+ 50

Machines in ZVVZ workshops

Complete processing

from the preparation room to the paint shop

More than

70 years of tradition


**ZVVZ MACHINERY, a.s.**

Sažinova 888, Milevsko, 399 01

info@zvvz.cz

+420 382 551 111

www.zvvz.cz


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# MECHANICAL TECHNOLOGY

# MACHINERY OVERVIEW


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# MATERIAL PREPARATION ROOM


## BOSCHERT ECCOLINE ROTATION
**CNC Cutting-Out Press**

› Maximum size: 1,500 x 3,000 mm
› Maximum thickness: 6 mm (with the material St 37)

The machine is used for cutting-out the parts using the punches. The machine is suitable for cutting the parts with more holes.


## LASER L 6030S (2 MACHINES)
**Manufactured by Trumpf**

› Maximum size: 2,000 x 6,000 mm
› Maximum thickness: 20 mm (with the material St) 37
› Maximum thickness: 12 mm (15 mm)
(with the material 1.4301)
› Maximum thickness: 8 mm (aluminium alloy AlMg3)

The machine is used for cutting of precise parts.
The smallest cut hole equals the metal sheet thickness.

## PROXIMA CNC FLAME CUTTING MACHINE
**Manufactured by VANAD**

› Maximum size: 4,000 x 12,000 mm
› Maximum thickness: 200 mm (with the material St 37)

The machine is used for flame cutting of thicker metal sheets.

## PROXIMA CNC PLASMA CUTTING MACHINE

› Maximum size: 2,000 x 8,000 mm
› Minimum size: 250 x 250 mm
› Maximum thickness: 50 mm (with the materials St 11373.1, 17246.1, alluminium alloys)

The machine is used for plasma cutting of parts.

## HHP 10 PLANER

› Minimum width of clamped part: 200 mm
› Minimum length of clamped part: 700 mm
› Maximum length of planed part: 9,400 mm
› Maximum thickness of metal sheet: 50 mm
› Maximum chip cross-section: 50 mm2
› Maximum angular displacement of cutter head: 35 degrees
› Number of knives: 2
› Maximum weight of planed part: 3,000 kg

## ROLLER BENDING MACHINES ROUNDO R-5-S, SWISSTOOL, PELS, XZL 150/120

TPL min. 25 x 4 mm, ø 200 mm and higher
max. 120 x 25 mm, ø 1250 mm and higher
TL min. 20 x 20 x 3, ø 250 mm and higher (with outer flange)
max.120 x 120 x 12 mm, ø 1250 mm and higher
min. 20 x 20 x 3, ø 400 mm and higher (with inner flange)
max.100 x 100 x 12 mm, ø 1500 mm and higher
TI max. IPE 200 mm, ø 2000 mm and higher – vertical position
TU max. U 200 mm, ø 2000 mm and higher – vertical position
Roll pipes ø48, ø57, ø60, ø76, ø89, ø108, ø114, ø133

## FLANGE PUNCHING MACHINES

› Punched material width: 25 – 60 mm
› Maximum thickness of punched material: 10 mm (mat. 11375)
› Circular flanges from ø 0,225 mm to ø 1,400 mm – 2–32 holes – the number of holes must always be even
› Square flanges – in the rods of the length ranging from 125 mm to 2000 mm
› Punch diameters – 7, 8, 10, 12, 14, 15, 18, 19


## CNC PRESS BRAKE
**TRUMPF – type TruBend 5320**

› Maximum width of divided tool – 4,420 mm
› Controlled axes: Y, X1, X2, R, Z1, Z2.
› Pressing force is adjustable up to 320 t
› Two front tables with controlled lifting force – 2 x 250 kg
› Width between uprights - 3,680 mm, press opening – 420 mm
› Maximum stroke – 445 mm
› Matrix: opening 8–160 mm, load capacity: 40–150 t/m
› Punches: R1 – R20, load capacity: 60–250 t/m

# MECHANICAL WORKSHOP


## GASPARINI CNC PRESS BRAKE TYPE PSG 300/4000

› Maximum width of divided tool – 4,100 mm
› Controlled axes: Y1, Y2, X1, X2, R, Z1, Z2.
› Pressing force is adjustable up to 300 t
› Two front stops with the adjustable lifting force – 2x 100 kg
› Width between uprights – 3,600 mm, press opening – 450 mm
› Maximum stroke – 350 mm.
› Matrix: opening 8–160 mm, load capacity: 40–100 t/m
› Punches: R1 – R20, load capacity: 60–100 t/m

## SCHLICK
**Blasting machine for metallurgical materials**

› Maximum width of a part – 2,100 mm
› Minimum metal sheet thickness – 3 mm (with roller spacing of 400 mm)
› Maximum metal sheet thickness: 50 mm
› Minimum transport length of metal sheet – 1,200 mm (with roller spacing of 400 mm) and 2,000 mm (with roller spacing of 800 mm)
› Maximum profile size – IPB 1000
› Maximum height of a part – 500 mm

## CAR-TYPE FURNACE CAN 20.20.10/1

**Technical Parameters**
› Inside dimensions - working area
(1) Width: 2,000 mm
(2) Length: 2,000 mm
(3) Height: 1,000 mm
› Nominal temperature: 1,100 °C
› Temperature tolerances in a working area
(1) at 1,000 °C ± 5 °c
(2) at 600 °C ± 15 °c
› Temperature and cooling rise speed:
(1) Temperature rise speed: 150°c / hours.
(2) cooling (up to 300 °C) max. 150°c / hours.
› Car load rating: 4,000 kg

THE FOLLOWING EQUIPMENT IS ALSO AVAILABLE IN THE MATERIAL PREPARATION ROOM:
› **GASPARINI shears**
› **R.D.O. car-type furnace 10.25.10/11**
› **Presses –** hydraulic presses, eccentric presses
› **Saws –** max. profile width – 450 mm
max. profile height – 820 mm
angle 0°+-60°


## FVP 50 CNC
**Milling and drilling portal**

| | |
|---|---|
| › Control system: | HEIDENHAIN ITNC 530 |
| › Maximum lift of milling/drilling head – | Z axis – 600 mm |
| › Maximum transverse adjustment of milling spindle – | X axis – 1,000 mm |
| › Maximum longitudinal table adjustment – | Y axis – 1,400 mm |
| › Table working surface | 1,600 x 1,000 mm |
| › Maximum table load | 4,000 kg |


## MCFV 2080 CNC (2X)
**3-axis coordinate machining centre**

| | |
|---|---|
| › Control system: | r. v. 2008 – HEIDENHAIN iTNC 530<br>r. v. 2013 – HEIDENHAIN iTNC 530 |
| › Maximum lift of milling/drilling head – | Z axis – 810 mm |
| › Maximum transverse adjustment of milling spindle – | X axis – 2,030 mm |
| › Maximum longitudinal table adjustment – | Y axis – 810 mm |
| › Table working surface | 2,200 x 780 mm |
| › Maximum workpiece size | 2,030 x 810 x 730 mm |
| › Maximum table load | 2,010 kg |


## WHN 10 NC
**Horizontal 3-axis coordinate boring machine**

| | |
|---|---|
| › Control system: | HEIDENHAIN TNC 530 |
| › Maximum longitudinal table adjustment – | Z axis – 1,000 mm |
| › Maximum transverse adjustment of table – | X axis – 1,250 mm |
| › Maximum vertical spindle adjustment – | Y axis – 900 mm |
| › Table working surface | 1,000 x 1,120 mm |
| › Maximum table load | 4,000 kg |

## WHN 13 NC
**Horizontal 3-axis coordinate boring machine**

| | |
|---|---|
| › Control system: | MEFI CNC 856 |
| › Maximum longitudinal spindle extension – | Z axis – 800 mm |
| › Maximum transverse adjustment of table – | X axis – 1,250 mm |
| › Maximum vertical spindle adjustment – | Y axis – 900 mm |
| › Table working surface | 1,800 x 2,200 mm |
| › Maximum table load | 12,000 kg |

## MASTURN 550 / 1500 CNC
**Automatic lathe – 2x**

- Control system: HEIDENHAIN MANUALPLUS 4110
- Swing over bed 550 mm
- Swing over cross-slide 350 mm
- Distance between centres 1,600 mm
- Maximum diameter of rod material 80 mm
- Maximum workpiece weight 600 kg
- Tool head 8 positions


## MASTURN 70 / 3000 CNC
**Automatic lathe**

- Control system: HEIDENHAIN MANUALPLUS 4110
- Swing over bed 820 mm
- Swing over cross-slide 530 mm
- Distance between centres 3,000 mm
- Maximum diameter of rod material 105 mm
- Maximum workpiece weight 2,500 kg
- Tool clamping MULTIFIX C

## MULTICUT 500I S
**Turning and milling centre**

- Control system: SINUMERIK 840 D sl
- Max. swing over bed 1,030 mm
- Max. turning diameter B=0°/ B=45°/ B=60°/ B=90° 549 / 690* / 880* / 1030* mm
- Maximum milled profile 486 x 486 mm
- Maximum machining length 1,527 mm
- Maximum workpiece weight 800/1,600 kg
- Number of continuously controlled axes during machining 5

## SKQ 12 CNC
**CNC vertical lathe with 15 positions in the tool holder**

- Control system: SINUMERIK 840 D sl
- Clamping plate diameter 1,250 mm
- Maximum workpiece diameter – clamping in the hole 1,500 mm
- Maximum diameter of face turning 1,500 mm
- Maximum diameter of circumferential turning 1,250 mm
- Maximum workpiece height 900 mm
- Maximum workpiece weight 6,000 kg

## SKJ 63 A CNC
**CNC lathe (carousel)**

- ŘControl system: MEFI CNC 872iTD
- Maximum diameter of machining 6,300 mm
- Maximum workpiece height 2,500 mm
- Maximum workpiece weight 40,000 kg

## DKZ 4000
**Conventional vertical lathe (carousel)**

- PClamping plate diameter 3,500 mm
- Maximum diameter of machining 4,000 mm
- Maximum workpiece height 1,800 mm
- Maximum workpiece weight 25,000 kg

## SUA 100 / 7000
**Conventional shaft lathe with longitudinal and transverse measuring**

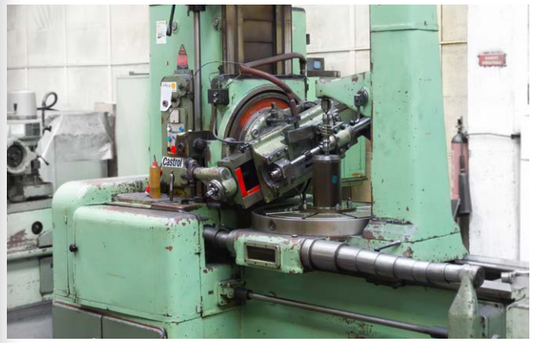
- OSwing over bed 1,000 mm
- Swing over cross-slide 650 mm
- Distance between centres 7,000 mm
- Maximum workpiece weight 1,000 kg

## HD 16/ 6000
**Double column planer**

- Workpiece height 1,600 mm
- Workpiece width 1,600 mm
- Workpiece length 6,000 mm
- Maximum workpiece weight 12,000 kg

## BUC 63/3000
**Centre grinder**

| | |
|---|---|
| › Maximum ground diameter | 630 mm |
| › Ground part length | 3,000 mm |
| › Maximum workpiece weight | 2500 kg |

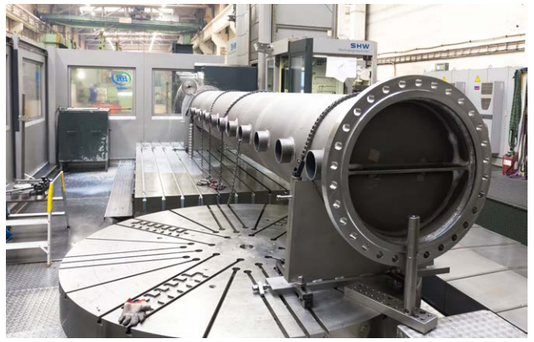


## FO 10
**Hobbing cutter**

| | |
|---|---|
| › Workpiece height | 600 mm |
| › Workpiece diameter | 1,000 mm |
| › Maximum module of gear | M 10 |
| › Maximum workpiece weight | 500 kg |

## HOV 63
**Slotting machine**

| | |
|---|---|
| › Workpiece height | 630 mm |
| › Workpiece diameter | 2,000 mm |
| › Maximum workpiece weight | 1000 kg |

## SHW-UNIFORCE 6
**Horizontal machining centre**

| | |
|---|---|
| › Control system: | SINUMERIK 840 D sl |
| › Start-ups: | X = 8,000 mm, Y = 2,600 mm, Z = 1,600 mm |
| › Clamping plate (10 m²) | 2,000 x 5,000 mm – 10t/m² |
| › Turning table Ø 2,500 mm W 1,500 | load rating 10t |

Universal milling head in orthogonal arrangement:

| | |
|---|---|
| › Clamping device: | SK 50, hSK 100 |
| › digital main drive motor with planetary gearbox | |
| › Head tilt range: | A axis: +90 – -90°<br>C axis: 360° |
| › Indexing: | 1° |
| › Drive power: | up to 60 kW |
| › Torque: | up to 2,300 Nm |
| › Standard revolution range: | 22 – 4,000 rpm |

Feeds:

| | |
|---|---|
| › Feed range: | 2 – 24,000 mm/min (Y and Z axis)<br>2 – 36,000 mm/min (X axis) |
| › Feed force: | up to 25 kN |
| › Drive type: | digital drives (AC servomotors) |
| › Acceleration: | 2 m/s2 |
| › Rapid feed: | 2 – 24,000 mm/min (Y and Z axis)<br>2 – 36,000 mm/min (X axis) |
| › Tool holder: | 66 places |
| › Special PICK-UP stations | number of tools 10 |

## THE FOLLOWING MACHINERY IS ALSO AVAILABLE IN THE MECHANICAL WORKSHOP:

- **milling machine FRC 50 NC**
- **centre lathe S 32 / 750**
- **centre lathe SV 18 / 1250**
- **centre lathe SU 63 A / 5000**
- **turret lathe R5**
- **vertical milling machine FA 4 U**
- **drilling machine VR 4A**
- **drilling machine VO 50**
- **drilling machine VR 6**
- **vertical lathe (carousel) SK 12**
- **vertical lathe (carousel) SK 25**
- **horizontal boring machine W 100 A**
- **centre grinder BHU 32 / 1500**
- **centre drilling machine with alignment FXLZD 160**
- **CNC/MANUAL MILLING MACHINE XYZ SMX 5000**

# FINAL PRODUCTION

## REDMAN
**Rolling line for manufacturing of collecting electrodes.**

- Rolled section types: ČS 1, ČS 8, ČS 11, SČS 1, ČSH 1, ČSH 2, V 1, ELEX (ZVVZ, BHA), STANDARD (Elbistán), SIGMA III and SIGMA VI
- Production of profile fence sheets.

## TUBOSEC

- Flame-cutting machine for straight piping with the diameter from 60 mm to 1,400 mm
- Maximum thickness of the straight cross-section: 12 mm, maximum cutting length: 3,100 mm
- Flame cutting of segments for elbows and Y-branches for adapting pipes
- Flame cutting of intersection on and outside the axis, flame cutting of pipe edges
- Flame cutting of holes of the diameter range 21 mm to 1,400 mm (round, oval and square), flame cutting under at an angle +-30°
- Flame cutting of prisms to the required length with dimensions ranging from 60x60 mm to 150x150mm

## FTV - 4, BUG-O
**Automatic welder for metal sheet setting**

- Max. weld length 4,000 mm (FTV-4), 3,100 mm (BUG-O)
- Maximum part size: 4,000 x 11,000 mm (FTV-4) 3,100 x 11,000 mm (BUG-O)
- Maximum metal sheet thickness – 5 mm for one-sided setting 8 mm for double-sided setting
- Minimum weld length recommended: 1.000 mm

## LONGLINE
**Automatic welder for longitudinal pipe welding.**

- Minimum piping diameter 125 mm
- Maximum piping diameter 1,600 mm
- Minimum piping length recommended 500 mm
- Maximum piping length 3,000 mm
- Maximum material thickness* 4 mm

*as per the order character, also the thicknesses up to 6 mm may be welded (“V” weld)

## VSV 311-3 M
**Automatic welder for longitudinal pipe welding.**

- Welding length 3,050 mm
- Welding length from 0.1 to 2 m/min

Circular piping:
- Piping diameter from the diameter 180 to 2,600 mm
- Thickness of stainless and low-alloy sheet steel 3–12 mm
- Aluminium ribs with the dimension up to 2,600 mm and thickness of 3-10 mm
- Minimum piping length recommended 500 mm
- NC control

## LHT 3535
**Automatic welder for longitudinal and circumferential welding**

- Welding methods: 131,135 (MIg/MAg)
- Welded diameter 1,200 – 2,600 mm
- Maximum length of longitudinal weld 4,000 mm
- Maximum length of welded product 8,000 mm
- Thickness of sheet steel: Fe a AKV – 2–5 mm, Al – max. 6 mm

## ROLL BENDING MACHINE FACCIN 4HEL 2126 NC

- Thickness of sheet steel max. 10 mm
- Thickness of sheet with pre-bending 8 mm
- Bent part diameter 300 mm
- Roller length 2,050 mm, total number of rollers 4
- Number of driven rollers 2
- Number of hydraulically adjustable rollers 3
- Upper roller diameter 240 mm
- Bottom roller diameter 20mm
- Direct drive of rollers by means of hydraulic motors

## ROLL BENDING MACHINE PULLMAX – PV 7H 3000 / 16

- Thickness of sheet steel max. 30 mm
- Thickness of sheet with pre-bending 16 mm
- Bent part diameter 520 mm
- Roller length 3,000 mm, total number of rollers 3
- Number of driven rollers 1
- Number of hydraulically adjustable rollers 2
- Upper and bottom roller diameter 345 mm

## THE FOLLOWING MACHINERY IS ALSO AVAILABLE IN THE FINAL PRODUCTION:
- **3-roller bending machine Roundo - PS 255 3000/6, PS 310 3000/10**
- **3-roller bending machine SCHRÖDER - FASTI 134-15/3.0**

# BALANCING CENTRE

## SCHENCK 20 N DYNAMIC BALANCING MACHINE

- Weight of part being balanced: 100 kg
- Maximum 0 of balanced part: 1,200 mm
- Maximum length of balanced part: 1,300 mm
- Sensing sensitivity: 2 gmm

## DYNAMIC BALANCING MACHINE SCHENCK H6 UN

- Weight of part being balanced: 20-4,000 kg
- Maximum 0 of balanced part: 4,000 mm
- Maximum length of balanced part: 4,200 mm
- Sensing sensitivity: 50 gmm


## DYNAMIC BALANCING MACHINE SCHENCK HM 70 U

- Weight of part being balanced: 20,000 kg
- Maximum diameter of rotor above bed 3,600 mm
- Maximum diameter of rotor above opening 6,000 mm
- Pulley extensions for storage 0 pins 70 – 300 mm
- Pulley extensions for storage 0 pins 300 – 600 mm

The machine bed consists of two longitudinally divided beds with a rack bar enabling the upright movement alongside the machine bed

- Length of individual bed parts 3,000 mm
- Total length of the machine bed 6m + hole 3 m + 3 m
- Scanning sensitivity 0.5 gmm/kg
- Measurement range 120 – 15,000 min-1
- Measuring sensitivity 0.5 gmm/kg
- Minimum measurable residual unbalance 80 gmm
- Related to the balanced rotations 1,000 min-1
- Unbalance reduction ratio (URV) up to 95 %


# PAINT SHOP

## ARC-H - H10 BLASTING BOOTH

It is used for blasting the surface of products made of common structural and austenitic steels and cast iron to the grade Sa 1, Sa 2, Sa 2 1/2 and Sa 3 according to ČSN ISO 8501-1.

- Maximum dimensions of treated product:
  - length 14,000 mm
  - width 3,150 mm
  - height 3,150 mm
- Maximum weight of treated product 12,500 kg

## GALATEK – H10 DEGREASING BOOTH

It is used for pretreatment of product surface by degreasing, phosphating and passivation.

- Maximum dimensions of treated product:
  - length 16,000 mm
  - width 3,150 mm
  - height 3,150 mm
- Maximum weight of treated product 12,500 kg.

## OLT - H10 PAINTING LINE

It is used for application of water-soluble paint systems.

- Maximum dimensions of treated product:
  - length 8,000 mm
  - width 3,150 mm
  - height 3,150 mm
- Maximum weight of treated product 12,500 kg.

## H11 PAINT SHOP

It is used for application of paint systems based on paint thinners.

- Dimensions of H11 paint shop:
  - length 18,000 mm
  - width 16,000 mm
  - height 11,000 mm
- Maximum weight of treated product 12,500 kg.

# HVAC

**PRODUCTION LINE FOR FLANGE MOULDINGS**
**DK 20,30,40** 2x

**PRODUCTION LINE FOR SUSPENSION MOULDINGS**
**ZL 20,37**

**SPIRO PIPING PRODUCTION LINE** 2x
› Metal sheet thickness: 0.5 – 1.25
› Nominal diameter: 80 – 1800 mm
› Pipe length: up to 15,000 mm

**SQUARE PIPING PRODUCTION LINE** 2x
› Metal sheet thickness: 0.6 – 1.25 mm
› Pipe length: 150, 100, 500 mm

**MACHINES FOR MAKING**
**THE BETA ADAPTING PIECES** 2x
› Metal sheet thickness: 0.6 - 1.25 mm


**CORTINA PLASMA CUTTING MACHINE**
› Metal sheet thickness: 0.6 – 15.00 mm
› Working table dimensions: 1.5 x 6.0 m

**GASPARINI CNC PRESS BRAKE**
**TYPE PSG 300/4000**

› Maximum width of divided tool – 3,000 mm
› Controlled axes Y, X, Z.
› Pressing force is adjustable up to 100 t
› Matrix: opening 4–40mm, load capacity: 20–100 t/m
› Punches: R0,6 – R5, load capacity: 20–100 t/m