

Technology equipment





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Institute for Nanomaterials, Advanced Technologies and Innovation

3D Printer Objet Connex 500

3D print – technology PolyJet Matrix

System Objet modelling from ABS-like material for larger and accurate models.

Technical parameters:

- Maximal dimensions: 490 x 390 x 200 mm
- Layer thickness: 0,016 or 0,03 mm
- Accuracy: 0,1 mm
- Up to 114 different materials – **combinations of 2**
- Model & prototypes are firm, dimension stabile, easy for surface adjustment.

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3D printer Dimension SST 768

3D printing – technology FDM

System Stratasys, for quick modeling from ABS materials

Technical parameters:

- Maximal dimensions: 203 x 203 x 305 mm
- Layer thickness: 0,25 nebo 0,33 mm
- Accuracy: 0,1 mm
- Models & prototypes from ABS materials are firm, stabile & easy for surface adjustment…
- Models are useful for visualization, testing, assembly tests as well as functional parts.





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MK - Mini

Vacuum casting chamber

Vacuum casting system MK for Rapid Prototyping a Rapid Tooling.

- Maximal dimensions : 450 x 470 x 400 mm
- Max. weight: 1,4 kg

- Development of silicon moulds & patterns.
- Simple method of prototype production before making expensive metal tool.
- Vacuum casting resins allow similar features as most of plastic or other materials.
- Casted parts may serve to mechanical testing, shape checking, customer evaluation etc.

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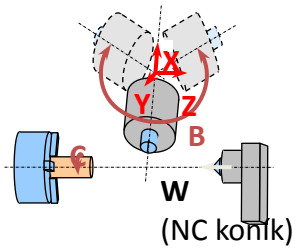
Mazak Integrex 100-IV

Turn-mill machining centre

Technical data:

- 5 simultaneous axis – X, Y, Z, B, C
- Tool clamping in indexed milling spindle
- Tool holder Capto C6
- Hollow in spindle Ø 44 mm
- Rapid 30 m/min, C axis 555 ot/min
- Feed 2 m/min, C axis 2000 °/min
- Programming – workshop MAZAK Mazatrol, a EIA/ISO standard

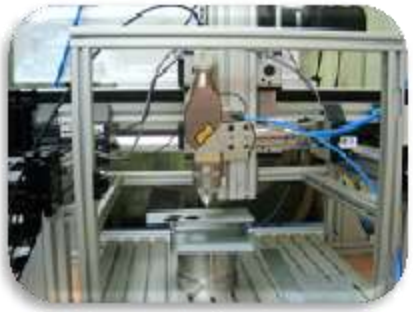
Max. work Ø dia. (axis X) [mm]	Max. work length *(axis - Z)* [mm]	Cross feed *(axis – Y)* [mm]	Tool head swing *(axis B)* [°]	Max. spin speed [rpm]	Max. tool speed [rpm]
545	570	±70	-30/+195	6000	12000



Lao 400W

Laser cutting system

- System Lao for cutting of different material sheets
- Fibre glass- ytterbium laser, wave length 1080nm
- Cutting of steel sheet mat. up to. 4 mm
- Max dimension 1000 x 1000 mm, cut general 2D shapes CNC controlled



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NS Line 1WS500U - Nanospider

Industrial production of nanofibers

The device uses principle and technology of electric fiber spinning. Uses solutions of polymers in electrostatic field of high voltage for production of nanofibers. High voltage is generated between two electrodes. Both electrode are connected to the high voltage source.

The difference between traditional needle-electric fiber spinning and NS is no use of needles, rather usage of free polymer level on the surface of fiber spinning electrodes.

Technical data	NS 1WS500U
Length of fiber spinning electrode	500mm (7,87'')
Maximum tension for fiber spinning electrode	positive 60 kV DC
Maximum tension for collecting electrode	negative40 kV DC
Maximum potential difference	100 kV DC
Maximum power for fiber spinning electrode	5 mA
Maximum power for collecting electrode	7,5 mA
Air-flow	max.200 m^3/h

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Quorum Q150R ES

Rotary-pumped coating system

Compact rotary-pumped coating system suitable for SEM sputtering with noble metals- eg gold (Au), gold/palladium (Au/Pd) and platinum (Pt) - and for carbon coating SEM specimens for EDS and WDS.

- Layer thickness monitor
- Metal sputtering or carbon coating
- Carbon fiber coating
- Advanced design carbon evaporation gun

PIM (CIM, MIM) – Powder Injection Moulding

Injecting machine ARBURG 270S 400-100 with robot kiln for process CIM, MIM

Technical data:

Plastification performance (PS)	8 kg/h
Injected amount	100 cm^3/s
Lift capacity	49 cm^3
Max. weight of product (Euromap 19)	45 g
Specific injected pressure	2000 bar
Closing strength	400kN
Opened molding device range	350 mm
Built-in height of form min	200 mm
Size of clamping plates	380x380 mm
Distance between columns	270x270 mm

Folding press AHPS

CNC folding press AHPS 2104 x 60 output 5,5 kW.

Technical data:

Length of folding ledge:	2000 mm
Max. strength of press	640 kN

Multimatrix for angles 85°and 88° in full length of press
Multimatrix for sharper angles 60° in full length of press
Upper instrument for angles around 90° in full length of press
Upper instrument for sharper angles in full length of press
Hemming instrument – upper and lower set in length 800

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11016S Clasic CZ

High temperature electric resistance kiln

Technical data:

Kiln is equipped with inert gas

- Outside dimensions: 1000 × 1100 × 2000 mm
- Inner dimensions: 450 × 600 × 400 mm
- Max. temperature 1550°C

System of cooling by servo controlled drop manually or programmable from regulator, air flow

- Gas management rotametr
- Usable gas argon, Natrium, CO2
- Speed of heating: max. 200°C/h, mn. 10°C/h
- Speed of cooling: max. 150°C/h, min. 10°C/min
- Speed of start and cooling: adjustable by 0,1°C/min

High temperature electric resistance kiln designed for temperature processing materials to 1550 °C by resistance heating.

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Vacuum deposition chamber - RF PACVD/MS

Radio frequency plasma assisted chemical vapor deposition/magnetron sputtering

Technical specifications:

Vacuum deposition chamber in the shape of a cylinder: inner diameter 411 mm, height 393 mm

RF generator 13,56 MHz, max. power – 2000 W

Magnetrons HV– 3 pieces:

- Typical operating conditions AC, DC, pulsed, RF,
- Possibility of changing the angular position of each magnetron
- Possibility to change the position of each magnetron up and down
- Power supplies for magnetrons :
- Regime: AC, DC pulsed
- Max. power 1000 W

Measurement of sample temperature using a thermocouple (max.1000 ° C) pieces of gas mass flow controllers

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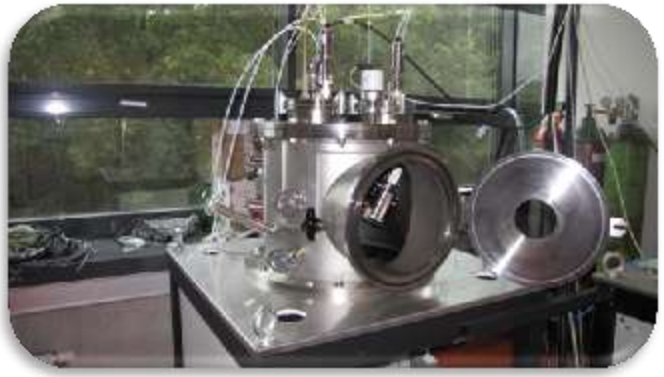

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