

## Stock of machine tools

### Large-batchmachining

| Turning lathes                                    |                                  |                                      |                     |                         |
|---|----------------------------------|--------------------------------------|---------------------|-------------------------|
| Name  | Type                             | Max diameter of machined parts (mm)  | Max length of parts | Other                   |
| Vertical single-spindle turning centers           | EMAG VL 5i                       | 270                                  | 175                 | grabbing-reversing unit |
| Twin-spindle automatic turning lathes             | MAZAK Quick Turn Nexus 250 II MS | 380                                  | 500                 | rotary tools            |
| Vertical automatic turning lathes                 | MAZAK Megaturn Nexus 900 M       | 920                                  | 800                 | rotary tools            |
| Vertical automatic turning lathes                 | MAZAK Megaturn Smart 600 M       | 600                                  | 550                 | rotary tools            |
| Vertical automatic turning lathes                 | HWACHEON VT - 450                | 460                                  | 450                 |                         |
| Vertical double automatic turning lathes          | DOOSAN V 450 T                   | 450                                  | 450                 |                         |
| Centre lathes                                     | HWACHEON CUTEX 160               | 300                                  | 170                 | rotary tools            |
| Centre lathes                                     | HWACHEON Hi – TECH 200 B         | 210                                  | 350                 | rotary tools            |
| Centre lathes                                     | MAZAK Quick Turn Nexus 250 II    | 380                                  | 515                 |                         |
| Centre lathes                                     | MAZAK Quick Turn Smart 250 M     | 380                                  | 515                 | rotary tools            |
| Centre lathes                                     | MAZAK Quick Turn Smart 250       | 380                                  | 515                 |                         |
| Surfacing lathes with gantry robot (dual spindle) | OKUMA 2SP-250H                   | 250                                  | 60                  |                         |
| Centre lathes                                     | TUJ – 560 Tarnów                 | 560 (above bed)<br>340 (above slide) | 1370                |                         |
| Turning lathes                                    | TZC 32N1                         | 630                                  | 200                 |                         |

| Milling machines                |                        |  |   |
|---------------------------------|------------------------|--|---|
| Name                            | Type                   | Max dimensions of machined parts or table dimensions | Other                                   |
| 5-axis vertical milling centers | MAZAK Variaxis i – 600 | detail Ø 700 x 450                                   | full 5-axis                             |
| Vertical CNC machines           | OKUMA Eurocenter V50   | axis travel 1020 x 510 x 525                         | 4 <sup>th</sup> axis<br>max Ø 280 x 600 |
| Vertical CNC machines           | OKUMA MB-46 VAE        | axis travel 560 x 460 x 460                          |   |
| Vertical CNC machines           | TOPPER TMV-850A        | axis travel 850 x 450 x 530                          |   |
| Vertical CNC machines           | TOPPER QVM -610A + APC | axis travel 610 x 410 x 460                          |   |
| Vertical CNC machines           | FYJ                    | axis travel 1280 x 425 x 475                         |   |
| Vertical CNC machines           | DEPO MCFV 1060 NTD     | axis travel 1016 x 610 x 760                         |   |

| Gear hobbing machines    |                       |                         |        |
|--------------------------|-----------------------|-------------------------|--------|
| Name                     | Type                  | Parameters              | Other  |
| CNC gear cutting machine | Gleason-Pfauter GP300 | Ø 300; nominal module 6 | 7 axes |



| <b>Gear shaping machines</b> |                        |   |              |
|------------------------------|------------------------|---|--------------|
| <b>Name</b>                  | <b>Type</b>            | <b>Parameters</b>   | <b>Other</b> |
| CNC slotting machine         | Gleason-Pfauter P300ES | Ø 300 (external teeth)<br>Ø 450 (max. diameter of the workpiece rotation)<br>nominal module 6 | 8 axes       |

| <b>Other</b>       |                 |                        |              |
|--------------------|-----------------|------------------------|--------------|
| <b>Name</b>        | <b>Type</b>     | <b>Parameters</b>      | <b>Other</b> |
| Broaching machines |                 | max force - 40 tonnes  |              |
| Balancing machine  | VR10AD-2        |                        |              |
| Marking machines   | TECHNIFOR CN101 |                        |              |
| Powder paint shop  |                 | max 1400 x 1700 x 1200 |              |

### Small-batch and single-piece machining

| <b>Machining</b>                                       |   |                           |
|--|---|---------------------------|
| <b>Name</b>  | <b>Characteristics</b>  | <b>Other</b>              |
| Bandsawing machines                                    | max diameter 440 mm   |                           |
| Slotting machines                                      | stroke up to 350 mm   |                           |
| Horizontal milling machines                            | table up to 390 x 1 500 mm  |                           |
| Vertical milling machines                              | table up to 400 x 2 000 mm  |                           |
| Milling-centering machines                             | up to Ø 160 x 900   | L <sub>min</sub> ; Ø =120 |
| Screwing machines                                      | steel up to M16; cast iron up to M20  |                           |
| Cylindrical grinder                                    | up to max Ø 250 or L max 1200   | max 250 kg                |
| Internal grinders                                      | Ø 40/ Ø 400 x 500<br>Ø 10/ Ø 160 x 200  |                           |
| Surface grinders                                       | L = 1000; Ø 1000  |                           |
| Spline grinders  | Ø 25/ Ø 125 x 200/1350  |                           |
| Center hole grinders                                   | Ø 160 x 1000  |                           |
| Face lathes  | up to Ø 1130 x 500  |                           |
| Centre lathes  | up to Ø 420 x 2500  |                           |
| Jig drilling machine                                   | table 800 x 400   |                           |
| Drilling machines                                      | up to Ø 50  |                           |
| Boring machines  | max boring Ø 700 mm<br>max body size 800 x 800 x 800  |                           |
| Hobbing machines                                       | up to module 12; max diameter 1 250 mm  | max number of teeth 400   |
| Fellows type slotting machines                         | module 1;25 – 10<br>outer diameter Ø 30/ Ø 1000 inner diameter Ø 120/ Ø 1000                | max rim width 150         |
| MAAG type slotting machines                            | min/max diameter of machined wheel 100/1200 min/max m 2/15<br>min/max number of teeth 8/350 | max width 320             |
| Gleason type planning machine for straight bevel gears | max diameter Ø 500; m10<br>min/max number of teeth 10/200                                   | max rim width 90          |
| Gear grinders  | max pitch diameter Ø 800; min diameter of roots Ø 30;<br>min/max m 1/14                     |                           |
| Electrical discharge machines                          | shift X/Y/Z 350/250/250<br>max. workpiece size 900x680x250 max. workpiece weight 400kg      |                           |



## Additional services implemented under stock of machines possession

| Additional Services   |   |       |
|---|---|-------|
| Machining with controlled rotation of the main spindle (C-axis) and the possibility of using rotary tools |   |       |
| Machining with automatic loading and with using spindle gripper and overfilling unit between machines     |   |       |
| Machining using 5 axes  |   |       |
| Grinding shafts with diameter to 300mm with the possibility of grinding to 8 surfaces in one cycle        |   |       |
| Cutting EDM   |   |       |
| Gear wheels production in hardened condition, it means, gear shaving excluding grinding                   |   |       |
| Gear wheels production with internal teeth and a gear straight and slanting oblique in a one clamping     |   |       |
| Production of thin-grooved wheels   |   |       |
| Tool making and assembly work   |   |       |
| Welding   | electric, gas and gas-shielded arc welding    |       |
| Heat treatment  | annealing, quenching and tempering, hardening |       |
| Box carburizing   |   |       |
| Induction hardening   | high frequency                                | 37 kW |
| Shot peening and sandblasting   |   |       |
| Painting  | powder and wet painting                       |       |