



Trailblazer
Recycling &
Clean Energy

Access world-class manufacturing equipment.

Scale up your clean energy and recycling prototypes in the University of Newcastle's newly established Modern Manufacturing Workshop (MMW).

Located at the University of Newcastle's Callaghan campus in the NIER Precinct, the MMW hosts state-of-the-art fabrication and manufacturing machinery.

Supported by the Trailblazer for Recycling and Clean Energy (TRaCE) program, dedicated research and engineering expertise will be available to help take your ideas to market.



What capabilities are available?

Turning

Turning is a precision machining process for creating cylindrical and conical components by rotating a workpiece against a stationary cutting tool. It delivers excellent surface finishes and tight dimensional tolerances across metals, plastics, and composites.

The MMW offers a range of lathes in various sizes to support both small-scale and complex turning projects.

Model	Specifications
Colchester Mascot VS 2000	Maximum machining length: 2000 mm Maximum diameter: 460 mm
Colchester Triumph VS 2500	Maximum machining length: 1250 mm Maximum diameter: 400 mm
Colchester Master VS 3250	Maximum machining length: 1250 mm Maximum diameter: 350 mm



Colchester Mascot VS 2000



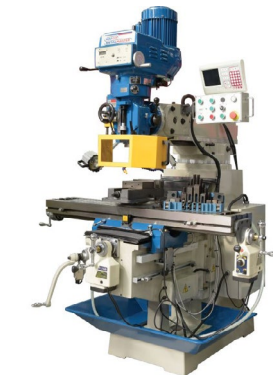
Colchester Triumph VS 2500



Colchester Master VS 3250



BM-1600



BM-63VE

Milling

Milling removes material using rotating cutters, enabling the creation of complex shapes such as slots, holes, and contoured surfaces. The MMW includes a universal mill for horizontal and vertical operations, and a turret mill with a rotating head and adjustable spindle for high-precision, multi-axis work.

Together, these machines support intricate, multi-sided part production with exceptional flexibility.

Model	Specifications
Universal mill BM-1600	Machining envelope*: 1310 mm (X), 300 mm (Y), 410 mm (Z)
Turret mill BM-63VE	Machining envelope*: 890 mm (X), 400 mm (Y), 400 mm (Z)

*These machines can accommodate larger work pieces, please contact us to discuss your requirements.

Cutting and Drilling

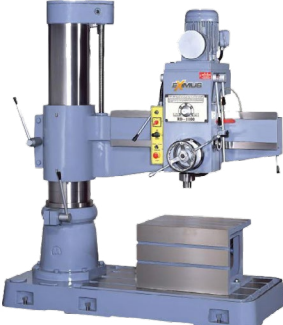
Cutting and drilling are fundamental processes for manufacturing and essential for creating holes, slots, and fine features. These operations can be integrated with techniques such as tapping and threading to meet specific design and functional requirements.

These capabilities deliver the precision and adaptability needed for both standard parts and complex assemblies.

Model	Specifications
Vertical bandsaw Clausing V4014H	Maximum material thickness: 356 mm
Radial arm drill Eximus TF1700H	Maximum drill diameter: 70 mm Drilling depth: 250 mm
Geared head column drill MetalMaster GHD-55G	Maximum drill diameter: 50 mm Drilling depth: 180 mm
Benchtop mill drill MetalMaster HM-46B	Maximum drill diameter: 31.5 mm Machining envelope*: 485 mm (X), 175 mm (Y), 430 mm (Z) *Machine can accommodate larger work pieces, please contact us to discuss your requirements.



Clausing V4014H



Eximus TF1700H



MetalMaster GHD-55G



MetalMaster HM-46B

Waterjet Cutting

The MMW features a full-sheet-size 5-axis waterjet cutter for high-precision, multi-angle machining. Ideal for intricate geometries and hard-to-machine materials, this system includes specialised attachments for cutting refractory materials.

It is a powerful solution for advanced industrial and research applications.

Model	Specifications
5-Axis waterjet cutter Performatec Mach 200C	Table size: 3000 mm x 2000 mm Positional accuracy: ±0.064 mm/m Maximum material thickness: 200 mm



Performatec Mach 200C

Sheet Metal Forming

Sheet metal forming shapes thin metal into precise, functional parts using processes like bending, stamping, and rolling. Equipment such as press brakes and roll formers apply controlled force to achieve desired shapes without removing material. This method offers a cost-effective, high-precision solution for durable components—ideal for prototyping and low-to-mid volume production.

Model	Specifications
Hydraulic bender MetalMaster PB-70E	Maximum sheet width: 2500 mm Maximum sheet thickness: 7 mm* (Mild Steel) *Dependent on bend radius
Plate shear MetalMaster HG2506	Maximum sheet width: 2400 mm Maximum sheet thickness: 6 mm (Mild Steel), 4 mm (Stainless Steel)
Pyramid rolls MetalMaster PR-136A	Maximum sheet width: 1300 mm Maximum sheet thickness: 6.5 mm (Mild Steel)



Computer Numerical Control Machining

Computer Numerical Control (CNC) machining automates processes like turning and milling using computer-driven systems. Programmed instructions guide each movement, enabling consistent, high-accuracy results—even on complex geometries. CNC technology delivers exceptional precision, repeatability, and efficiency, making it ideal for both prototyping and scalable production.

Model	Specifications
CNC mill Colchester Storm VL1000 Vertical Machining Centre	Machining envelope*: 1020 mm (X), 510 mm (Y), 560 mm (Z) Accuracy: 0.025 mm *Machine can accommodate larger work pieces, please contact us to discuss your requirements.
CNC lathe Colchester Alpha 1460XS	Maximum machining length: 1500 mm Maximum diameter: 460 mm



5-Axis Machining

The MMW features a state-of-the-art 5-axis CNC machining centre, offering simultaneous movement along five axes for unmatched precision. This advanced capability enables the creation of intricate parts with tight tolerances and complex contours. By reducing setup time and boosting efficiency, 5-axis machining is ideal for high-precision, multi-faceted projects.

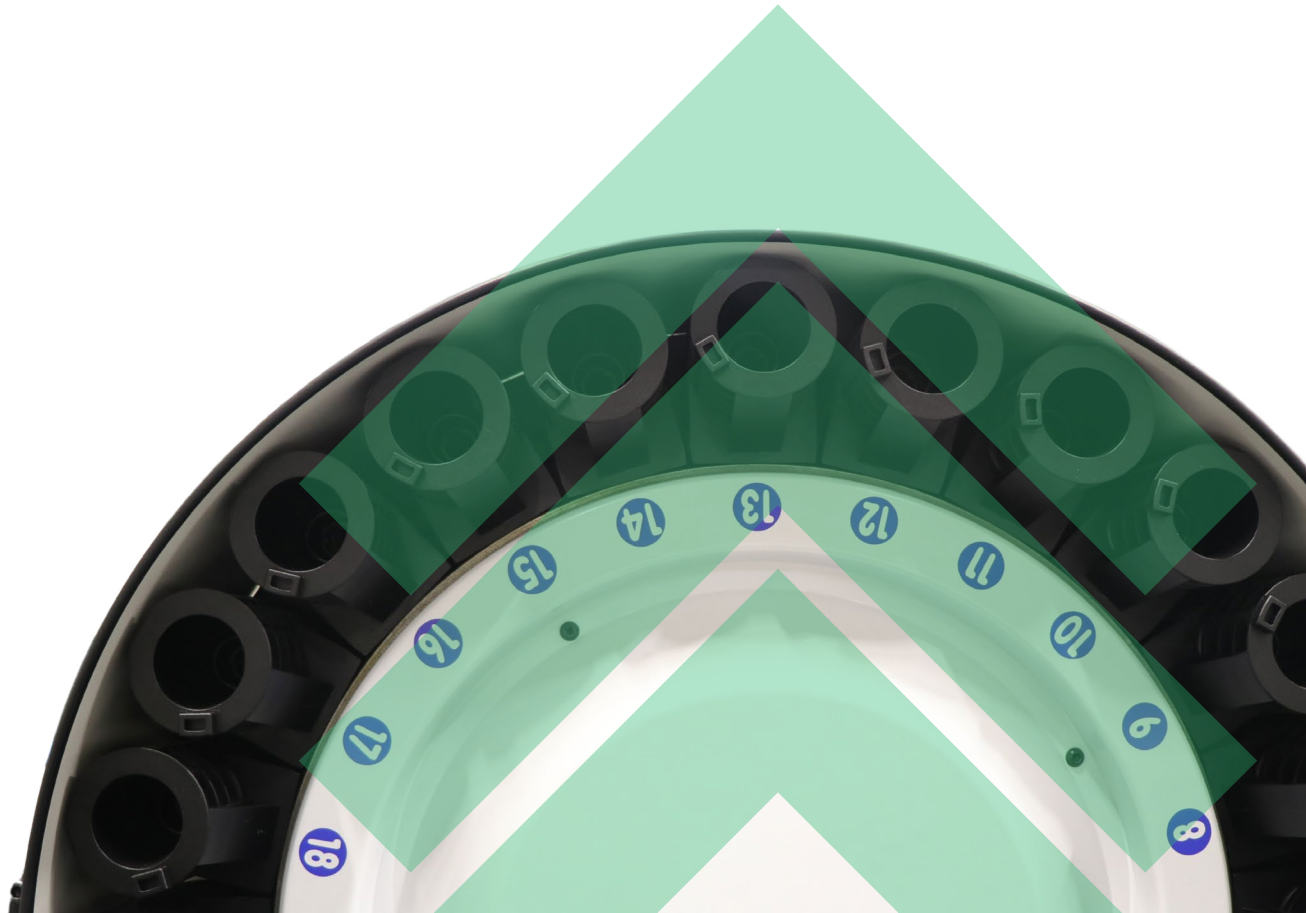
Model	Specifications
5-Axis CNC machining centre Mazak Integrex i-450HS	Maximum machining length: 1519 mm Maximum diameter: 670 mm Accuracy: 0.0001 degrees



Metal 3D Printing

Metal additive manufacturing builds parts layer by layer from digital models, enabling the creation of lightweight, complex structures beyond the reach of traditional methods. Compatible with a range of metal alloys, this process supports rapid prototyping, custom part production, and optimised design—with minimal material waste and reduced assembly needs.

Model	Specifications
Metal 3D printer Markforged Metal X Gen 2	Printing capacity: 300 mm (X) x 220 mm (Y) x 180 mm (Z) Available materials: Stainless Steel, Tool Steel, Inconel, Copper



Partner with us

TRaCE is looking to partner with trailblazing start-ups, scale-ups, and larger enterprises committed to accelerating the commercialisation of clean energy solutions to support the energy transition.

A suite of existing and new labs and workshops at the University of Newcastle and UNSW Sydney are equipped with a range of the latest manufacturing and prototyping equipment to help you take your technologies to market.

By partnering with TRaCE, you can also gain access to specialist advice, research and project management support, and matched funding.

Trailblazer for Recycling and Clean Energy (TRaCE)

The TRaCE program is supported by the Australian Government Department of Education through the Trailblazer Universities Program.

A collaborative partnership between



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Connect with us

For more information about the Modern Manufacturing Workshop, contact the TRaCE team at the University of Newcastle.

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For more information about TRaCE, contact hello@trace.org.au, or visit www.trace.org.au.



Metal 3D Printer
Markforged Metal X Gen 2