



# **STROJÍRNY A STAVBY TŘINEC**

## **MACHINERY**

**[www.sas-trinec.cz](http://www.sas-trinec.cz)**

## THE QUALITY CONTROL MANAGEMENT SYSTEM

**The Quality Management System** acc. to EN ISO 9001:2015 is in compliance with International Standards and regulations. It provides guarantees, that conditions for conformity of delivery with requirements specified by a customer have been created. The Quality Control Management System refers to all processes and activities of company.

**The Environmental Management System** - all utilized technology, materials and means of production used in Strojírny a stavby Trinec, a.s. are carefully chosen in reference to Integrated Quality System EMS to minimise negative impact to environment according to International Standard EN ISO 14001: 2015.

**The Occupational Safety and Health Administration system** according to EN ISO 45001:2018.

**The Energy Management System** - in accordance with the EN ISO 50001:2011 Standard. The company is focused on effective management with energy, trying to continually reduce the energy demand, which leads to reducing of costs and environmental impact.

Product certificates provide a guarantee that technical and utility parameters comply with the demands defined in specific standards.

### CERTIFICATES AND LICENCES

- Quality Management System certification in accordance with the EN ISO 9001:2015 Standard
- The Environmental Management System in accordance with the EN ISO 14001:2015 Standard
- Quality Management Systems - Guidelines for quality management in projects ISO 10006:2017
- The Occupational Safety and Health Administration system pursuant to the EN ISO 45001:2018
- The Energy Management System in accordance with the EN ISO 50001:2018 Standard
- Welding Licence for structures welding acc. to Czech Standard ČSN EN ISO 3834-2, TKP 19 SŽDC and section 19 TKP MD ČR (*TÜV NORD Czech, s.r.o.*)
- Quality certificate for manufacturing of pressure tanks and pressure pipings, direction 97/23/EC, EN 13445, EN 13480, EN 12952 according to standards EN ISO 3834-2
- Welding Licence for manufacturing and assembly of structures according to Czech Standard ČSN EN 1090 – 2 (*TÜV NORD Czech, s.r.o.*)
- Welding according to AWS D1.1-2010 (welding documentation WPQR)
- Product certificate for manufacturing of smith forged bars from Quality Material P355QH1 and C35 E acc. to PED 97/23/EC Standard, annex 1, section 4,3 (*AD 2000 - Merkblatt W0*)
- Licence for manufacturing and supplies of forging of axles (smith forged, roughed and machined) for railway cars acc. to Czech Standard TP-SAST-01, 02 (*České dráhy - č.342*)
- Licence for manufacturing of asphalt matters (asphaltic concrete) (*VÚPS Praha*)

# ACREDITED MEASURING CENTRE

The Measuring Centre is equipped with 3D co-ordinate measuring appliance MITUTOYO and with the length meter CARL-ZEISS-JENA ULM 01-600 C.

## Measuring centre offers:

- Calibration of length measures
- Measuring and calibration services

# ACREDITED CALIBRATION TEST-ROOM No.: 2241

The test-room offers services for calibration of electric values:

- Calibration of electric measuring instruments
- Direct-current voltage up to 1 000 V
- Direct current up to 1 000 A
- Alternating voltage up to 750 V
- Alternating current up to 1 000 A
- Resistances up to 100 Mohm



EN ISO 50001:2018



EN ISO 9001:2015



EN ISO 14001:2015



EN ISO 45001:2018



ISO 10006:2017



ČSN EN ISO 3834-2

# MACHINERY

## MAIN ACTIVITIES

### PRODUCTION

- **Technological units** incl. the assembly of hydraulic, pneumatic, electric parts and project engineering management
- **Weldments and structures** incl. the machining, surfacing and the assembly
- **Cranes and suspension devices** incl. the design (turnkey projects - complete supplies)
- **Pressure tanks, piping** incl. the assembly
- **Single-purpose engineering machines and appliances acc. to own or customer's technical drawings**
- **Smith forgings up to max. weight 3 tonnes incl. the heat treatment and CNC machining**
- **Overhaul repairs and maintenance of manufacturing equipment, especially for metalurgy**
- **Overhaul repairs and modernization of machine tools and forming machines**
- **Machine parts, spare parts parts incl. the renovation**

### SERVICES

- Heat treatment, ionic nitridation, induction hardening
- Supplies of hydraulic hoses incl. the couplings (complete supplies – repairs)
- Saw band welding (width 13 ÷ 54 mm; min. thickness 0,5 mm; max. thickness 1,6 mm)
- Thermometry services (Thermal camera Fluke Ti45)
- 3D portable digital electro-optical measurements

## MACHINERY

### TURNING

Lathes	Workpiece max. D	Max. length	Note
SKIQ 16 CNC	2100 mm	1500 mm	Slide ram 1000 mm max. 10000 kg
SK 12	1250 mm	1000 mm	Ø table 1180 mm max. 4000 kg
SK 25	2600 mm	1570 mm	Ø table 2400 mm max. 6000 kg
Spikes lathes CNC	Max. Ø	Distance between spikes	Note
SE 520 Numeric	290 / 520 normal 300 mm	1500 mm	max. 1000 kg
Masturn 550i CNC	350 / 550 mm	1500 mm	max. 1000 kg
Masturn 70 CNC	510 / 820 mm	4500 (4440 max.) mm	max. 3500 kg
SUA 63 Numeric	380 / 655 mm	3500 (3250 max.) mm	max. 8000 kg
spikes conventional	max. 1600 / 1980 mm	max. 8000 mm	max. 30000 kg
Chucking lathes CNC	Max. Ø	Max.lenght workpiece	Note
KH 35 CNC	900 / 1400 normal 1200 mm	1000 mm	max. 2000 kg
Special lathes	Max. Ø	Lenght between spikes/torque	Note
relieving DH 250/4	250 / 300mm	1000 / 630 mm	

## BORING AND MILLING

HORIZONTAL BORING			
Ø of spindle	Table size	Travel X, Y, Z, W	Note
Ø 100 mm	1000 x 1120 mm	1250, 1100, 940, 710 mm	Max.3000kg
Ø 110 mm	1400 x 1600 mm	2500, 1600,1250, 710mm	max. load of work table 8000 kg
Ø 130 mm	1600 x 1800 mm	3500, 1800, 750, 750 mm	Max.load of work table 8000 kg
Ø 160 mm WD 160 CNC	2000 x 2000 mm	7890, 2430, 1000, 1000 ( 1000 manual) mm	1 work table + table 1000 x 1000 mm Max.table 20000kg Base plate 4000 x 3700 mm working platform max. weight 20000 ÷ 40000 kg CNC parting machine
Ø 160 mm W 160H CNC	2000 x 2000 mm	3990, 2430, 1560, 1560, 1500 mm Z + W can not be combined	Max. 25000 kg
Ø 180 mm CNC HCW 2 180	2500 x 3000 mm	11000, 3500, 1300, 1200, 2500 mm	Clamping plate 6400 x 3900 mm Load max. 40000kg 5-axis heads UFK 1000 NC
Ø 225 HCW 3000	3000 x 3000 mm Additional carousel plate 4000 mm	6000, 3000, 2000, 1400, 3400 mm	multifunction center for machining by turning and milling

MILLING			
Machine type	Table size	Travel X, Y, Z	Note
universal conventional	2000 x 400 mm 1800 x 630 mm	1250, 400, 400 mm 1400, 630, 600 mm	
FNG 40 CNC	800 x 400 mm	600, 400, 400 mm	max. 350 kg
Milling center MCV 1270 Speed	1500 x 670 mm	1270, 610, 720 mm	max. 1200 kg
Portal milling center FVC 160 / 3,2 CNC	3200 x 1600 mm	3400, 2452, 1000 mm	indexed 2-axis head Sempuco KFU-D3/90 max. 8000 kg
HOBBING MACHINE FOR GEARING			
External gearing type	Parameters		
Straight gearing (rolling and dividing) Oblique gearing (rolling mode)	Outside gearing $\varnothing 20 \div \varnothing 2500$ ( $\varnothing 3000$ ) mm modul 1 ÷ 22 angle of view $\alpha = 20^\circ$ precision t IT 7 ÷ 8 roughness Ra 3,2 oblique gearing $\beta = \text{do } 48^\circ$		
screw wheels (rolling)	modul 1 ÷ 25 angel of view $\alpha = 15^\circ \text{ a } 20^\circ$ one and multiple		
String wheels (rolling and dividing)	pitch = 9,525 ÷ 136 mm $\varnothing = 6,35 \div 46$ mm		

## SHAPING

Shapers and slotters	Parameters
Shaper	max. cutting stroke: 700 mm
Slotter	max. cutting stroke: 1150 mm
Gear shaper OERLIKON K4a	$\varnothing 50 \div 1\,720$ mm; pitch angle: $7^\circ \div 10^\circ$ max. pitch angle: $180^\circ$
Shaper FELOW Machine 0H 50A	max. $\varnothing$ of workpiece body: 800 mm max. height of workpiece 230 mm module: $1 \div 8$ , max. height: 125 mm external $\varnothing$ of teeth $50 \div 500$ mm, internal $\varnothing$ of teeth up to $\varnothing 450$ mm, accuracy of manufacture IT 7- 8 roughness Ra $1,6 \div 0,8$ according to material of workpiece pressure angle $20^\circ$ ; straight teeth $\beta = 0^\circ$

## GRINDING

Grinding operations	Max. size
External	to $\varnothing 300 \times 1500$ mm
Inside I	to $\varnothing 650 \times 680$ mm
Tool Grinding machine SAACKE UW IC NC	table clamping $130 \times 130$ mm, head stock height 135 mm, grinding travel 220 mm, grinding spindle speed $2\,000 \div 10\,000$ min <sup>-1</sup> spindle $\varnothing 60$ mm
BUC 85C NC/4000 Practic-universal cylindrical grinding machine	External grinding: diameter $\varnothing 850$ mm, $L_{\max} 4000$ mm, $m_{\max} = 3$ t, Ra 0,2, IT 5, inside: max/min $\varnothing = 400/100$ mm, $L_{\max} = 500$ mm, possibility of grinding of cones, radiuses, curves

## FORMING AND PRESSING

Workpiece	Parametrs	Note
Shaped forgings	up to max. weight 600 kg	pinions and bandages up to the weight 600 kg
Shaped shaft forgings	up to max. weight 3000 kg	max. $\varnothing 350$ mm max. L 3000 mm
Bars	up to max. weight 3000 kg	max. $240 \times 240$ mm max. L 6000 mm
Pressings	$120 \times 425$ mm	friction press, max. press power 250 t
Bars made from continuously cast semi-finished products with no guarantee of ultrasonic testing	up to max. weight 3000 kg	max. $320 \times 320$ mm max. L 6000 mm acc.cross section

## BROKE FORMING, ROLL BENDING

Bending operation	Parameters
Broke forming CNC Brake Press Safan H-Brake 480T-4100-TS 1	min. thickness 1 mm, max. thickness 60 mm max. sheet width 4000 mm up to thickness 10 mm max. sheet width 3000 mm above thickness 10 mm
Bending	up to sheet width 2000 mm and thickness 6 mm
Roll bending Small bending roll	min. Ø 200 mm, min. sheet thickness 3 mm, max. sheet thickness 20 mm max. sheet width 2500 mm
Big bending roll	min. Ø 700 mm, min. sheet thickness 5 mm, max. sheet thickness 50 mm max. sheet width 3000 mm
Four cylinder hydraulic bending machine MCB 3053	Min. min. Ø 590 mm, min. sheet thickness 15 mm, max. sheet thickness 80 mm max. sheet width 3000 mm.
	Bending of cones

## SHEARING, CUTTING

Operation	Workpiece dimension
Shearing	max. thickness 12 mm, max. L 3000 mm
Cutting - saw MEB Aeco 410 DG saw Pegas 440	max. 750 x 410 mm, max. Ø 410 mm max. L 7500 mm; angle range 30° - 135°

## PAINT APPLICATIONS, SPRAYING

Spraying box - Max. size	Note
Box size: 10 x 4,5 x 5 m Max. weight 10 t	according to agreement e.g. water paint, epoxy paint, paint with zinc, fast drying etc.

## STEEL-GRIT BLASTING

Steel-grit blasting box - max. size	Note
Box size: 10 x 4,5 x 5 m Max. weight 10 t	according to agreement e.g. mobile blasting device

## WELDING, FLAME CUTTING, ELECTROSPARK CUTTING

<ul style="list-style-type: none"> <li>▪ arc welding (E – 111)</li> <li>▪ semiautomatic welding in shielding atmosphere (MIG/MAG – 131/135)</li> <li>▪ semiautomatic welding in shielding atmosphere (TIG – 141)</li> <li>▪ semiautomatic welding in shielding atmosphere (MOG – 136)</li> <li>▪ flame welding (311)</li> <li>▪ submerged arc welding and surfacing technology (APT 121)</li> <li>▪ automatic electric arc surfacing in shielding atmosphere (135)</li> <li>▪ CNC cutting machine RUM 3000 GP: plasma arc cutting: 12000 x 2550 x max. 40 mm; oxygen cutting: 12000 x 2300 x 100 mm,</li> <li>▪ oxygen cutting on CN machine – VANAD PROXIMA K30/85 (3000 x 8000 x 150 mm)</li> <li>▪ CNC cutting machine RUM 2500 P: plasma arc and oxygen cutting: 6050 x 2050 x max. 25 mm,</li> <li>▪ electrospark cutting AGIE CUT SPRINT 20, max. dimensions of workpiece: 300 x 200 x 220 mm, surface roughness of workpiece Ra 0,8 and AGIE Clasic (500 x 350 x 420 mm, Ra 0,4)</li> </ul>
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## HEAT TREATMENT

<p>Heat treatment is carried out in an electric bogie hearth furnaces or furnace-shafts which has a lining of filamentous materials. Its possible to carry out heat treatment in an inert atmosphere of nitrogen. The furnace temperature regime regulation is controlled by a central computer via thermal sensors with registration and recording of the process.</p> <p>Cementation of the surface is provided by controlled carburization in protective atmosphere.</p>	
<p><b>Material for heat treatment</b></p> <ul style="list-style-type: none"> <li>▪ the whole range of steel grade including stainless steel, tool steel acc. to Czech Standards ČSN 11 ÷ 17 + 19 and theirs equivalents in compliance with EN, ASTM, DIN, AISI etc.</li> <li>▪ cast steels,</li> <li>▪ cast iron.</li> </ul>	
<p><b>Type s of heat treatment:</b></p>	<p><b>Main and auxiliary facilities, inside dimensions and specification:</b></p>
<ul style="list-style-type: none"> <li>▪ normalizing, normalizing with tempering</li> <li>▪ soft annealing</li> <li>▪ stress relief annealing</li> <li>▪ wire coils annealing</li> <li>▪ heat treatment</li> <li>▪ tool steels hardening and tempering</li> <li>▪ rolled bar products annealing, tapering and homogenization annealing</li> <li>▪ gas case – hardening, pack hardening</li> <li>▪ surface hardening</li> <li>▪ oil, water and air hardening</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Car–hearth furnace 2000 x 1100 x 6500 mm</b>, max. temperature 1150 °C, possibly inert atmosphere, max weight of heat 20 t, single part 10 t (max. lifting capacity 10t)</li> <li>▪ <b>Car–hearth furnace 1000 x 700 x 1500 mm</b>, max. t, 1100 °C, possibly inert atmosphere, max. weight of heat, 1 t,</li> <li>▪ <b>Shaft furnace, diameter 1600 x 4000 mm</b>, max. t 1100 °C, possibly inert atmosphere, max. weight of heat 5 t,</li> <li>▪ <b>Shaft furnace, diameter 1000 x 2000 mm</b>, case hardening with retort, equipped with an oxygen probe and controlled carburizing, max. weight of heat 2 t,</li> <li>▪ <b>Two hardening shafts of the diameter 2500 x 4200 mm</b> (oil circulation),</li> <li>▪ <b>Hardening tank 2000 x 4100 x 2500 mm oil and water</b> hardening oil BURGDORF (oil and water with medium temperature circulation),</li> <li>▪ <b>Hardening shaft with inert atmosphere, 600 x 500 x 750 mm</b>, max. temperature 1 280 °C</li> <li>▪ <b>Car –hearth furnace 7000 x 3000 x 2200 mm</b> max. temperature 1 050 °C, max. weight of heat 50 t</li> </ul>
<p><b>Induction hardening</b></p>	
<ul style="list-style-type: none"> <li>▪ gradual induction hardening peripherically</li> <li>▪ gradual induction hardening vertically</li> <li>▪ gradual induction hardening method by tooth after tooth</li> </ul>	<p>Max. weight = 5 t,</p> <p><b>Flat strips:</b>  <math>H_{max} = 150</math> mm, <math>L_{max} = 1</math> m, hardening = 45 ÷ 62 HRC (acc. to material), max. hardening depth = 6 mm</p> <p><b>Travelling wheel, gear wheels:</b>  <math>D_{min} = 200</math> mm,  <math>D_{max} = 2000</math> mm, module <math>m \geq 10</math>;</p> <p><b>Cylindrical components:</b>  <math>D_{min} = 30</math> mm,  <math>D_{max} = 200</math> mm, larger D by method „around periphery“  <math>L_{max} = 1000</math> mm (1500 mm – on twice)</p>
<p><b>Ionic nitridation</b></p>	
<ul style="list-style-type: none"> <li>▪ carbonitriding a oxinitriding</li> </ul>	<p><math>D_{max} = 1</math> m, <math>H_{max} = 1,5</math> m, <math>m_{max} = 3000</math> kg</p>



# STEEL STRUCTURE

## MAIN ACTIVITIES

- Manufacturing and assembly of structures incl. the steel bridges to EXC 3
- Processing of steel profiles ( cross section 60 – 800mm) by the CNC drilling and cutting machine.
- Repairs of machinery
- Manufacturing and assembly of cranes and crane runways
- Repairs of wagons for TRINECKÉ ŽELEZÁRNY, a.s.
- Wheel sets machining from Ø 300 mm to Ø 1100 mm
- Renovation of wheel sets by surfacing incl.tyres
- Grab repairs
- Renovation and repairs of rubber conveyer belts and moulded rubber goods
- Customer service of manual lifting mechanisms
- Validation test of suspension means
- All type balances repairs and calibrations
- Repairs of machine component fractures or breakages by cold METALOCK repair proces

### Advantages of METALOCK process:

- Saving costs for purchase of new machine part, or eventually complete machine
- Repairs directly on the spot without disassembly
- Rigidity and tightness of the joint (comparable to original quality material)

### Examples of repaired parts:

- Cast iron, cast steel, aluminium and brass from 4 mm thickness
- Rolling mill stands, engine blocks, turbine casings, pump casings, gearboxes, gears, machine tool beds, presses etc.

## MACHINERY

- Profile forming and plate roll bending (max. thickness 15 mm, max. width 3000 mm)
- CNC drilling and cutting machine including continuous blasting equipment
- Roll plate bending (max. thickness 10 mm, max. width 3000 mm)
- Precise plate cutting up to thickness 200 mm, size 3,1 x 12 m
- Machining by horizontal milling machine W100
- Welding by MIG/MG, TIG
- Machine cutting of profile material (size 600 x 500 mm)

# MACHINING

## MAIN ACTIVITIES

- Production and machining of metallurgical rolls incl. the roll calibration
- Production of shafts (wind power plants, cylindrical, stepped, conical, spline, turbine, rotary, generator, etc)
- CNC milling – engraving of inscriptions and signs
- Slab, billets, blooms grinding
- Heat treatment - soft annealing, stress relief annealing of weldments, workpieces, steel bars bundles and cast rolls
- Cutting of material – cutting, cutting off

## MACHINERY TURNING

### TURNING

Turning	Machine type	Work piece size, weight
profile surfaces conical surfaces rolls calibration thread turning Grinding– additional grinder SK2	CNC lathes	max. Ø of workpiece 2200 mm max. length of workpiece 8500 mm max. weight 40 t max. dimension of workpiece Ø 2000x8500 mm
classic rolls calibration		max. Ø 1200 mm max. length 4000 mm max. weight 15 t
classic turning		max. Ø 1000 mm max. length 4500 mm max. weight 15 t

### MILLING AND GRINDING OPERATIONS

Operation	Limit dimensions of workpiece	Work piece size, weight
Milling - wobblers	max. diameter of workpiece max. length of workpiece max. weight of workpiece	2450 mm 7000 mm 25 t
- various milling operations - milling-engraving	max. size height max. weight	5000 x 5000 mm 2000 mm 25 t
Grinding - on round shapes incl. cones	max. workpiece Ø max. grounded Ø max. length max. weight	1000 mm 1000 mm 6000 mm 8 t

Grinding	Workpiece parameters
Special grinding machines CENTRO MASKIN (plane roughing of metallurgical semi-finished products)	width 200 ÷ 800 mm thickness 110 ÷ 500 mm length 6000 mm max. weight 5000 kg
CNC SK rolls grinding	max. Ø 300 mm length 80 mm max. weight 50 kg

<b>Cutting</b>	<b>Workpiece parameters</b>	
Band saw MEBA 620-S	max. Ø	1120 mm
	max. size	1120 x 1120 mm
Band saw BOMAR EXTEND 1120.1120	max. length	10000 mm
Automatic NC Band saw EVERESING H-800 HANC	max. Ø	800 mm
	max. size	800 x 800 mm
	max. length	10000 mm

## **REPAIR MOTORS, ELECTRICAL WORKS AND INSTALATION**

### **MAIN ACTIVITIES**

#### **Repair of machine and devices** - repairs of all type motors:

- Low-voltage induction motors up to power output 630 kW
- High-tension motors up to power output 2,8 MW
- Direct-current motors up to power output 5 000 kW
- Synchronous motors up to power output 3 000 kW
- Transformer repairs up to power output 1,6 MVA

We carry out repairs of rotary and static welders, dynamos, hydraulic relievers and vibrators.

We also carry out welding of shafts by MIG, MAG and repairs of motor machine components.

The rotating parts are dynamic balanced up to weight 1,6 tonnes and length max. 2 930 mm and diameter max. 1 600 mm (balancing machine of type SCHENK acc. to Czech Standard ČSN 01 1410).

We offer repairs of lifting magnets, manufacturing and repairs of starting resistors, repairs of manual electric tools too. We provide motor setting into horizontal and vertical plane by laser.

#### **Electrical works, electric instalation**

- Electrical wiring system of buildings
- Implementation of electrical units (production lines, high voltage wiring, etc.)
- Repairs and overhaul repairs of cranes and suspension devices
- Manufacturing of switchboards (low voltage)
- Lighting installation acc. to customer's requirements

We offer installation and maintainance of electric fire alarm systems, installation of remote control of cranes and conductors assembly. We provide these services from technical drawings, assembly, auditors' report to supply delivery. We are able to offer you complete supplies – turnkey projects too.

#### **Testing and general overhauling**

- Testing and measurement of alternativ – current and direct-current motors (low voltage and high voltage) before, during and after repair or overhauling by using of modern diagnostic tools
- Testing of oil and air transformers
- Measuring of electric strength of liquid dielectric transformer oils
- Testing of tachogenerators, setting of centrifugal switches and measuring of dynamometer electric values
- Testing of aids and dielectric gloves
- Full – scale monitoring of crane operation and units
- Logic automat programming of type LOGO, ALFA etc.
- Setting of current, voltage, power and earth-fault protections and regulators
- Primary testing of turbo-generators (after repairs and after stop working)
- Electric values measuring acc. to customer requirements, electric cable measurement
- Voltage testing of electric cables up to 120 KV (SS)
- Determining of electric cable lines
- Fixing of technical faults by using of surge generator

- Vibration measurements on motor (vibro diagnostics bearings)
- Temperature measurements with a thermal camera

## **MACHINERY**

### **Workshop of repairs of electrical machines**

- Machines for machining down (lathes, shapers, cutter, saw, drill)
- Balancer, puller 100 t
- Degreasing machine, oil purifier Micafluid

### **Coil winding shop**

- Winders, presses, expander of the coil (round wire, profile, small coils), expander of the high voltage coil
- Woodworking machines
- Station for impregnation (boiler 2 m<sup>3</sup>)

### **Testing**

- Dynamometer up to 50 kW, sets on lay-out of the line and troubleshooting cables
- Equipments for measuring of coils, windings (before and after repair), tester of oil Meger
- Device for adjusting of electrical protections in substations

### **Calibration test-room**

- Kit of devices for calibrating instruments for measuring electrical quantities

### **Electrical installation**

- Machines for sheet metal processing (shears, presses, saws, drills)
- Hydraulic kit for Cu and Al collection
- Tools and equipment for electrical work outside of the worksho

# **DESIGNING**

## **MAIN ACTIVITIES**

- Engineering technology design
- Structures design
- Expert consulting services
- Detailed Engineering – processing of detailed manufacturing technical drawing of technological equipment and machine devices for metallurgy, rolling mills, finishing lines and devices
- Detailed Engineering – processing of detailed manufacturing technical drawings of structures (buildings, railway and road bridges)
- Preparing of technical drawings of repaired machines, technological lines and devices
- Preparing of technical drawings of cranes incl. the structures and suspension devices
- Development and design of single-purpose engineering appliances and complex engineering machines and devices incl. the electric, pneumatic and hydraulic parts
- Manufacturing of designed machines and equipment and customer service (Production Plant)
- Engineering strenght calculations by Finite Element Method
- Space fully dimensional simulation
- Technical drawing digitization
- Reprographic services

## **SOFTWARE:**

- Autodesk Inventor (3D)
- Autodesk AutoCAD Mechanical ( 2D CAD)
- Wise Image
- ANSYS 21R2 – Solutions for large linear and nonlinear problem by the Finite Element Method
- Tekla Structures
- SCIA Engineer

### **Address:**

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