



The Metallurgical Division offers four basic operations as a part of cooperation:

1. Heat treatment
2. Laboratory testing
3. Machining
4. Forming

1. Heat treatment

ZDAS offers, as a part of heat treatment, annealing, hardening, refining in water, oil and polymer bath.

Thermal processing of narrow components – soaking furnace for components up to diameter of 800 mm, length of 6800 mm, weight of 10000 kg. Thermal processing of large-sized components – from car-type furnaces by agreement.

Furnace №	Type	Heating medium	Temperature [°C]		Internal dimensions l × w × h / D – d [mm]	Load capacity [t]
			min.	max.		
54; 55	annealing car-type	natural gas	-	930	9000 × 3800 × 2700	60
56-59; 61	annealing car-type	natural gas	-	1100	5000 × 2500 × 2000	30
60	annealing car-type	natural gas	130	1100	6100 × 3400 × 2900	30
67	annealing car-type	natural gas	-	1000	5700 × 3200 × 2600	30
71	annealing car-type	natural gas	-	930	8900 × 4200 × 2600	80
53	annealing soaking	natural gas	-	700	8000 × 2500 × 2000	60
150	cooling soaking	natural gas	-	650	6900 × 2500 × 2400	30
1; 2	electric soaking	electric current	300	1030	850 – 6500	10
3	electric soaking	electric current	300	1030	750 – 5500	8

Furnace №	Type	Heating medium	Temperature [°C]		Internal dimensions l × w × h [mm]	Load capacity [t]
			min.	max.		
1	annealing car-type	natural gas	-	1100	9400 × 4070 × 3500	70
2	annealing car-type	natural gas	-	1150	9400 × 4050 × 3570	70
3	annealing car-type	natural gas	-	1200	9400 × 4080 × 3500	70
4	annealing car-type	natural gas	-	1135	8800 × 5100 × 3000	100
7	annealing car-type	natural gas	-	1050	5000 × 4000 × 2650	40
8	annealing car-type	natural gas	-	1250	5500 × 2800 × 3000	20

2. Laboratory testing

Mechanical laboratory

- Tensile test (up to +700 °C)
- V-notch test (from -196 °C to +100 °C)
- Rockwell, Vickers, Brinell Hardness
- Bending test

Tensile testing machines

ZWICK Z 400E, WB LFM 300kN

Impact testing hammers

ZWICK RKP 450

Durometers

DuraVision 250, DiaTestor 2Rc, Brinell KPE 3000

Metallographic laboratory

- Micropurity
- Grain size
- Microstructure
- Resistance against intercrystal corrosion
- Microhardness measuring

Microscopes

Olympus GX51F, Neophot 32

Image analysis

LECO IA32

Microdurometer

LECO LM-248AT

Chemical laboratory

- Steel Analysis
- Gases content in steel (H₂, N₂, O₂)
- Measuring of measured radioactivity

Spectrometers

ARL 4460, ARL 3460, PMI-Master Pro

Gamaspectrometer

EXPLORANIUM GR 320

Thermoevolution analysers

LECO TC 600, H 836 a CS 844

3. Machining

Lathes

Machine type	Pcs	Machining range [mm]	Max. load [t]
SU 80 A	7	ø 495 × 2000 - 3500	6
SRM 100	5	ø 710 × 3000 - 7000	10
SRM 100 CNC	3	ø 710 × 3000, 4300, 6000	70
SRM 125 CNC	2	ø 900 × 5000 - 8000	14
SRM 1600	2	ø 1200 × 4000	28

Vertical boring machines

Machine type	Pcs	Machining range [mm]	Max. load [t]
SK 12	2	ø 1180 × 1000	4
SK 25 A	1	ø 2400 × 1600	10
SK 25 A CNC	1	ø 2400 × 1600	10
SK 40 CNC	2	ø 3750 (ø 4320 head) × 2500	40 (crane 32)
SKJ 50 CNC	1	ø 4500 (ø 7840 head) × 3000	100 (crane 32)

Gantry-type and special milling machines

Machine type	Pcs	Machining range [mm]	Max. load [t]
FR 08	1	800 × 3500 × 935	5
FP 16	1	1250 × 3500 × 1250	8
FP 20	3	1600 × 4000 × 1400	10
Frez 20 CNC	1	2000 × 6000 × 1795	20

Horizontal boring machines

Machine type	Pcs	Machining range [mm]	Max. load [t]
WFQ 80 CNC	3	850 × 1600 × 1000 (table 850 × 850)	5 (table 3)
WD 130 A	1	2920 × 1770 × 980 (table 2000 × 2000)	32 (table 20)
WD 160 CNC	2	3150 × 1600 × 2500 (table 2000 × 2000)	32 (table 20)
WD 160 CNC	2	3500 (7000) × 1600 × 2500 (table 2000 × 2000)	32 (table 20)
WD 200	1	6000 × 2000 × 3150	40 (crane 32)
WD 200 CNC	1	4000 × 2000 × 3150 (table 2850 × 3100)	40 (crane 32)
W 200 G CNC	1	6000 × 2000 × 3150 (table 2000 × 2500, 3100 × 3100)	20 (crane 20)
W 200 G HCW 2	1	7000 × 5000 × 1300 (table 3550 × 4000)	80 (crane 32)



4. Forming



Forging equipment: CKV 630, CKV 1250/1600 and CKV 1800/2250 with rail-bound manipulators QKK 3, QKK 8, QKK 20 (max. load capacity 3, 8 and 20 t). Maximum forging weight 15 t.

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