12" x 12" axis travel, dual 250mm pallet changer. Ideal for parts with close tolerance complex geometries.
- 1 **Kitamura 3XiF SparkChanger Vertical Mill.** 15 hp, 20,000 rpm spindle. 30" x 18" x 18" travels, automatic pallet changer for maximum production up time.
- 1 **Ganesh VFM2818 CNC Vertical Mill.** 10 hp, 12,000 rpm spindle. 28" x 18" x 16" axis travel. Renishaw MP700 part probe. **New in 2017**

### CNC Turning Machinery

- 1 **Tornos ST-26 CNC 9-axis Swiss Screw Machine.** Simultaneous synchronous machining on two 10 hp, 10,000 rpm C-axis spindles. Driven tools for milling complex features radially and axially at both spindles. 12-foot Servo bar load/feeder. 1000 PSI coolant thru both turrets. 1" dia bar thru spindle.
- 1 **Ganesh Cyclone 52TTM 8-axis Dual Spindel – Dual Turret CNC lathe.** Simultaneous synchronous machining on 30 hp, 6000 rpm C-axis spindles. 16 tools on both turrets, all can be driven by 7.5 hp servo motors. 1000 PSI coolant thru both turrets. **New in 2015**
- 5 **Ganesh Cyclone 32CS 7-axis Turn-Mill center.** Simultaneous synchronous machining on 10 hp, 6000 rpm main spindle and 5 hp, 6000 rpm sub-spindle. 27 cutting tools including driven axial and radial tools. Full C-axis path control in both main and sub spindles. 1.25" dia bar thru spindle. Automatic bar load/feeder. **New in 2016 and 2017**
- 1 **Emco Maier 345/II CNC Turn-Mill center.** 17 hp, 6300 rpm spindle. Work piece envelope 6" dia x 27.0" long, 1-3/4" dia bar thru spindle.