

LASER PROCESSING EQUIPMENT LIST



Welcome

The MTC is home to some of the world's most advanced laser technologies, providing future industry with leading manufacturing capabilities. Within this booklet, you can discover an array of equipment housed within our facilities, along with technical specifications. Launched in 2010, the MTC has been the hub for laser-based processing, covering surface engineering, advanced machining and material joining for many organisations across the UK. If you require any further information about our equipment or facilities, get in touch by e-mailing laser@the-mtc.org

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Laser Cutting and Drilling

DMG LT50

Equipment Specification



DMG LASERTEC 50 (LT50)

Laser source	QCW fibre laser
Average output power	2 kW
Wavelength	1070 nm
Beam Delivery	Fixed Beam
Spot size	80 μm - 300 μm
Pulse duration	0.1 – 10 ms
Axis stages	5-axis
Travel X,Y, Z	500 x 500 x 700 mm
Max. table load	150 kg [3-axis], 14 kg [5-axis]
Table diameter	200 mm

Laser Cutting and Drilling

InnoLas Single Mode Fibre Laser System

Equipment Specification



InnoLas Single Mode Fibre Laser System

Laser source	CW/modulated Ytterbium fibre laser
Average output power	2 kW
Wavelength	1070 nm
Beam Delivery	Fixed Beam
Pulse duration	Modulation available to 10 kHz
Spot size	14 – 100 μm
Axis stages	4-axis
Travel X,Y, Z	400 x 400 x 250 mm
Max. table load	40 kg [3-axis], 20 kg [4-axis]

Hybrid Laser Cutting and Drilling

Synova Waterjet Guided Laser System

Equipment Specification



Synova Water Jet Guided Laser system (LCS305)

Laser source	Diode Pump Solid State Nd:YAG
Maximum average power	400 W
Wavelength	532 nm
Beam Delivery	Fixed Beam
Pulse frequency	10 – 40 kHz
Pulse duration	200-600 ns
Axis stages	5-axis
Water jet diameter (approximate beam diameter)	50 μm – 120 μm

Laser Texturing and Micromachining

Picosecond Laser

Equipment Specification



Laser Processing Cell	
Maximum output power	268 W
Wavelength	1064 nm
Frequency	8 MHz
Spot size	20-53 μm
Pulse duration	10 ps
Maximum Pulse energy	0.54 μJ
Beam quality, M^2	1.2
Beam diameter	5.3mm

Laser Texturing and Micromachining

GFMS P400U

Equipment Specification



GFMS P 400 U	Nanosecond laser	Femtosecond laser
Laser source	Ytterbium pulsed fiber laser	Fibre laser
Average output power	30 W \pm 5%	20 W \pm 5%
Wavelength	1064 nm \pm 1%	1030 nm
Beam Delivery	Galvo Scanner	Galvo Scanner
Frequency	1.6 kHz – 2000 kHz	500 kHz – 2000 kHz
Spot size	50 μ m	50 μ m
Pulse duration	up to 200 ns	400 fs – 5 ps
Pulse energy	1 mJ at T=200 ns	40 μ J
Axis stages	5-axis	5-axis
Travel X,Y, Z	600 x 400 x 300 mm	600 x 400 x 300 mm
Beam quality, M²	1.84	1.14
Payload	50 kg [3-axis], 4 kg [5-axis]	50 kg [3-axis], 4 kg [5-axis]

Laser Polishing and Peening

SEAMLESS Cell

Equipment Specification



SEAMLESS Cell	Polishing Laser	Peening Laser
Laser source	YLR-500-MM-AC fibre laser	LPY Nd:YAG laser
Average output power	500 W	-
Wavelength	1070 nm	1064 nm
Beam Delivery	Galvo Scanner	Galvo Scanner
Frequency	N/A	10 Hz
Spot size	300 μm	12.5 mm
Pulse duration	N/A 40 μs -20 ms	10-13 ns
Pulse energy	N/A	2 J
Beam quality, M^2	1.1	<3.5
Robotic system	6-axis ABB Robot	6-axis ABB Robot

Laser Welding

20 kW Laser Cell

Equipment Specification



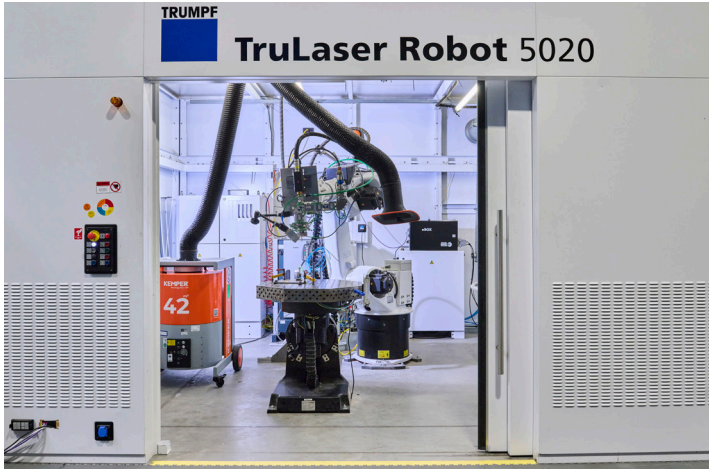
20 kW Laser Cell

Laser source	YLS-20000 Ytterbium laser
Average output power	20 kW
Wavelength	1082 nm
Beam Delivery	Galvo scanner and fixed beam
Frequency	Up to 5 kHz
Spot size (nozzle)	Nozzle: 333 μm , 500 μm , 1000 μm Scanner: 317 μm , 476 μm , 952 μm
Pulse duration	0.2-10 ms
Powder mass flow	~5 kg/h maximum
Litre Capacity	4 L
Wire size	0.8 mm, 1.2 mm, 1.6 mm
Hot wire	Yes
Robotic system	ABB IRB6700
Working envelope	3 m x 3 m
Payload	2000 kg [Twin axis manipulator], 5000 kg [Single axis manipulator]

Laser Welding

Trumpf Laser Cell

Equipment Specification



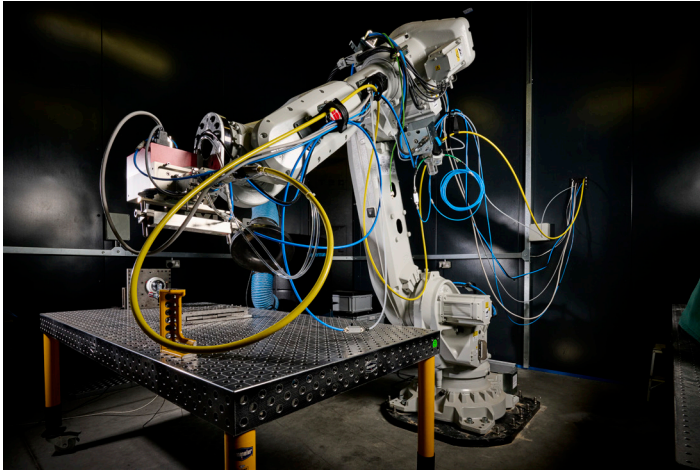
TruLaser Robot 5020

Laser source	TruDisc 3302 disk laser
Average output power	3.3 kW
Wavelength	1070 nm
Beam Delivery	Galvo scanner
Frequency	Up to 5 kHz
Spot size	40 μm
Pulse duration	0.2-10 ms
Powder mass flow	~5 kg/h maximum
Litre Capacity	4 L
Wire size	0.8 mm, 1.2 mm, 1.6 mm
Hot wire	Yes
Robotic system	6-axis KUKA robot, tilt/turn table and semi-automated production turn table

Laser Welding

Blue Laser Cell

Equipment Specification



Bluelaser Cell

Laser source	LDMblue 1500-300
Average output power	1.5 kW
Wavelength	445 ± 20 nm
Beam Delivery	Galvo Scanner
Spot size	700 µm
Beam quality	33 mm mrad
Robotic system	6-axis ABB robot

Laser Welding, Drilling and Cutting

IPG Multiaxis Cell

Equipment Specification



IPG Multiaxis Cell

Laser source	QCW Ytterbium Laser
Average output power	450 W
Wavelength	1070 nm
Beam Delivery	D30 wobble head or Microcutting head
Spot size	100 μm
Pulse duration	Modulation available to 5 kHz
Max pulse energy	45 mJ
Travel X,Y, Z	500 x 300 x 300 mm
CNC	5-axis

Laser Cutting

Lasercutting Bed

Equipment Specification



Lasercutting Bed

Laser source	C4000i-C CO2 Laser
Average output power	4000 W
Wavelength	10.6 nm
Frequency	5-33 kHz
Spot size	At exit shirt < \varnothing 27 long < \varnothing 24 long
Pulse duration	Up to 20 μ s
Travel X, Y	12.1 m x 4.1 m
CNC	Gudel XYZ CNC Gantry
Robotic system	M-20iB 6 axis robot
Working envelope	12 x 4 x 16 m

Laser Cleaning

CLEANSE Cell

Equipment Specification



CLEANSE Cell

Laser source	Rigel U90 diod pump solid state laser
Power	90 W
Wavelength	355 nm
Beam Delivery	Galvo Scanner
Frequency	10 kHz
Spot size	140 μm
Pulse duration	50 ns
Pulse energy	8 mJ
Beam quality, M^2	< 25

Laser DED

Meltio M450

Equipment Specification



Meltio M450	
Laser Type	6 x 200W, direct diode lasers
Laser Power	1200 W
Laser Wavelength	976 nm
Beam delivery	Fixed beam
Hot wire	Yes
Wire Materials	Stainless steel, carbon steel, titanium alloys, Inconel (in development: copper, aluminium)
Wire size	0.8 - 1.2 mm
Powder Materials	Stainless steel, carbon steel, Inconel (in development: copper)
Powder size	49 - 90 μ m
Print Envelop (XYZ)	150 x 170 x 425 mm

ARC Welding

FANUC Cell

Equipment Specification



Fanuc Cell	
Source Type	Electrical Arc
Process Type	Gas Metal Arc (GMA) Plasma Transferred Arc (PTA) Gas Tungsten Arc (GTA)
Machine Type	Fronius cold metal transfer (CMT) Fronius TPSi Fronius magicwave 5000 GTAW BOC Linde Arcline Plasma
Maximum power	500 amp
Feedstock type	Solid wire (0.8 mm, 1.0 mm, 1.2 mm, 1.6 mm)
Build rate	3 kg/hr – 7 kg/hr
Robotic system	3 x Fanuc M20iA
Working envelope	3.5 m x 4.8 m
Payload	2 x 500 kg dual axis manipulator



To find out more visit our website www.the-mtc.org
Or email us at laser@the-mtc.org