

# PROTOTYPING FACILITY



## Overview

The NGI prototyping suite is a facility to support the fabrication of devices and services to the research community with National Graphene Institute and associated partner institutes across the University of Manchester. The suite will generally run on managed projects and designs, but will have emergency drop-in capability for NGI repairs.

Computer-aided manufacture and specialist 3D prototyping is an essential feature of the NGI's agility and fast turn-around of devices/projects. We work proactively with researchers and engage to deliver the project requirements.

## Capability profile

### CNC 5 Axis milling machine with CAD/CAM capability

The complete tool will manufacture complex assemblies. This tool is also used in the development and maintenance of the vast range of specialist equipment within the NGI facility.

X Travel: 560mm, Y Travel: 400mm, Z Travel: 500mm

Table Size: 610mm x 370mm

Spindle Centre to Column: 455mm

Spindle to Table: 100-600mm

Rapid Feeds (X Y Z axis): 20M/min

Cutting Feeds: 1-20000mm/min

Maximum Table Load: 300Kg

Positioning Accuracy: + 0.005mm (Repeatability + 0.003mm)

T Slot Size: 16mm, T Slots (Number & Pitch): 4 @ 80mm

Spindle Speed: 60-8000 rpm

Spindle Motor Maximum Rating: 11.5 Kw

Spindle Motor Duty Cycle: 9.7 Kw

Spindle Taper: BT40 (MAS403 Type 1 Pull Studs)

Tool Changer: 12 Station Carousel Type

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## **CNC Centre Lathe**

The precision lathe will support the manufacture of complex assemblies and also support the vast range of specialised equipment within the NGL.

Swing over bed: 400mm

Swing over cross slide: 218mm

Distance between centres: 760mm

Spindle bore: 54mm

Spindle nose: D1-6 camlock

7.5 HP variable speed spindle motor with Yaskawa inverter drive Spindle speeds 150-2,500 rpm

Tailstock travel: 127mm

Taper: 4MT

Diameter: 60mm

Bed width: 320mm

## **3D Prototype Objet 260 Printer**

Precision prototype printer capability of flexible resin printing to sub 30µm resolution for vacuum and gas tight prototypes.

Tray size (X Y Z): 260 x 260 x 200mm

Printing modes:

Digital material (DM): 30 micron, High quality (HQ): 16 micron, High speed (HS): 30 micron

Layer thickness (Z-axis): Horizontal build layers down to 16 micron.

## **Cutting & Boring**

The suite has a wide range of material preparation capability: cutting, pillar drill, grinding and turning capabilities.