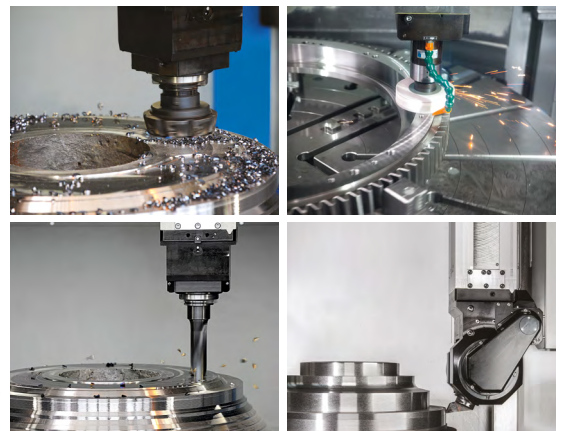
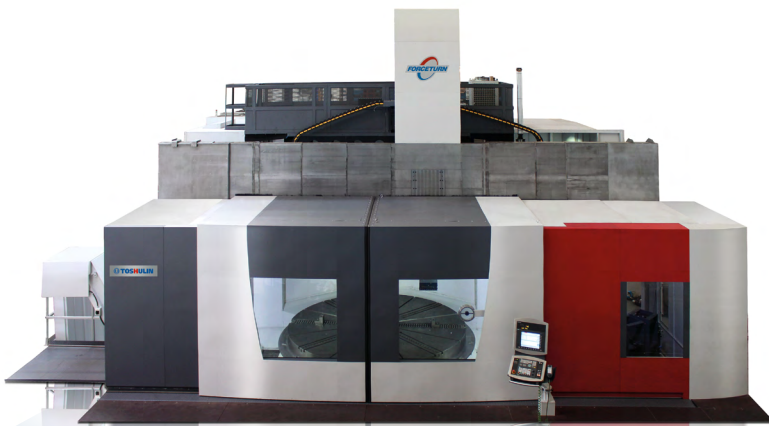


Information about Manufacturing Possibilities at TOSHULIN, a.s.

Vertical lathes

FORCETURN 4000
EXPERTURN 3000
POWERTURN 2000
BASICTURN 2000
SKIQ 16
BASICTURN 1250

- Maximum workpiece diameter 5 000 mm, workpiece height 2 500 mm.
- The machines are specified for high-efficient machining by means of turning, drilling, milling and grinding operations. It is possible to machine inside as well as outside cylindrical, conical and shaped surfaces and it is possible to cut threads. There are measuring probes available to the machines.



Machining centres

HECKERT HEC 800 X5

- 800 × 800, travels 1 450 × 1 300 × 1 300; A-axis = -45° - +91°, B-axis = 360°; position setting accuracy of axes 0.004 mm

MORI SEIKI NH8000DCG

- 2 pallets 800 × 800, travels 1 400 × 1 200 × 1 350, B-axis 360 degrees, divided by 0.001 degree

TAJMAC MCFV 2080

- 2 machines, travels 2 000 × 800 × 500 mm

MCFV 1260

- 2 machines, travels 2 000 × 800 × 500 mm

TAJMAC H63

- 2 machines, table dimensions 800 × 300, travels 1 010 × 800 × 1 010 mm; B-axis 360 degrees



Turning machining centres

MAS S80i

- maximum flange diameter 430 mm, maximum shaft dimensions $\varnothing 370 \times 1\,000$ mm

MORI SEIKI NL 2500

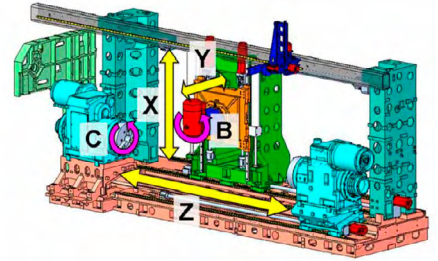
- maximum dimensions $\varnothing 356 \times 705$ mm, Y-axis ± 50 mm, maximum diameter of bars 80 mm

MORI SEIKI NL 3000

- maximum dimensions $\varnothing 420 \times 2\,123$ mm, Y-axis ± 60 mm, maximum diameter of bars 90 mm

MORI SEIKI NT6600 DCG/6000CS

- maximum dimensions $\varnothing 1\,070 \times 6\,076$ mm, Y-axis ± 330 mm, B-axis $\pm 120^\circ$
- drilling of deep holes in dependence on tooling



Gantry machining centre

ZIMMERMANN FZ 42

- | | | | |
|-----------------|-----------|----------------|-----------|
| ■ table length | 11 500 mm | working length | 10 000 mm |
| ■ table width | 5 000 mm | working width | 5 000 mm |
| ■ travel height | 2 780 mm | working height | 2 000 mm |



Horizontal boring and milling machines

WHQ 13 CNC

- X = 3 500 mm, Y = 2 350 mm, rotary table $2\,000 \times 1\,800$ mm

WD 130 with indication

- X = 5 500 mm, rotary table $2\,000 \times 1\,800$ mm

W 160 with indication

- X = 6 000 mm, rotary table $3\,500 \times 4\,000$ mm



Plano-milling machine

FRFQ 350

- maximum workpiece dimensions $4\,000 \times 2\,200 \times 17\,000$ mm



Lathes

- maximum diameter 700 mm, length 6 000 mm

Grinding machines

Slideway grinding machines

- maximum workpiece dimensions 2 200 × 2 000 × 10 000 mm

Surface grinding machine BRH

- with the magnetic clamping plate 500 × 1 500 mm

Grinding machine BUC 63

- maximum diameter 600 mm, length = 4 000 mm, grinding spindle for holes, length = 700 mm

Erwin JUNKER – GRINDING Allround

- length = 800 mm, maximum diameter 600 mm

Spline shaft grinding machine

- maximum workpiece length = 850 mm, spline length = 500 mm, maximum spline width 30 mm



Measuring equipment

Five-Axis Continuous Scanning Head REVO – 2

- five-axis scanning
- five-axis contact measuring
- scanning speed by means of the motion of the probe REVO up to 4000 points/second
- measuring of holes by means of contact points, circular scans or spiral scans
- data on the shaped surfaces and edges can be recorded by the quick head motion
- five-axis measuring machine
- maximum dimensions of the measured part:
 - X = 1 088, Y = 2 235, Z = 858
- spatial accuracy:
 - $MPE(E_0) = \pm(5.5 + L / 300) \mu\text{m}$ (L in mm)



API LaserTracker T3-40

- portable laser measuring camera
 - measuring parameters:

– measuring range	±40 m
– angle of rotation	±320 degrees
– angle of inclination	+80/-60 degrees
 - spatial 3D accuracy:

– static	±5 ppm (2 sigma)
– dynamic	±10 ppm (2 sigma)
 - temperature, pressure and material compensation
- utilization for measuring tasks:
 - setting and levelling of machine assembly groups on the foundation
 - measuring of bilateral perpendicularity and parallelity of particular components
 - measuring of shape deviations at large components (straightness, planeness, parallelity), especially at discontinuous surfaces



WENZEL LH 108

- three-axis measuring machine
 - maximum dimensions of the measured part:
 - X = 1 200 mm
 - Y = 1 600 mm
 - Z = 800 mm
 - spatial accuracy: 2,4um + I/300 (mm)



ZEISS Rondcom 44

- precise roundness measuring device determined to check shape deviations and position
- vertical axis – measured path 500 mm
- maximum load 30 kg



Laser

TruLaser 3040

- maximum dimensions of metal sheet: 2 000 × 4 000 × 20 mm
- gas: CO₂
- material: steel metal sheets



Paint shop

- area 400 m²

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