

MAILING CARD

Manufacturer's full name:	"Novokramatorsky Mashinostroitelny Zavod" Joint Stock Company
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Individual tax number:	057635905159
Registration number:	06257881 NB No. 019568
Main Product Line:	Rolling mill equipment, mill rolls and power equipment, metallurgical, press and forging, hydrotechnic, mining, handling and special-purpose machinery; castings, forgings



DEAR SIRS

The largest in Ukraine and world-known manufacturer of unique high-duty rolling, iron and steel, press and forging, hydrotechnic, mining, handling and special-purpose machinery Joint Stock Company «Novokramatorsky Mashinostroitelny Zavod» invites you to mutually beneficial business cooperation.

Historic mission of «NKMZ» is provision with equipment for the basic branches of industry from mining operations to engineering output, satisfaction of wants of the most exacting customers, solving their problems aimed at increase of efficiency of technological cycles and reduction of outlays for output of products. «NKMZ» personnel follows traditions of high responsibility and reliability continuously improving in technologies and professionalism.

Since September 1934 «NKMZ» has designed and manufactured more than 100 rolling mills, 189 mixers for liquid metal storage and transportation, 45 die forging hammers, 20 plants for surfacing the blast furnace bells and hoppers, 142 presses of different purpose and capacity, 17 machines for removing slag from cast-iron ladles, 103 horizontal forging machines, more than 2000 walking draglines, more than 2000 mine hoisting machines, about 3000 ore and coal grinding mills, 18 bucket wheel excavators and mining complexes. Participation in the defense and space programs of the Soviet Union gave engineers and process staff of «NKMZ» invaluable experience of use of high technologies.

«NKMZ» develops new products release continuously. Recently «NKMZ» produces continuous casting machines, ladle-furnace units, arc furnaces, roadheaders and winning machines, drilling rigs, various handling equipment. «NKMZ» is the first-rate supplier of rolls for rolling mills, custom-made castings and forgings.

Powerful manufacturing, scientific-research and experimental facilities, advanced technologies and skilled personnel enable the Works to produce integrated equipment of high quality and in a short period of time, to maintain their good long-term operation at the Customer.

Since 1994 the quality assurance system has been developed and introduced at the enterprise. It covers the whole production complex: from marketing research to installation and after-sales service. The quality system guarantees manufacturing of the high-quality products and meets the requirements of International Standard EN ISO 9001:2000, that has been confirmed by the Certificate of Technical Supervisory Company TUV NORD CERT (Germany) and Certification Authority STANKOSERT (Odessa), the Certificate EFQM "Recognition of perfection in Europe".

«Novokramatorsky Mashinostroitelny Zavod» - is a world - famous company. Our machines and equipment work in more than 50 countries of the world, including Japan, Germany, France, Italy, Canada, USA.

We are ready to make a contract for their designing, manufacturing and delivery. Our Experts will give detailed information and consultations. We are ready to consider any inquiry beyond the scope of our standard supplies.

Contact us and you'll find a reliable business partner.

Marketing Department

*OUR UNIQUE CAPABILITIES, INTELLECT, HIGH TECHNOLOGIES -
AT YOUR SERVICE*

**We offer a complete range of engineering,
manufacturing, delivery
and modernization**

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as well as industrial services

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1. ROLLING-MILL MACHINERY

Complete deliveries

- 1.1 Plate mills, work roll barrel length up to 5000 mm.
- 1.2 Wide-strip ferrous hot rolling mills.
- 1.3 Wide-strip mills for hot rolling of aluminium and other non-ferrous alloys.
- 1.4 Special-purpose wide-strip mills with furnace coilers (Steckel type).
- 1.5 Wide-strip single and multistand cold rolling mills for ferrous metals, aluminium and its alloys.
- 1.6 Reversing hot and cold mini-mills for sheet-by-sheet rolling.
- 1.7 Primary, billet and section rolling mills.
- 1.8 Small-section mills.
- 1.9 Continuous casting direct rolling facilities consisting of continuous-casting machine, preheating furnace and wide strip mill.
- 1.10 Facilities for aluminium ingotless rolling.
- 1.11 Pipe-welding machines, including large diameter pipes.
- 1.12 Gas-tight panel bending lines.
- 1.13 Slitting units.
- 1.14 Cross-cutting units.
- 1.15 Straightening units.
- 1.16 Combined cutting and straightening units.
- 1.17 Profile bending machines.
- 1.18 Hot- and cold-rolling pipe and tube mills.

Basic manufacturing equipment

- 1.19 Devices for charging slabs into heating furnaces.
- 1.20 Walking – beam type heating furnaces.
- 1.21 Walking – beam heating furnaces.
- 1.22 Devices for slabs discharge from heating furnaces.
- 1.23 Furnace, main, intermediate and delivery tables.
- 1.24 Vertical stands for wide-strip hot rolling mills (including edgers).
- 1.25 Two-and four-high stands for wide strip hot rolling mills.
- 1.26 Two-and four-high stands for section and small-section mills.
- 1.27 Four-high stands for plate mills.
- 1.27.1 Vertical stands for plate mills.
- 1.28 Six-high stands for wide strip mills.
- 1.29 Active guards of roughing stands.
- 1.30 Manipulator, centering guards and guards.
- 1.31 Hydraulic guards in front of carryover pinch rolls.
- 1.32 Interstand equipment for finishing stands (guards, guides and loopers).
- 1.33 Plate slitting and cross cutting shears.
- 1.34 Double-cut plate trimming shears.
- 1.35 Circular plate trimming shears.
- 1.36 Bloom, slab, continuous cast billet and bar shears.
- 1.37 Hot and cold strip coilers.
- 1.38 Trimmings coilers.
- 1.39 Furnace coilers.
- 1.40 Carryover pinch rolls.
- 1.41 Mechanisms for coil transfer from coiler to conveyor.
- 1.42 Conveyors, indexing transporters for coils, pallet roller tables.
- 1.43 Wire bundle conveyors.
- 1.44 Car-strippers.
- 1.45 Controlled rod cooling conveyors.
- 1.46 Coil tilters.
- 1.47 Coil receivers.
- 1.48 Lifting-turning tables.
- 1.49 Sheet pilers.
- 1.50 Sheet turnovers.
- 1.51 Heat shields.
- 1.52 High-speed heating furnace.

- 1.53 Roller and pressing machines for bending clad metal sheets on ingots of aluminium alloys.
- 1.54 Hot and cold sheet-straightening machines.
- 1.55 Special-purpose straighteners for aluminium sections, panels and plates.
- 1.56 Bar straighteners.
- 1.57 Machines for round strapping of bundles.
- 1.58 Units for coils packing.
- 1.59 Working stand rolls and table rollers drives.
- 1.60 Mill multi-input and combined speed reducers.
- 1.61 Roller tables distributing speed reducers.
- 1.62 Hot and cold back-up and work rolls.
- 1.63 Gear clutches.
- 1.64 Roller sleeves.
- 1.65 Spindle arrangements with toothed hinges.
- 1.66 Spindle arrangements with universal hinges on sliding inserts.
- 1.67 Roller spindles.

Ancillary equipment

- 1.68 Mechanized devices for work and backup rolls changing .
- 1.69 Stands for assembly and disassembly of rolls with chocks units.
- 1.70 Tilters of chocks with bearing units.
- 1.71 Bearing units dismounting devices.
- 1.72 Universal machines for reconditioning the working surfaces of slabbing mills, wide-strip hot and cold and other rolling mills housings.
- 1.73 Bimetal plates for rolling mill housings and chocks.
- 1.74 Hydraulic cylinders of different standard sizes.
- 1.75 Spare parts and equipment for maintenance of all types of rolling-mill machinery.
- 1.76 Change sets: work and backup rolls for various-purpose rolling mills.

Electric and hydropneumatic lubrication processing systems

- 1.77 Automated process control systems.
- 1.78 Hydraulic control systems for walking beam furnaces.
- 1.79 Hydraulic systems of screwdowns, roll bending, shift and crossing systems.
- 1.80 Furnace and mill hydraulic descaling systems with sectional individual nozzle control.
- 1.81 Low-pressure hydraulic descaler using water and air-water mixture under pressure up to 1.5 MPa.
- 1.82 High-pressure hydraulic descaler using water under pressure of 16 MPa and 25 MPa.
- 1.83 Work roll cooling and heat contouring systems with sectional and individual control of nozzles.
- 1.84 Interstand strip cooling systems.
- 1.85 Strip cooling systems on runout tables.
- 1.86 Hot strip mill rolls lubrication systems.
- 1.87 Primary and secondary cooling systems for section and slab continuous casting machines
- 1.88 Feed controlled cooling system for plate mills.
- 1.89 Aluminium cold strip mill rolls lubrication systems.
- 1.90 Cooling and heat contouring systems for aluminium strip cold rolling mills.
- 1.91 Work rolls heat contouring system with sectional and individual nozzle control for aluminium strip cold rolling mills.
- 1.92 Automatic oil and grease lubrication systems for machinery.
- 1.93 "Oil-air" lubrication system.
- 1.94 Hydraulic systems with preset schedule of movement.
- 1.95 Hydraulic systems for regulated nut tightening.
- 1.96 Hydraulic systems for assembly and disassembly of connections on collet.
- 1.97 Accumulators with the pressure of up to 0.63 MPa and capacity up to 6.3 cu.m for lubrication systems for margoils.
- 1.98 Lubrication stations with the capacity of 50-2500 l/min.
- 1.99 Separate arrangements and units of lubrication systems of machinery (tanks, accumulators, water separators, lubrication headers, etc).
- 1.100 Mechanisms functional control units.
- 1.101 Pumping plants and pump-and-accumulator stations for various purposes.
- 1.102 Separate devices and units of the hydraulic control systems (tanks, accumulators, control panels, pump units, pipes connections etc).
- 1.103 Various-purpose pneumatic systems with adjustable flow rate and pressure.

2. MILL ROLLS AND POWER EQUIPMENT COMPONENTS

- 2.1 Solid-forged cold work rolls.
- 2.2 Solid-forged hot backup rolls.
- 2.3 Solid-forged cold backup rolls.
- 2.4 Solid-forged work rolls for hot rolling mill roughing stands.
- 2.5 Solid-forged work rolls for section mills.
- 2.6 Solid-forged work rolls for primary and billet mills.
- 2.7 Sleeved back-up rolls.
- 2.8 Composite work rolls for finishing stands of hot rolling mills with high-chromium iron and high-speed steel working layer.
- 2.9 Composite work rolls for roughing stands of hot rolling mills with high-chromium steel working layer.
- 2.10 Composite backup rolls for hot and cold rolling with carbon high-alloy steel working layer.
- 2.11 Rotor shafts for wind power plant of 1,5 W, wind power plant of 2,0 W, wind power plant of 3,0 W.
- 2.12 Turbine shafts.
- 2.13 Turbine disks.
- 2.14 Generator shafts.
- 2.15 Hydraulic shafts.
- 2.16 Propeller shafts.

3. METALLURGICAL MACHINERY

- 3.1 Hydraulic systems for steel - making units and continuous casters.
- 3.2 Electric arc steel - making furnaces (having capacity from 40 t up to 180 t).
- 3.3 After-furnace ladle steel treatment units: «Ladle-furnace»
- 3.4 Materials preparation area equipment.
- 3.5 Ladle sliding gates.
- 3.6 Wire feeders.
- 3.7 Ladle fill-and-drain lining facilities.
- 3.8 Pulverized material injection facilities.
- 3.9 Vacuum degassing facilities "VD-VOD".
- 3.10 Slab continuous casting machines.
- 3.11 Billet continuous casting machines.
- 3.12 CCM rollers.
- 3.13 CCM roller segments.
- 3.14 CCM casting bows equipment.
- 3.15 Ladle vertical drying stands.
- 3.16 Ladle horizontal heating stands.
- 3.17 Tundish drying and heating stands.
- 3.18 CCM lifting - and - turning stands.
- 3.19 Withdrawal levelers.
- 3.20 Chain and rigid, semi-rigid and combined dummy bars.
- 3.21 Mould tilting mechanisms.
- 3.22 Hydraulic flying shears.
- 3.23 Scrap processing facilities.
- 3.25 Roll grinding presses.
- 3.26 Vacuum steam ejector pumps.
- 3.27 Self-propelled and non-self-propelled cars.
- 3.28 Furnaces for ferroalloys calcination.
- 3.29 Floor charging machines.
- 3.30 Units for hard-surfacing the blast furnace bells and hoppers.
- 3.31 Welding and surfacing units.
- 3.32 Machines for centrifugal casting.

Dressing equipment

- 3.33 Mixers and pelletizers.
- 3.34 Sintering machines.

- 3.34.1 Roasting cars.
Sintering area – 4,0; 5,25; 6,6 m².
Depth – 485, 423, 400 mm.
- 3.35 Briquetting units.
- 3.36 Single-roll crushers: ДО-1,3x2,7; ДО-1,3x4,2.
- 3.37 Four-roll crushers with smooth rolls (900x700).
- 3.38 Hammer crushers: DMR 14,5x13; CM 170Б.
- 3.39 Mobile unbalanced - throw screen GIL-32.
- 3.40 8-, 10-, 14-roll, single and twin revolving disk grizzlies.
- 3.41 Furnace - charge distributors.
- 3.42 Sintering cars.
- 3.43 Apron conveyors.
- 3.44 Gas cleaning systems equipment.
- 3.45 Kilns.

Blast furnace equipment

- 3.46 Blast-furnace jacket.
- 3.47 Cooling plates.
- 3.48 Machines for plugging up the tap-holes in blast furnaces.
- 3.49 Top bells control winches LK-38M and LK-45.
- 3.50 Skip winches LC -15; LC -22,5; LC -29; LC -39.
- 3.51 Skips.
- 3.52 Rope sheaves.
- 3.53 Valves: of cold blast, chimney, atmospheric steam dump, air-relief, compensation, relief, gas throttle, air and gas throttle, shut-off, plug etc.
- 3.54 Water filters Dnom 400; 500; 600; 700.
- 3.55 Self-propelled and non self-propelled slag cars.
- 3.56 Self-propelled and non self-propelled hot-metal transfer ladles.
- 3.57 Conveyor-type iron casting machines.
- 3.58 Rotary-type iron casting machines.
- 3.59 Taper - type charging device.
- 3.60 Slag dehydrator of rotary type.

Steelmaking and ferroalloy equipment

- 3.61 Oxygen-blown converter with the capacity from 50 to 350 t.
- 3.62 Converters bodies.
- 3.63 Converter swiveling mechanisms.
- 3.64 Equipment for electroslag remelting furnaces.
- 3.65 150, 200, 250, 300, 350, 420 and 600 t mobile mixers.
- 3.66 300, 450, 600, 1300, and 2500 t stationary mixers.
- 3.67 Stands for mobile mixers repair.
- 3.68 Machines for slag skimming from hot-metal transfer ladles with ladle tilting turrets.
- 3.69 Chargers for openhearth furnaces.
- 3.70 Charging - box cars.
- 3.71 Self-propelled scrap cars.
- 3.72 Self-propelled teeming ladle cars.
- 3.73 Hot-metal ladles.
- 3.74 Steel-teeming ladles.
- 3.75 Ladle tilters.
- 3.76 Stands for assembly and welding of consumable electrodes.
- 3.77 Gate hoist winches.
- 3.78 Inclined chimney slide valves.
- 3.79 Ferroalloy casting machines of conveyor and rotary type.
- 3.80 Rotary furnaces for aluminium secondary processing.
- 3.81 Pelletizers.

4. PRESS - FORGING MACNINERY

Hydraulic presses

- 4.1 Hydraulic stamping presses, capacity up to 750 MN.
- 4.2 Hydraulic forging presses, capacity up to 150 MN.
- 4.3 Vertical extrusion and stamping hydraulic presses, capacity up to 450 MN.
- 4.3.1 Hot briquetting roll press
- 4.4 Hydropressing units PGSK-600 for lime-and sand brick manufacture.
- 4.5 Hydraulic presses for powder materials (ferroalloys) pressing, capacity of 400 MN.
- 4.6 Modernization and substitution of obsolete press (hydraulic, steam-hydraulic) control systems for modern electrohydraulic ones.

Crank presses

- 4.7 Hot die-forging crank presses with capacity from 16000 kN.
- 4.8 Sheet-stamping crank presses with capacity 1600-10000 kN.
- 4.9 Crank knuckle-joint embossing presses with capacity 10000-40000 kN.
- 4.10 Horizontal forging machines with vertical split of dies, capacity up to 31500 kN.

Plate/sheet bending and straightening machines; lines on their basis

- 4.11 Three-and four-roll sheet bending machines having working area 12000mm long.
- 4.12 Roll straighteners for hot and cold plates of standard and high strength up to 4500 mm wide and up to 100 mm thick.
- 4.13 Skelping lines for oil and gas single seam pipes.

Hammers

- 4.14 Die-forging anvil hammers, blow energy up to 800 kJ.
- 4.15 Die-forging no-anvil hammers, blow energy from 400 to 1600 kJ.
- 4.16 Air - steam forging hammers of bridge type, 50-240 kJ.
- 4.17 Air - steam arch-type forging hammers, 50-80 kJ.
- 4.17.1 Modernization of electrical part of the supplied press-forging equipment with application of modern electric equipment, drive mechanisms and energy-saving control systems.

Auxiliaries

- 4.18 Hydropneumatic pumps for pressure from 10 to 40 MPa for static tests and repair works (control-through air P=0.3-0.5 MPa).

Heating and heat-treatment furnaces

- 4.19 Two-chamber heating furnaces.
- 4.20 Car - bottom heat-treatment and heating furnaces.
- 4.21 Roller-hearth heating furnaces.
- 4.22 Bell-type furnaces.
- 4.23 Pulse heating and cooling units.
- 4.24 Throttle-regulating devices.
- 4.25 Fire check valves.
- 4.26 Low-temperature tempering furnace (up to 300°C).
- 4.27 Vertical (shaft) heat-treating furnaces.

5. MINING MACHINERY

Drilling rigs

- 5.1 CBШC-250/270-32
Drilling depth – 32 m;
Hole dia – 250 and 270 mm.
Weight-92 t
- 5.2 CBШC-250 H
Drilling depth – 32 m;
Hole dia – 250 mm.
Weight-78 t

Walking draglines*

- 5.3 ЭШ-6.5/45 M Single-bucket excavators (Walking dragline excavators with bucket capacity - 6.5 cu.m; boom length – 45 m).
- 5.4 ЭШ-11/70 Single-bucket excavators (Walking dragline excavators with bucket capacity – 11 cu.m; boom length – 70 m).
- 5.5 ЭШ-11/70 Single-bucket excavators equipped with facility for aiming loading on transport means.
- 5.6 ЭШ-14/50 Single-bucket excavators (Walking dragline excavators with bucket capacity – 14 cu.m; boom length – 50 m).
- 5.7 ЭШ-15/80 Single-bucket excavators (Walking dragline excavators with bucket capacity – 15 cu.m; boom length – 80 m).
- 5.8 ЭШ-15/80 Single-bucket excavators equipped with facility for aiming loading on transport means.
- 5.9 ЭШ-15/90 single-bucked excavators (Walking dragline excavators with bucked capacity 15 cu.m; boom length 90 m).
- 5.10 ЭШ-20/65 Single-bucket excavators (Walking dragline excavators with bucket capacity – 20 cu.m; boom length –65 m).
- 5.11 ЭШ-10/100 Single-bucket excavators (Walking dragline excavators with bucket capacity –10 cu.m; boom length – 100 m).
- 5.12 ЭШ-10/100 Single-bucket excavators equipped with facility for aiming loading on transport means.

*Note: on the Customer's request excavators can be supplied with driving mechanisms:

- DC driving mechanisms as per systems "generator-motor", generators driven by thyristor converters or magnetic amplifiers;

- AC driving mechanisms controlled by frequency converters, "frequency changer- asynchronous motor" system.

Bucket-wheel excavators

Design and manufacture according to the Customer's performance specifications, as well as:

- 5.13 Stripping bucket-wheel excavator ЭШП-1600, theoretical output 5000 cu.m/hr in friable mass.
- 5.14 Stripping bucket-wheel excavator ЭШП-5000, theoretical output 5000 cu.m/hr in friable mass.
- 5.15 Mining bucket wheel excavator ЭШД-5000, theoretical output 5000 cu.m/hr in friable mass.
- 5.16 Stripping bucket-wheel excavator ЭП-5250, theoretical output 5250 cu.m/hr in friable mass.
- 5.17 Mining bucket wheel excavator ЭШД-5250, theoretical output 5250 cu.m/hr in friable mass.
- 5.18 Bucket wheel excavator with advanced digging force ЭШПП-5250, theoretical output 5250 cu.m/hr in friable mass.

Spreaders

Design and manufacture according to the Customer's performance specifications, as well as:

- 5.19 Spreader, type ОШ-1600/110, handling capacity in friable mass 1600 cu.m/hr, dumping radius 110 m.
- 5.20 Spreader, type ОШ-4500/90, handling capacity in friable mass 4500 cu.m/hr, dumping radius 90 m.
- 5.21 Spreader, type ОШ-4500/180, handling capacity in friable mass 4500 cu.m/hr, dumping radius 180 m.
- 5.22 Spreader, type ОШ-5000/190, handling capacity in friable mass 5000 cu.m/hr, dumping radius 190 m.
- 5.23 Spreader, type ОШ-5250/190, handling capacity in friable mass 5250 cu.m/hr, dumping radius 190 m.
- 5.24 Spreader, type ОШ-7000/190, handling capacity in friable mass 7000 cu.m/hr, dumping radius 190 m.

Belt Conveyors

- 5.25 Belt conveyors КЛ-8000 (mobile and stationary), belt width 800...2000 mm designed, designed to convey soft, bedrock and other rocks and mineral resources.
- 5.26 Rollers for belt conveyors, belt width from 800 to 2000 mm.
- 5.26.1 High-angle conveyors with pressure belt, capacity up to 3500t/hr.
- 5.26.2 Feed apron, mean type.
Feed, II mean type.
Capacity – up to 1700 cu.m/hr.
Belt width – up to 2400 mm.
Length – 4,5-18 m

Facilities for Stockyard

Design and manufacture of drum-type blending plants for ore and coal, rotary stacker-reclaimers according to the Customer's performance specifications, as well as:

- 5.27 Blending rotary crawler reclaimer ЗРГ-1200, theoretical mass capacity 1200 t/hr.
- 5.28 Blending rotary reclaimer ЗРГ-1000, theoretical mass capacity 1000 t/hr.

- 5.29 One-boom nonrotatable stacker Y1CH-1000, theoretical mass capacity 1000 t/hr.
5.30 One-boom nonrotatable stacker Y1CH-5000, theoretical mass capacity 5000 t/hr.

Stationary, semistationary and self-propelled feeder-breakers

- 5.31 Rock crushing units on the basis of pneumohydraulic hammer with blow energy of 100kJ.
5.32 Semistationary crushing units on the basis of crusher – ККД – 1500/180ГРЩ
5.33 Semistationary feeding-breaking units ДПУ-2000/1200K on the basis of crusher KBKД-1450/180.
5.34 Semistationary crushing units ДПУ-2000/1200-Ш on the basis of crusher – ДШЗ – 1000/320-1.
5.35 Self-propelled feeding-breaking units ДПА-2000 on the basis of crusher KBKД-1450/180.
Note: below see data on crushers

Crushers

- 5.36 Cone crushers and cone-roll crushers.

Coarse crushing

Cone roll crushers KBKД-1450/180 for primary crushing.
Capacity – 2000 cu. m/hr;
Compressive strength of rock bulk - up to 250 MPa;
Feed size - up to 1200 mm;
Discharge opening width – 180 mm (opening can not be adjusted).

Coarse cone crushers ККД-1500/180
Capacity – 1550 cu. m/hr;
Compressive strength of rock bulk - up to 250 MPa;
Feed size - up to 1200 mm;
Discharge opening width – 180 mm.

Reducing crushing

Reducing crushing cone crushers КРД-700/75
Capacity – up to 400 cu.m/hr;
Compressive strength of rock bulk – up to 250 MPa;
Feed size – 550 mm;
Discharge opening width – 75 mm.

Reducing crushing cone crushers КРД-700/100
Capacity – up to 780 cu.m/hr;
Compressive strength of rock bulk – up to 250 MPa;
Feed size – 550 mm;
Discharge opening width – 100 mm.

Secondary crushing

КСД-2200Гр

Capacity - 360-610 cu.m/hr;
Compressive strength of rock bulk - up to 300 MPa;
Max. feed size – 300 mm;
Range of discharge opening adjustment - 30-60 mm.

КСД-2200Т

Capacity – 180-360 cu.m/hr;
Compressive strength of rock bulk - up to 300 MPa;
Max.feed size – 250 mm;
Range of discharge opening adjustment - 15-30 mm.

Fine crushing:

КМД-2200Т1

Capacity – 170-230 cu.m/hr;
Compressive strength of rock bulk - up to 300 MPa;
Max.feed size – 85 mm;
Range of discharge opening adjustment - 5-15 mm.

КМД-2200Т2

Capacity - 150 cu.m/hr*;
Compressive strength of rock bulk - up to 300 MPa;
Max.feed size up to 80 mm;
Range of discharge opening adjustment - 8-12 mm.
* - by strength of rock bulk of 100-150 MPa and humidity of up to 4% in open cycle.

5.37 Jaw crushers.

ДЩ-4x6

Capacity – 10...25 cu.m/hr;
Compressive strength of rock bulk - 300 MPa;
Feed size-up to 340 mm;
Discharge opening width – 40...90 mm.

ДЩ-6x9

Capacity – 35...80 cu.m/hr;
Compressive strength of rock bulk - 300 MPa;
Feed size-up to 500 mm;
Discharge opening width – 70...130 mm.

ДЩ-4x9

Capacity – 15...35 cu.m/hr;
Compressive strength of rock bulk - 300 MPa;
Feed size-up to 340 mm;
Discharge opening width – 40...90 mm.

ДЩ-2.5x9

Capacity – 10...25 cu.m/hr;
Compressive strength of rock bulk - 280 MPa;
Feed size-up to 340 mm;
Discharge opening width – 20...60 mm.

5.38 Toothed screw crushers

ДШЗ-500/140

Capacity up to 200 cu.m/hr*;
Compressive strength of rock bulk - up to 150 MPa;
Feed size-up to 600 mm;
Discharge opening width – 140 mm.

ДШЗ-750/250

Capacity-up to 600 cu.m/hr*;
Compressive strength of rock bulk-up to 150 MPa;
Feed size-up to 900 mm;
Discharge opening width-250 mm.

ДШЗ-1000/320

Capacity - up to 600 cu.m/hr*;
Compressive strength of rock bulk - up to 150 MPa;
Feed size-up to 1200 mm;
Discharge opening width – 320 mm.

* - at strength of rock bulk of 80-120 MPa, 25% content of lumps with maximal dimension in raw product;
- capacity can be changed by increasing/reducing length of the feed opening and power of the drive motors (for ДШЗ 750/250 and ДШЗ – 1000/320).

5.39 Toothed-roll, rotary and hammer crushers

Toothed-double-roll crushers ДДЗ 1500x1200 Г

Capacity - 150...450 t/hr;

Feed size - 500 mm;
 Width of discharge opening - 25...150 mm;
 Compressive strength of rock bulk up to 150 t.

Smooth four-roll crushers Д4Г 900x700

Capacity – 65 cu.m/hr;
 Material being crushed - coke;
 Feed size-up to 40 mm;
 Finished product size – 2...10 mm.

Rotary crushers ДР-1200

Capacity – 1200 t/hr;
 Material being crushed - coal;
 Feed size – 1200 mm;
 Finished products size - 50...100 mm.

Hammer crushers ДМР-14,5x13

Capacity - up to 300 t/hr;
 Feed size – 80 mm;
 Finished product size - 0...3 mm;
 Compressive strength of rock bulk – up to 120 MPa.

Mills:

5.40 Wet grinding mills.

Center-discharge rod mills for wet grinding of ore and nonmetallic mineral resources (except for plastics): МСЦ 3200x4500*, МСЦ 3600x4500, МСЦ 3600x5500, МСЦ 4000x5500;

Center-discharge ball mills for wet grinding of ore and nonmetallic mineral resources (except for plastics) – МШЦ 3200x4500, МШЦ 3600x4000, МШЦ 3600x5500, МШЦ 4000x5500, МШЦ 4500x6000.

Center discharge ball mills for ore wet grinding МШЦ 5500x6500, МШЦ 5500x7500, МШЦ 5500x8000.

Ball mills with grate for wet grinding of ore and nonmetallic mineral resources (except for plastics)-МШР 3200x4500, МШР 3600x4000, МШР 3600x5000, МШР 4000x5000, МШР 4500x5000.

Ore-pebble mills for ore wet grinding – МРГ 4000x7500, МШГРУ 4500x6000, МРГ 5500x7500М.

* In all designations of mill types the first group of figures following the letters indicates the drum diameter, the other one – its length in mm.

Self-grinding mills for ore wet grinding MMC 70x23, MMC 90x30, ММПСИ 70x70.

5.41 Dry grinding mills

Ball mills for dry grinding МШС 1.5/4.6, МШР 1.5x5.6

Output – up to 7; 10 t/hr respectively.

Cement grinding mills МЦ-3.2x9, МЦ-3.2x12, МЦ-4.0x13.

Output – 27; 30; 35 t/hr respectively.

Drum-roll mills with output up to 100 t/hr, reduced specific consumption of electric power, exclusion of small particles, downsizing.

Coal grinding mills:

МБ 56/29 (with drum length to diameter ratio 0,5)

Output – 75 t/hr.

Ш-60

Output 60 t/hr. (Mounting on existing foundations of mills Ш-50 and Ш-50А is possible).

Ш-50

Output – 50 t/hr.

Ш-50А

Output – 50 t/hr.

ШБМ 320/570 (Ш-25)

Output – 25 t/hr.

ШБМ 287/470 (Ш-16)

Output – 16 t/hr.

ШБМ 380/550 (Ш-32)

Output – 32 t/hr.

5.42 Maintenance sets of drives for grinding mills Ш-50 and Ш-50А, including ring gear, driving pinion assembly, ring gear guard with drive mounting on existing foundations of Ш-50 and Ш-50А mills.

5.43 Mechanization facilities for maintenance operations for grinding mills:

- devices for mill drum slow rotation;
- devices for mill drum hoisting, consisting of four hydraulic jacks, pumping plant and two lifting beams;
- units for mill drum relining (with discharge of grinding bodies).

Hydraulic jacks for grinding mill mounting and maintenance operations; load capacity – 200 and 300 t.

Drum winders with electrical equipment and automated process control system

5.44 Drum winders, type 2Ц and ЦР, single drum and БЦК, drum dia – 4 m and more, with outside brake position.

5.45 Drum winders, type МПБ, drum dia – 5 m and more, with inside brake position.

5.46 Multirope mine winders, rope sheave dia 3,25 m and more, type МПМН, МК and ЦШ.

5.47 Skips, ballasts, headframe pulleys, charging and discharging units, guides, box distance bars and girders for bore reinforcement.

5.47.1 Spare parts for all mine winders. Modernization of the existing machines with their re-equipment to multirope ground-based machines.

Various-purpose service equipment

5.48 Slurry pumps:

АН 22x26 ПМ

Capacity - 9000 cu.m/hr;

Head – 90 m;

Motor power - 4000 kW;

АНПМ-9000

Capacity - 9000 cu.m/hr;

Head – 105 m;

Motor power - 4000 kW;

5.49 Car dumpers for unloading open wagons with the capacity of 60...93 t (track gauge – 1524 mm):

- stationary side;
- movable side;
- stationary rotary;
- movable rotary

5.49.1 Modernization of electrical part of the supplied machines with application of modern electrical equipment, drives and power-saving control systems.

Equipment for coal mining

5.50 Heading machine П-110 with two cutter heads located radially.

5.51 Heading machine П-110-01 (П-220) with two cutter heads located radially.

5.52 Heading machine П-110-04 with axial cutter head.

5.53 Heading machine П-110-01 (П-220) equipped with a drilling rig for anchor installation.

5.54 Heading machine П-110-01 М with two cutter heads located radially, certified in conformity with the European standard ATEX.

5.55 Loading belt, belt width 800 mm for heading machines П-110, П-110-01.

5.56 Mining machine УҚДЗ with remote feed system for beds of 0,8-1,3 m.

5.57 Mining machine УҚД 200 with remote feed system for beds of 0,8-1,3 m.

5.58 Mining machine УКН 400 with built-in feed system and frequency adjustment of feed drive for beds of 0,8-1,5 m.

5.59 Machines МП-2 for loading rock bulk crushed by means of drilling-and-blasting method.

5.60 Machines МБП-2 for drilling pits for charge seating and subsequent loading of rock bulk crushed by means of drilling-and-blasting method.

5.61 Flight conveyors КСД 28.

5.62 Dintheaders МПП with cutting tool.

5.63 Bucket – rippers МППк.

6. FACILITIES FOR HYDRAULIC STRUCTURES

- 6.1 Cone gates of dam water outlet up to 2500 mm in dia, mechanically or hydraulically driven.
- 6.2 Hydraulic loaders, pulling force up to 630 tf.
- 6.3 Hydraulic drives for radial gates, force up to 320 tf, rod stroke up to 15 m.
- 6.4 Hydraulic drives for plain gates, force up to 1600 tf, rod stroke up to 15 m.
- 6.5 Step hydraulic drives for plain gates, force up to 1600 tf, lifting height up to 56 m.
- 6.6 Radial gate supports.

7. HANDLING MACHINERY

- 7.1 Stripping cranes.
- 7.2. Pouring cranes with lifting capacity up to 650 t.
- 7.3 Prätzen-cranes (cranes with grabs).
- 7.4 Electric overhead pit cranes.
- 7.5 Electric overhead grab cranes.
- 7.6 General-purpose electric overhead cranes.
- 7.7 Electric overhead slab-transporting cranes.
- 7.8 Overhead cranes with hook swinging mechanism.
- 7.9 Electric overhead cranes with the cross beam flexible suspension and swinging trolley, capacity-up to 80 t.
- 7.10 Travelling gantry and semi-gantry, grab and general purpose cranes.
- 7.11 Special-purpose cranes for hydroelectric station.
- 7.12 Portal full-swing cranes, capacity 16/20/32 t, boom 8-32 m.
- 7.13. Ship loaders and unloaders.
- 7.14 Loading grab cranes.
- 7.15 Unloading and reloading machines for nuclear power station.
- 7.16 Lifting traversers for servicing metallurgical equipment.
- 7.17 Rope and motor grabs of different capacity.
- 7.18 Winches for servicing metallurgical equipment.
- 7.19 Special-purpose dogging cranes.
- 7.20 Telescope booms for cranes:
 - lifting capacity – 25 t, (4 sections, length – 27 m and hydraulic cylinder for telescoping);
 - lifting capacity – 40 t, (2 sections, length – 18 m and hydraulic cylinder for telescoping);
 - lifting capacity – 50 t, (4 sections, length – 35 m and hydraulic cylinder for telescoping).
- 7.19 Equipment for reconstruction of cable cranes.
- 7.20 Hydraulic crawler-mounted cranes, lifting capacity up to 25 t.
- 7.21 Hydraulic crawler-mounted cranes, lifting capacity up to 50 t.
- 7.22 Self-propelled jib cranes KKC-55 with lifting capacity of 55 t on short wheelbase undercarriage MoA3 8004.
- 7.23 Autohydraulic hoists for fire-fighting service, hoisting height-30 m.
- 7.24 Autohydraulic hoists МГП-28.04 on the base of KpA3-65101 undercarriage.
- 7.25 Autohydraulic hoists МГП-28.03 on the base of all-wheel drive undercarriage KpA3-260Г.
- 7.26 Cargo winches HK-312-0304-00-000, rope force 6.9 t.
- 7.27 Cargo winches HK-312-0305-00-000, rope force 3.6 t.
- 7.28 ИМР-2М emergency-rescue vehicles.
- 7.29 General-purpose and special-purpose winches.
- 7.30 Rope hanging equipment.
- 7.31 Facilities (cranes) for slab transfer – УПС (FST).
- 7.32 Loading-unloading facilities (cranes) for flat products transfer – ЗРУ (LUF).
- 7.33 Spares for crane facilities:
 - crane wheels;
 - hoist drums;
 - mechanisms of hoist, crane and trolley travel;
 - shoe brakes ТКП-400, ТКП-500, ТКП-600, ТКП-700, ТКП-800;
 - cross beams and suspensions;
 - balancing trolleys;
 - components of crane metal structures;
 - crane cabins.
- 7.34 Facilities (cranes) for slab transfer and tilting – УКТС (FSTT).
- 7.34.1 Modernization of electrical part of the supplied cranes with application of modern electrical equipment, drives and power-saving control systems.

8. RAILWAY EQUIPMENT AND SPECIAL-PURPOSE MACHINERY

- 8.1 Railway cranes, load-lifting capacity 80 t.
- 8.2 Railway cranes with EDK undercarriage.
- 8.3 Car retarders HK-114 of КНП-5-73 type.
- 8.4 Body car retarders HK 140.
- 8.5 Control units for car retarders БУВЗ-400.
- 8.6 Screw-and rack type hoists for locomotive sheds.
- 8.7 Sowing units HK-213.
- 8.8 Cultivators HK 304, КПС-4 type and spares for them.
- 8.9 Hooks with lifting capacity of 0.5...20 t.
- 8.10 Motor-driven and reclamped grabs with the capacity of 0.6...1.6 cu.m.
- 8.11 Hanging equipment for road-building and agricultural machinery.
- 8.12 Electrically operated rotating drums for leather dressing.
- 8.13 Cars, carrying capacity 1...25 t, for intershop transportation.
- 8.14 Intershop cars for indoor use also.
- 8.15 Selfdumping containers for bulk, chip and scrap materials.
- 8.16 Facilities for galvanic processing, including for:
 - galvanizing;
 - phosphatization;
 - oxidation;
 - copper plating;
 - chromium plating;
 - nickel plating;
 - passivation;
 - pickling;
 - zink removal;
 - chromium removal;
 - nickel removal;
 - collecting;
 - washing;
 - electrolytic chemical polishing;
 - electrolytic chemical degreasing;
 - treatment in acetic acid;
 - alkalization.
- 8.17 Brick cutting machines.
- 8.18 Movable gate.
- 8.19 Units for assembly - beading of bottoms and bodies.
- 8.20 Machine tools for making and working the springs of bar of diameter of 8...60 mm, inside diameter - 50...300 mm including;
 - machine tools for hot spring coiling;
 - machine tools for grinding the spring faces;
 - facilities for prefacing the spring faces of bar having diameter of 30...60 mm by gas torch.
- 8.21 Devices for mechanization of building up the electrodes in electric melting furnaces.
- 8.22 Multiposition plants for semi-automatic milling the workpieces of wood at series and mass production.
- 8.23 Equipment and auxiliaries for repairing major manufacturing installations:
- 8.23.1 Portable metal working devices for machining the worn-out surfaces of large-sized parts of press and forging equipment at site of installation:
 - devices for boring holes with diameters 150...450 mm; 500...1500 mm;
 - portable machines for milling the worn - out surfaces of anvil blocks;
 - devices for milling flat circular surfaces such as mounting seats for press column nuts.
- 8.23.2 Jacks:
 - lifting capacity 100-400 t, lifting height – 150 mm,
 - small - sized jacks, lifting height – 60 mm, lifting capacity – 25 t, stroke – 20 mm.
- 8.24 Automatic lines of pneumatic transport for dry sand.
- 8.25 Automatic machines for manufacture of moulding hooks.
- 8.26 Cantilever slewing exhaust unit.

- 8.27 Machines for clearing and winding of welding wire.
- 8.28 Units for local heat treatment of welds.
- 8.29 Stands for measuring of vibrocharacteristics of pneumatic chipping hammers.
- 8.30 Stands for measuring of vibrocharacteristics of pneumatic drilling machines.
- 8.31 Stands for measuring of vibrocharacteristics of pneumatic grinding machines.
- 8.32 Trailer-type cable-laying machines (for 600 m) for rail-mounted cars with electric drive.
- 8.33 Intershop transport tanks of 0.5, 1, 2 cu.m capacity (due to bodies of motor car transport and battery-operated trucks).
- 8.34 Chambers for parts shot blast cleaning.
- 8.35 Powder fire-fighting set.
- 8.36 Rotating tables of load-carrying capacity specified.
- 8.37 Machines for surface induction hardening.
- 8.38 Electric oil baths for parts tempering after hardening.
- 8.39 Hardening (water and oil) mechanized tanks.
- 8.40 Argon and carbonic acid manifolds.
- 8.41 Vibrating conveyors.
- 8.42 Units for emulsion preparation.
- 8.43 4-roll chip-crushers (Q=2...4 t/hr., fraction 40...120 mm).
- 8.44 Stands for levelling of motor cars bodies.
- 8.45 Unit for washing of motor cars.
- 8.46 Roll press-grinders.
- 8.47 Railway transport facilities for intraworks carriage of heavy, large - sized and long-sized parts.
- 8.48 Furnaces for chemical heat treatment.
- 8.49 Stands, chambers for washing, painting and drying of machine units.
- 8.50 Universal stands for inspection of cars clutch plates.
- 8.51 Air pumps for aggressive mediums,
Capacity – 400 l/hr, head – 10 m.
- 8.52 Drum driers for sand.
- 8.53 Portable units for air laying of antisticking paint on the mold surface.
- 8.54 Units for distilled water production.
Capacity – 35 l/hr.
- 8.55 Telescopic platforms for work at a height.
- 8.56 Equipment for wind power units.
- 8.57 Vacuum degassing steam-ejector pump unit ПЭВН.00.00.00.000.
- 8.58 Thermos-car, capacity of 60 t.
- 8.59 Sling making machine.
- 8.60 Equipment for liquid glass melting.
- 8.61 Unit for tank hydraulic tests.
- 8.62 Gas cylinder system vacuum degassing and pressure test stand.
- 8.63 Equipment for bearings preservation.
- 8.64 Metal samples pneumatic transport.

9. GEAR SPEED REDUCERS AND GEAR TRANSMISSIONS

- 9.1 General-purpose cylindrical gear speed reducers:
 - Single-reduction, center distance – 355...1250 mm.
 - Double - reduction, center distance of low speed stage - 400...1250 mm.
 - Triple-reduction, center distance of low speed stage 400...1250 mm.
- 9.2 Large-sized cylindrical single - and double-reduction (mill), center distance - up to 2700 mm.
- 9.3 Pinion stands, center distance – 500...1400 mm.
- 9.4 Worm reducers, cylindrical and globoid, single-reduction with the worm under, over and at the side of the wheel, center distance - 63...630 mm.
- 9.5 Worm reducers, cylindrical and globoid, double-reduction, center distance of low speed stage - 160...400 mm.
- 9.6 Combined gear speed reducers, worm-cylindrical and cylindrical-worm.
- 9.7 Planetary gear speed reducers, single-, double- and triple-reduction, with vertical and horizontal version of output shaft. The output shaft torque up to 1000 kNm.
- 9.8 Mine winder reduction gears:

- double-drive ЦО-14, ЦО-16, ЦО-18, ЦО-22, 2ЦД-2200, center distance 1400 mm;1600 mm; 1800 mm; 2200 mm;
- double-reduction speed reducer ЦД-20, overall center distance – 2000 mm; reduction ratio-20.
- 9.9 Cylindrical–bevel-cylindrical speed reducers:
 - with centre distance of low speed stage up to 1000 mm, transmission capacity up to 1000 kW;
 - with integrated stop in the form of a backward running clutch.
- 9.10 Gear wheels and pinion shafts: cylindrical, bevel, worm etc.
- 9.11 Gear couplings for connecting the shafts with dia of 30...1000 mm.
- 9.12 Reducers for mechanisms drives of bucket-wheel, walking and crawler-mounted excavators, trunk conveyors, underground escalators.
- 9.13 Design and manufacture of reducers for import equipment.

10. MANUFACTURE OF CASTINGS, FORGINGS

- 10.1 Steel castings:
 - manufacture of box-type parts (cross bars, bodies, housings) weighing up to 65 t of low-alloy, medium-alloy steels;
 - manufacture of heavy parts (anvil blocks, impact plates, rams) weighing 80...100t of low-alloy and medium-alloy steels;
 - manufacture of castings weighing 5...10 t of carbon and alloy steels as well as high alloy steels with special properties (toothed wheels, bodies, speed reducer covers);
 - manufacture of light castings of carbon and alloy steels weighing 0.05...1 t (armour plates, lugs, covers);
 - manufacture of any type of low carbon medium alloy and high alloy steel castings weighing 1...60 t.
- 10.2. Iron castings. Castings of the following iron grades can be manufactured:
 - gray cast iron Cч10, Cч15, Cч20, Cч25, Cч30 GOST 1412-85;
 - irons for ingot molds, beds, extension pieces CчИ1, CчИ2, OST 24.920.02-80;
 - special-properties irons ЧХ1, ЧХ28Н1, ЧХ3, ЧС5Ш, ЧХ 28;
 - antifriction iron АЧС1 GOST 1585-85;
 - high-strength irons as per DSTU 3925-99; ВЧ450-5, ВЧ500-2 for castings weighing up to 5,0 t; ВЧ600-3,ВЧ700-2 for castings weighing up to 50 kg;
 - special-purpose irons CчP (for retorts), Cч20XH (for blast-furnaces lining), Gh 190 (for car spares);
 In separate cases castings of other iron grades can be considered and accepted for manufacture.
- 10.3 Non-ferrous castings:

Castings of the following bronze and aluminium alloy grades can be manufactured:

 - БpA9Ж3Л, БpA10Ж3Mц2Л, БpA10Ж4H4Л GOST 493-79;
 - БpO10Ф1 GOST 613-79;
 - БpO5Ц5C5 GOST 613-79;

There is a possibility to consider manufacture of castings of other non-ferrous alloy grades.
For example:GZ CuSn12Ni, GZ Cu7ZnPb, GZ CuSn12Pb DIN 1705, БpO10C10 GOST 613-79 etc.

 - manufacture of body-of-rotation type castings by centrifugal method with liquid metal weight from 20 kg to 3,5 t, diameter 105...1500 mm;
 - manufacture of heavy sleeve-, nut-, insert- type castings with the total weight of casting and accessories up to 10 t (crane capacity);
 - casting in stationary moulds with the diameter from 50 up to 150 mm and 300 mm high (with no regard for the head part);
 - making of castings of strap type with maximum dimensions 1000x500x50;
 - all castings of rotation-body-type are rough machined (agreed upon when signing the contract);
 - remelting of aluminium and copper scrap and casting into pigs.
- 10.4 Forgings from ingots with premachining:
 - manufacture of parts of carbon and alloy steels of round, square, rectangular and combined sections as;
 - shafts weighing from 0.05 to 85 t, from 1.5 to 26 m long;
 - cylinders weighing from 0.5 to 105 t, from 350 to 2000 mm in diameter, from 700 to 9000 mm long;
 - rings, sleeves weighing from 0.5 to 65 t, from 0.55 to 5 m in diameter;
 - plates weighing from 0.5 to 75 t, up to 3 m wide;
 - blocks weighing from 0.3 to 40 t, from 250x250x300 mm to 600x600x600 mm in dimension;
 - manufacture of crank-shaft forgings with cranks positioned in two interperpendicular planes in the press with 2400 tf capacity .

Forgings weight: 7-15 t, overall dimensions of cranks: 500-800 mm.

 - manufacture in the press with 10000 tf capacity of forgings of hollow spheres type truncated on both sides in the

press with 10000 tf capacity . Forgings weight: 10-25 t, sphere dimensions:
R=800-1200 mm, H=1000-1600 mm.

- 10.5 Forgings weighing from 5 to 400 kg of steel grades 20, 35, 45, 40XH, 40X, 38X2H2MA, 20X2H4A.
Manufacture of forgings of carbon and alloy steels of round, square, rectangular and combined sections by different methods:
- by open forging of disks, blocks, bushings, rings, shafts, hubs, hexagon-head bolts with the thread size of M64-M100, hexagon nuts with the thread size of M42-M180, eye-bolts with the thread sizes of M72-M100;
- by coiling method manufacture of torsion, tension, compression helical springs made of metal rolled products of steel 60C2(A) Ø8-50 mm.
- 10.6 Stampings weighing from 0.011 to 33 kg of carbon steels: eye-bolts M8-M64, hexagon-head bolts with the thread size M16-M56, single hooks with load capacity of 2-8 tons, fastening hooks with load capacity of 0.5...5 ton, angle pieces 1/4"-2", T-joints 1/4"-2", knives for harvester-shredders, disk springs.
- 10.7 Open-hearth and electric arc melting pressing and forging ingots weighing 1.6 and 170 t;
Vacuum degassed bottom-poured ingots weighing 5-13.3 t of killed steel grades.
Tetrahedral bottom-poured ingots weighing 5-13.3 t for rolling mills.
Vacuum degassed bottom-poured ingots weighing 5-27.6 t of killed steel grades.
Ingots of low-alloy stainless steel grades weighing up to 27.6 t melted in electric furnaces.

11. METALLURGICAL PROCESSES

- 11.1 Fettling, cleaning and primary heat treatment of steel and iron castings weighing from 0.5 to 100 t.
- 11.2 Induction hardening of teeth, bushings, casings, wheels, pinion-shafts, pistons, screws, rolls, chocks, disks and other parts.
- 11.3 Chemical heat treatment of heavy-duty gear teeth.
- 11.4 Annealing, isothermal annealing, normalizing cum tempering and tempering of blanks.
- 11.5 Hardening with subsequent tempering of forged oversized blanks weighing up to 65 t with the following dimensions:
- cylindrical: up to 2500 mm in dia, up to 25000 mm long;
- rectangular: up to 200 mm thick at up to 2500 mm wide;
- from 200 to 700 mm thick at width up to 2000 mm;
- from 700 mm thick and more at width up to 1500 mm;
- rings, sleeves weighing up to 25 t, up to 4500 mm in dia.
- 11.6 Hardening cum tempering of cast parts.
- 11.7 Tempering of metal structures, iron castings, ageing of forgings and castings in the process of machining.
- 11.8 Gas case hardening of machined parts up to 3500 mm long and up to 1850 mm in diameter.
- 11.9 High-temperature hardening of parts up to 2500 mm in dia, weighing up to 25 t of steels ЭИ-415, 2X13, 3X13, ЭИ-961, ЭИ-802 and other heat-resistant grades of steel.
- 11.10 Carrying out of research and development works on metallurgical processes problems.
- 11.11 The test center is equipped with modern facilities allowing to carry out the check of forgings, castings, welded joints etc. The center experts have the certificates of competence and have undergone training in specialized centers.
The test center is accredited for technical competence in testing objects of high safety importance under the supervision of the Labour Protection State Supervision, State Branch Certification Commission in the nuclear power field.

12. WELDING PROCESSES

- 12.1 Manufacture of machine-building, building and other metal structures of various purpose, incl: of high-strength steels for operation under any climatic conditions (up to 50°C incl.)
- 12.2 Fabrication of welded cylindrical structures up to 6 m in diameter by electric arc welding.
- 12.3 Manufacture of cast-and-welded and forged-and-welded cylindrical parts of carbon and alloy steels by electric arc welding with an open narrow single-U butt weld having a throat from 500 to 3000 mm, up to 9500 mm long and with thickness of welded joint of up to 500 mm.
- 12.4 Argon arc welding of titanium with a thickness up to 15 mm. Welding of electroplating baths.
- 12.5 Electroslag welding of large-size articles weighting up-to 360 t of carbon and low-alloy steels with welded section of 4500x5500 mm (weld thickness x weld seam length).
- 12.6 Cutting-off of casting heads up to 1.5 m in diameter.
- 12.7 Surfacing of copper and alloys on copper basis on steel, cladding of copper with steel.

- 12.8 Welding of steels with copper and its alloys.
- 12.9 Manufacture of welded shells, milling of rolled plates with thickness up to 80 mm and width up to 3600 mm.
- 12.10 Manufacture of high-accuracy odd-shaped parts from low-alloy and intermediate-alloy steel plates with thickness from 6 to 300 mm and overall dimensions up to 2500x9000 mm in machines with CNC.
- 12.11 Manufacture of high-accuracy odd-shaped parts from corrosion-resistant steel, nonferrous metal plates with thickness from 5 to 40 mm and overall dimensions up to 2500x9000 mm by plasma arc cutting in machines with CNC.
- 12.12 Manufacture of forged-and-welded lightened aprons of increased rigidity.
- 12.13 Wear resistant, anticorrosive, reinforcing and restoring hardfacing of cylindrical surfaces of plungers, rollers, shafts, rods and other parts with diameters from 100 to 2000 mm.
- 12.14 Manufacture of building structures for sheltered threshing-floors, granaries, etc.
- 12.15 Manufacture of copper lugs for wires of various cross-sections.
- 12.16 Resistance welding of band saws up to 50 sq. mm in section.
- 12.17 Manufacture of metal doors, gates, safes
- 12.18 Manufacture of washers of various diameters by stamping.
- 12.19 Repair work performance by welding and surfacing.
- 12.20 Repair (manufacture) of various purpose crane booms as well as telescopic of any capacity.
- 12.21 Repair (manufacture) of crane bridges of any capacity and purpose.
- 12.22 Performance of high-temperature brazing with copper-containing and argentic solders, fluoborate and borido-halogenide fluxes.
- 12.23 Manufacture of welded rotors for radial blow machines (RBM).

13. MACHINING AND ASSEMBLY

- 13.1 Turret and turning operations:
 - manufacture of parts like screws, nuts, washers, bushings, wheels, axles, rollers, etc. with diameters up to 4000 mm, up to 25000 mm long and weighing up to 300 t.
- 13.2 Vertical turning and boring operations:
 - machining of parts with diameters from 500 mm to 13000 mm and height up to 5000 mm weighing up to 220 t.
- 13.3 Grinding operations:
 - cylindrical grinding of parts with min. grinding diameter of 5 mm, max. diameter 2300 mm, max. grinding length being 18000 mm, minimum radial run-out 0.002 μm on diameter of 600 mm, roughness Ra0.1 μm .
 - internal grinding of holes with diameters from 40 to 300 mm, depth up to 1200 mm, and with accuracy as per the 7th class of accuracy.
- 13.4 Honing operations:
 - honing of parts with diameters from 60 to 700 mm, minimum length of honing being 90 mm and maximum length 5000 mm.
- 13.5 Superfinishing and fine diamond grinding of outer surfaces of bodies of rotation providing Ra 0.05 μm roughness.
- 13.6 Deep-hole drilling and boring operations:
 - deep-hole drilling for rotary bodies with lengths of parts to be machined from 600 to 25000 mm, (length 25000 mm at drilled diameter from 20 to 250 mm) drilled diameters being between 40 and 250 mm, maximum weight of the blank being 250 t.
 - deep-hole boring operations with diameters of holes to be bored between 250 and 2200 mm and with article length up to 25000 mm (L=8000 mm at bore diameter from 50 to 80 mm, L=250000 mm at the diameter from 80 to 1000 mm, L=22000 mm at the diameter from 1000...2200 mm).
 - drilling and boring operations for basic parts and parts like flanges weighing up to 100 t, min. hole diameter 5 mm, max. hole diameter 1100 mm.
 - gun drilling of holes with the diameter from 10 to 36 mm, maximum depth 1300 and 2300 mm correspondingly in basic parts weighing up to 40 t.
- 13.7 Multi purpose milling of basic parts with intricate sections according to control programs in the machining center.
- 13.8 Gear cutting operations:
 - cutting of spur, helical and herringbone gear wheels with modules from 1 mm up to 75 mm and diameter of a part up to 10000 mm; diameters up to 2000 mm according to the 7th degree of accuracy;
 - cutting of worm gear wheels M= from 1 to 30 mm with centre distance up to 2000 mm;
 - cutting of globoidal worms and gears (gear rings) with M=5 to M=36 mm, diameters of parts being up to 2700 mm and centre distance being up to 1500 mm;
 - cutting of gear rings, casings, discs with internal gearing from M=1 to M=36 mm and diameter being 4500 mm;
 - cutting of pinion - shafts with diameters up to 1600 mm, lengths up to 5800 mm and maximal module using a gear hob-30 mm, a disk-type milling cutter-45 mm, an end-mill type gear cutter-75 mm;

- 13.10 Vertical grinding operation:
 - machining of intricate section of wheel type parts with diameters from 200 to 3200 mm and height up to 2000 mm according to control programs.
- 13.11 Electric erosion machining operations:
 - efficient electric erosion machining of parts from hardened and difficult-to-cut materials in the vertical machine within the range from 500 to 3800 mm in diameter and height up to 850 mm.
- 13.12 Fitting - and - assembly operations:
 - assembly and testing of hydraulic systems, separate cylinders and other vessels under pressure of 1000 atm and speed reducers of various types with a load up to 100 kNm.

14. TOOLS PRODUCTION

- 14.1 Manufacture of cutting tool bodies with ЧП(SNP):
 - end-type and disk-type milling cutters (\varnothing 100-315 mm b=10-30 mm), face milling cutter (\varnothing 80-315 mm with $\varphi=90^\circ, 60^\circ, 45^\circ$) and milling cutters for chamfering;
 - drilling-boring heads with diameters of 50, 65, 70, 105 mm;
 - boring heads with diameter of 55 mm;
 - boring blocks with micrometer feed and with boring range of \varnothing 23-655 mm;
 - boring blocks with preset adjustment and with boring range of \varnothing 23-655 mm;
 - left-hand and right-hand cutting tools with $\varphi=25^\circ, 45^\circ, 75^\circ, 90^\circ, 93^\circ, 95^\circ$.
- 14.2 Manufacture of high-frequency modular attachments for boring and milling machines and other equipment.
- 14.3 Manufacture of transfer moulds for production of plastic products.
- 14.4 Manufacture of cutting tools (taps, reamers, multiflute drills, end-mill type and disk-type gear milling cutters) by steel P 18 and tungsten - free electrodes surfacing.
- 14.5 Manufacture of pneumatic hammers MO6.
- 14.6 Manufacture of molds for rubber vulcanization (single-cavity molds and multi-cavity molds) with diameters up to 500 mm.
- 14.7 Manufacture of drill chucks with operating drill range from 1 to 16 mm.
- 14.8 Manufacture of thread gauges (plugs, rings) to check:
 - metric thread from M5 to M400;
 - trapezoidal and buttress threads from 100 to 400 mm in diameter.
- 14.9 Manufacture of plain gauges to check holes with dia from 6 to 200 mm.
- 14.10 Manufacture of bench vices with jaw width from 120 to 160 mm.
- 14.11 Manufacture of profiling end tools for contour and milling machining.
- 14.12 Manufacture of fastening equipment for metal-cutting machine tools according to Customer's technical specification.
- 14.13 Manufacture of devices for the inspection of mean diameters of threads (outer and inner diameters) from 150 mm and more.
- 14.14 Precision machining of working members of blanking dies and intricate section parts having unlimited hardness by the method of electric erosion machining which makes the subsequent fitting unnecessary.
- 14.15 Manufacture of coarse gear hob cutters.
- 14.16 Manufacture of non-reversible and reversible jaws for lathe chucks.
- 14.17 Manufacture of vibration dampened pneumatic chipping hammers MPB and compactors ТПВ.
- 14.18 Manufacture of sledges, axes, hammers, knives to planes, wood chisels, chisels of all types, centre punches, letters and figures stamps.
- 14.19 Manufacture of fasteners for cutting tools equipped with changeable through-away tips.

