

## 3D and 2D measuring

### Leica 3D Laser Tracker LTD 709

World's most accurate Absolute Distance Meter

- combined uncertainty of a spatial length 1400mm observed in a dist. of 6.5m  $\leq \pm 0.076\text{mm}$

- Metrolog XG for Leica software



### Wenzel RSD 6200 / 3000 / 2100 MAN

Horizontal Arm Measuring Center

- 6200mm x 3000mm x 2100mm
- measuring accuracy  
U1=40+(L/30)  $\leq 200\mu\text{m}$   
U3=50+(L/25)  $\leq 140\mu\text{m}$   
U3 duplex=80+(L/20)  $\leq 200\mu\text{m}$
- Metrosoft CM Wenzel software



### Wenzel LH 1512

CNC Portal Design Coordinate Measuring Machine.

- working range:

x: 1500mm, y: 2500mm, z: 1200mm

- MPEe= 2,9+L/350  $\mu\text{m}$  [L in mm]
- Metrosoft CM Wenzel software



### Wenzel Smart CMM CNC

CNC Coordinates Measurement Machine.

- working range:

x: 500mm  
y: 450mm  
z: 400mm

- MPEe= 3.5+L/300  $\mu\text{m}$  [L in mm]
- Metrosoft CM Wenzel software



## CAD / CAM

### CAD / CAM

We are able to manufacture moulds due to our design and documentation in Catia V5 or according to the design from the customer. Programming for NC machines is created in Catia V5 and EdgeCam software.

### Data transmission formats

Data exchange could be realised by ISDN-Odette, e-mail, or on CD or DVD media. We are able to work with many 2D and 3D data types: \*.igs, \*.step, \*.model, \*.exp, \*.prt, \*.dxf, \*.dwg, etc.

## Additional technologies

### 8 welding stall

- FRONIUS Transpuls Synergic 500
- FRONIUS Variostar 357 - 2
- FRONIUS Variostar 457 - 2

Welding possibility from small sheet processing to large steel constructions. The welding stations have the possibility of pre-selection of welding regimes.

### Metal plate cutting

- CNC burning machine ARENA
- CNC plasma cutter PA 47
- Table shears NTA 3150/10A
- Piercer NELSON

### Heat treatment

- Hardening (temperature of material up to 1150°C)
- Case-hardening
- Soft annealing, stress relieving (furnace size 1000x3000x600mm)

### Metal finishing

- Sanding
- Paintwork
- Brown finishing



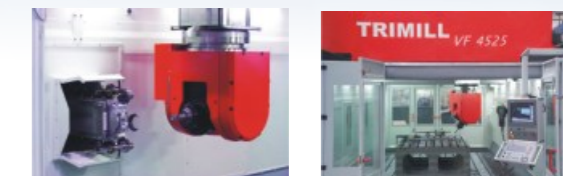
## List of machines and technologies TOOL SHOP

### 5-axis CNC machining center Trimill VF 4525

Manufacturer: TRIMILL a.s. Zlín – Czech Republic  
Control system: Heidenhain iTNC 530  
Controlled axis: X, Y, Z, B, C  
Clamping surface dimension (X, Y): 5 000 x 2 800 mm  
Motor power: S1/100% 25 kW  
High-frequency motor: 1-10 000 min<sup>-1</sup>  
Speed range: x = 4 500 mm  
Working range: y = 2 500 mm  
z = 1 250 mm



Travel speed:  
Feed / highspeed feed (X, Y, Z): 20/25m/min<sup>-1</sup>  
B axis: 6m min<sup>-1</sup>  
C axis: 4m min<sup>-1</sup>  
Integrated fork cutter head:  
B Working feed: -2 / + 95 °  
C Working feed: ± 185 °  
Machine accuracy by standard VDI/DGQ 3441  
Positional accuracy (X, Y, Z): max. 0,008 mm  
High-speed universal spindle IMT: up to 30 000 min<sup>-1</sup>  
Continuous power S1-100%: 10-12 kW  
Workpiece weight: max 10 000 kg/m<sup>2</sup>



### 5-axis CNC vertical machining center DEPOMILL

Manufacturer: TRIMILL a.s. Zlín - Czech Republic  
Control system: Heidenhain TNC 430 M  
Controlled axis: X, Y, Z  
B, C (indexed)  
Spindel RPM: Master spindle: 1 - 12 000 min<sup>-1</sup>  
Satellite spindle: 10 - 30 000 min<sup>-1</sup>  
Working range: x = 2 000 mm  
y = 1 200 mm  
z = 800 mm  
Working feed: 0-30 000 mm/min  
B - axis: +60 / -90 °  
C - axis: 180 °  
Working table: 2 300 x 1 600 mm  
Work piece weight: max. 12 000 kg  
Tool changer: 10 tools



### 5-axis CNC DMU 50 DECKEL MAHO

Manufacturer: DECKEL MAHO - Germany  
Control system: Heidenhain iTNC 530  
Controlled axis: X, Y, Z, swivel rotary table  
Spindel RPM: Master spindle: 20 - 8 000 min<sup>-1</sup>  
Working range: x = 500 mm  
y = 450 mm  
z = 400 mm  
Working feed: 10 000 mm/min  
Swivel rotary table with digital drive  
Table rotation: 360°  
Table swivel range: 115°(-5°/+110°)  
Working table: Ø630 x 500  
Work piece weight: max. 200 kg  
Tool changer: 16 tools



## CNC vertical machining center MCFV 1060 NT

Manufacturer: ZPS a.s. Zlín - Czech Republic  
 Control system: Heidenheim TNC 426 CB  
 Working range: x=1016 mm, y=610mm, z=760mm  
 Working feed: 0-20 000 mm/min  
 Position accuracy: 0,008 mm  
 Repeated accuracy: 0,006 mm  
 Clamping surface dimension: 1 270 x 590 mm  
 Max. work piece weight: 1016x590x410mm, 900 kg  
 Tool changer: 24 tools



## 7-axis machining centre with movable column TOS FU(Q)

Manufacturer: TOS Kuřim - Czech Republic  
 Control system: Heidenheim TNC 530i  
 Controlled axis: 7  
 Spindel RPM: 1 - 18 000 min-1  
 Working range X,Y,Z: 5 000mm, 1 500mm, 2 500 mm  
 Working feed X,Y,Z: 0 - 20 000 mm/min  
 Pivoted table: 2 000 x 3 000 mm  
 Work piece weight: 20 000 kg  
 Changeable cutter heads: 4  
 Tool changer: 40 tools



## 6 x CNC universal machining center MH 1000 S, MH 700 S, 600 S, 500 E

Manufacturer: MAHO AG - Germany  
 Control system: Philips 432  
 Tool chnager: 20 tools  
 Working range: x = 700 mm  
 y = 500 mm  
 z = 600 mm  
 Clamping surface dimension: 630 x 500 mm



## CNC drilling machine Pegard Precivit 2

Manufacturer: Pegard – Belgium  
 Control system: Siemens Sinumerik 840D  
 Working range: X = 1 800 mm, Y = 1 800 mm, Z = 1 200 mm  
 W = 940 mm, B = 360 grade  
 X,Y,Z: 5 000 mm/min  
 W: 6 000 mm/min  
 B: 3 RPM  
 Spindle drive: AC 28kW  
 RPM: up to max. 1 000 min<sup>-1</sup>



## CNC horizontal drilling and milling machine WHD 130

Manufacturer: TOS Varnsdorf a.s. - Czech Republic  
 Control system: Heidenheim TNC 415  
 Working range: x = 4 000 mm  
 y = 2 500 mm  
 z = 1 400 mm  
 Max. workpiece weight: 16 000 kg  
 Clamping surface dimension: 2 500 x 2 200 mm



## AZK C442, 3-axis CNC for graphite electrodes

Manufacturer: AZK, Czech republic  
 Control system: Comets, PC  
 Working range: 400 mm x 400 mm x 200 mm  
 Spindle revolutions: 2000-25000 min-1  
 Working feed: max. 3m/min.  
 Table dimensions: 500 x 500mm  
 Max. workpiece weight: 20kg



## CNC Multitechnology center

Type: Oerlikon Taurus 3 - Switzerland  
 Control system: Sinumerik 850 M  
 Working range: x=1220 mm, y=820 mm, z=610 mm  
 Tools clamping: ISO 50  
 RPM: 20 - 5 600 U/min  
 Feed: 1 - 5 600 mm/min  
 Rapid feed: 12 m/min  
 Working table: 1 120 x 1 070 mm  
 Work piece weight: 2 500 kg



## CNC EDM machine Charmilles Roboform 84

Manufacturer: Charmilles Technologies Switzerland  
 Working range: x = 800 mm; y = 600 mm; z = 550 mm  
 Max. workpiece weight: 4 200 kg  
 Basin dimensions: 1 500 x 1 000 x 475 mm



We are using EROWA  electrode holders.

## CNC EDM machine Deckel 25

Manufacturer: Deckel - Germany  
 Working range: x = 600 mm  
 y = 400 mm  
 Max. w.s. workload: 1 000 kg  
 Max. quill workload: 150 kg  
 Max. workpiece height: 260 mm



## 15 x Vertical milling machine

Working range: x = 1 200 mm  
 y = 800 mm  
 z = 800 mm

## 5 x Horizontal milling

Axis distance from pivot: 0 - 1 120 mm  
 Table working surface: 1 250 x 1 250 mm  
 Longitudial w.s. motion: 1 250 mm  
 Cross w.s. motion: 1 600 mm  
 Max. workpiece weight: 3 000 kg

## 2 x Vertical flat surface grinder

Table dimension: 700 x 1 200 mm  
 Max. workpiece height: 415 mm  
 Max. workpiece weight: 1 400 kg

## 5 x Flat surface grinder

Table dimension: 400 x 1 000 mm  
 Max. workpiece height: 400 mm  
 Max. workpiece weight: 500 kg

## CNC EDM Charmilles Robofil 310

Manufacturer: Charmilles Technologies Switzerland  
 Working range: 400 x 250 mm  
 XY path: 400 x 250 mm  
 UV path: 0 - 400 mm  
 Z path - programmable: 1 000 kg  
 Max. workpiece weight: 850 x 500 x 400 mm  
 Max. workpiece dimension:



## 8 x centre lathes

Perch diameter over support: 720 mm  
 Perch diameter over bed: 900 mm  
 Perch length: 3050 mm

## 5 x Centre grinder (universal)

Peach diameter: 600 mm  
 Max. workpiece length: 3 000 mm  
 Max. workpiece weight: 300 kg