NOMENCLATURE

65th International Engineering Fair

13th International Machine Tools Exhibition

19th International Foundry Fair

26th International Welding Engineering Fair

9th International Surface Technology Fair

7th International Plastics, Rubber and Composites Fair

8–11 October, 2024

Brno – Czech Republic

The key marks will be

- **Industry 4.0 and a Digital Factory** – digitization of production

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MINING, METALLURGICAL, CERAMIC AND GLASS ENGINEERING

MSV 2024

Mining, boring and dressing equipment

1.1.1 Machines and instruments for geological prospecting
1.1.2 Instruments for geophysical prospecting
1.1.3 Machines and equipment for mining
1.1.4 Mining equipment for underground mines
1.1.5 Machines for open-cast mining
1.1.6 Machines and equipment for coal and ore dressing, accessories
1.1.7 Machines and equipment for crude oil and natural gas exploitation
1.1.8 Machines and equipment for stone, sand and clay excavation
1.1.9 Machines for mineral raw material processing
1.1.10 Fuel transport equipment
1.1.11 Storing equipment and tanks for fuels
1.1.12 Control systems of extraction machines
1.1.80 Measuring instruments for mining, boring and dressing equipment
1.1.87 CAD, CAM, CIM in mining processes and equipment
1.1.88 Consultancy in mining processes and equipment
1.1.89 Engineering and design service for metal production and processing
1.1.90 Service and repairs of mining, dressing and boring equipment
1.1.91 Refurbished mining, boring and dressing equipment
1.1.92 Technologies for mining processes
1.1.93 Implementation of complete mining, boring and preparation equipment plants
1.1.99 Mining, boring and dressing equipment – other

1.2.1 Metal production and processing equipment – metallurgical equipment
Pig iron production
1.2.1.1 Accessories of pig iron production equipment
1.2.1.2 Blast furnaces
1.2.1.3 Gas cleaning equipment
1.2.1.4 Auxiliary equipment for blast furnaces
1.2.1.5 Coking plant equipment
1.2.1.6 Linings and refractory material for metallurgical production
1.2.1.7 Slag products
1.2.1.99 Machines and equipment for pig iron production – other

1.2.2 Steel works equipment
1.2.2.1 Steel production equipment, furnaces, converters
1.2.2.2 Converter steel works
1.2.2.3 Continuous casting steel works
1.2.2.4 Automatic lines for casting production
1.2.2.5 Electric steel production equipment
1.2.2.6 Additives and alloying additions
1.2.2.7 Special ceramics for continuous steel casting

1.2.2.8 Scrap treatment and processing equipment
1.2.2.8.1 Hydraulic shears for scrap processing

1.2.2.9 Auxiliary equipment for steel works
1.2.2.99 Steel works equipment – other

1.2.3 Rolling mill and drawing plant equipment

1.2.3.1 Hot rolling mills

1.2.3.2 Cold rolling mills
1.2.3.2.1 Rolls for cold rolling

1.2.3.3 Blooming mills
1.2.3.4 Rolling mill drives
1.2.3.5 Conveyers for rolling mills
1.2.3.6 Separating and cutting machines for metallurgical production
1.2.3.7 Tube rolling and drawing mills
1.2.3.8 Tube treatment machines and tube insulation
1.2.3.9 Wire-drawing machines for rolling and drawing mills
1.2.3.10 Spooling equipment for rolling and drawing mills
1.2.3.11 Special machines for rolling mills
1.2.3.12 Handling machines for rolling and preparation plants
1.2.3.13 Accessories of rolling and treatment mills
1.2.3.14 Auxiliary equipment for rolling mills
1.2.3.15 Thin-walled profile production lines
1.2.3.99 Rolling mill and drawing plant equipment – other

1.2.4 Equipment for the production of non-ferrous metals

1.2.5 Heat treatment of metals
1.2.5.1 Accessories of equipment for heat treatment of metals
1.2.5.2 Hardening technology
1.2.5.3 Annealing technology
1.2.5.4 Tempering technology
1.2.5.5 Nitriding technology
1.2.5.6 Carburizing technology
1.2.5.99 Heat treatment of metals – other

1.2.6 Industrial furnaces for metal processing
1.2.6.1 Accessories for industrial furnaces
1.2.6.2 Industrial chamber furnaces for metal processing
1.2.6.3 Continuous furnaces for metal processing
1.2.6.4 Vacuum, crucible, combustion, bell and other furnaces
1.2.6.5 Electric furnaces for metal processing

1.2.6.6 Gas furnaces for metal processing
1.2.6.6.1 Gas burners for metal heat treatment furnaces

1.2.6.7 Metal heat treatment equipment including controlled atmosphere
1.2.6.8 Vacuum furnaces for metal processing
1.2.6.9 Melting furnaces for metal processing
1.2.6.10 Soldering furnaces
1.2.6.11 Plasma furnaces for metal processing
1.2.6.12 Fireclay brick formpieces for industrial furnaces
1.2.6.99 Furnaces and equipment for metal processing – other

1.2.7 Induction heating equipment for metals
1.2.7.1 High frequency generators for induction heating

1.2.95 Heat treatment of metal components to order

1.2.99 Metal production and processing equipment – other

Machines and equipment for the ceramic and glass industries

1.3.1 Hot processing technologies
1.3.1.1 Components and accessories of drying equipment for the ceramic and glass industries
1.3.1.2 Firing kilns
1.3.1.3 Firing tools
1.3.1.4 Kiln burners and heating systems
1.3.1.5 Kiln carriages and transport systems
1.3.1.6 Refractory materials
1.3.1.7 Monitoring and control instruments for firing technologies
1.3.1.8 Technical equipment for the neutralization of environmentally undesirable substances
1.3.1.9 Machines for hot processing technologies – other

1.3.2 Technologies for the ceramic industry – other
1.3.2.1 Raw material dressing in the ceramic industry
1.3.2.2 Mass preparation in the ceramic industry
1.3.2.3 Technology for mass moulding in the ceramic industry
1.3.2.4 Handling and transport technologies in the ceramic industry
1.3.2.5 Surface treatment of ceramic industry products
1.3.2.6 Machines and equipment for the processing of ceramics
1.3.2.7 Saws and grinding, milling and drilling machines for ceramics
1.3.2.8 Materials for the production of moulds in the ceramic industry

1.3.3 Machines and equipment for the glass industry
1.3.3.1 Hot processing technologies – glass melting
1.3.3.2 Burner systems for the glass industry
1.3.3.3 Glass moulding

1.3.3.4	Glass cooling technology
1.3.3.5	Special equipment and materials for the glass industry
1.3.3.6	Technologies for the glass industry – other
1.3.87	CAD, CAM, CIM for the glass and ceramic production
1.3.99	Machines and equipment for the ceramic and glass industry – other
1.4	**Machines and equipment for powder metallurgy technologies**

MATERIALS AND COMPONENTS FOR MECHANICAL ENGINEERING

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Metallurgical semi-products and products of metals

2.1.1 Basic metallurgical semi-products
2.1.1.1 Ingots
2.1.1.2 Billets
2.1.1.3 Blooms, slabs
2.1.1.4 Continuous casts
2.1.1.5 Slag

2.1.2 Hot rolled steel
2.1.2.1 Hot extruded steel
2.1.2.2 Bar steels and profiles

2.1.3 Steel sheets
2.1.3.1 Hot rolled sheets
2.1.3.2 Cold rolled sheets
2.1.3.3 Zinc-coated steel sheets
2.1.3.4 Tinned steel sheets
2.1.3.5 Sheets, sections and strips of corrosion-proof steels
2.1.3.6 Abrasion-resistant sheet metal
2.1.3.7 High-strength sheet metal
2.1.3.8 Surface finished steel sheets
2.1.3.9 Perforated steel sheets
2.1.3.10 Bands, strips
2.1.3.11 Profiled sheets and strips
2.1.3.12 Isotropic sheets and strips for electric engineering
2.1.3.13 Anisotropic sheets and strips for electric engineering
2.1.3.14 Steel foils
2.1.3.99 Steel sheets – other

2.1.4 Steel pipes, tubes, elbows, closed sections

2.1.4.1 Seamless steel tubes and pipes
2.1.4.1.1 Seamless corrosion-proof tubes and pipes

2.1.4.2 Welded steel tubes and pipes
2.1.4.2.1 Welded corrosion-proof tubes and pipes

2.1.4.3 Centrifugally cast tubes and pipes
2.1.4.4 Thick-walled steel tubes and pipes

2.1.4.5 Thin-walled steel tubes and pipes
2.1.4.5.1 Precision thin-walled steel welded tubes and pipes
2.1.4.5.2 Thin-walled corrosion-proof tubes

2.1.4.6 Surface finished tubes
2.1.4.7 Tube sleeves, couplings, elbows
2.1.4.99 Steel tubes and pipes – other

2.1.5 Cold rolled steel
2.1.5.1 Cold extruded steel
2.1.5.2 Cold profiled steel

2.1.6 Drawn steels
2.1.6.1 Cold drawn steel
2.1.6.2 Hot drawn steel

2.1.7 Forged steels

2.1.8 High-grade steels
2.1.8.1 Tool steels
2.1.8.2 High-speed steels
2.1.8.3 Refractory steels
2.1.8.4 Corrosion-proof steels
2.1.8.5 High-alloy steels

2.1.8.6 Special steels
2.1.8.6.1 Steels for low temperatures

2.1.9 Peeled steel

2.1.10 Steel wires
2.1.10.1 Corrosion-proof wires

2.1.11 Rails

Forgings, pressed parts
2.2.1 Pressed, drawn and stamped parts

2.2.2 Open die forgings
2.2.2.1 Open die forgings of steel
2.2.2.2 Open die forgings of non-ferrous metals

2.2.3 Drop forgings
2.2.3.1 Drop forgings of steel
2.2.3.2 Drop forgings of non-ferrous metals

2.2.4 Upset pieces
2.2.5 Extruded pieces

2.2.6 Metal pressed pieces
2.2.6.1 Cold pressed parts of sheet
2.2.6.2 Hot pressed parts of sheet

2.2.99 Forgings, pressed parts – other

2.4 Metal workpieces
2.4.1 Fine metal workpieces
2.4.2 Turned, milled, drilled and threaded components

2.5 Special elements – metal semi-products

Non-ferrous metals and semi-products of non-ferrous metals
2.6.1 Non-ferrous metals and alloys

2.6.2 Semi-products of non-ferrous metals
2.6.2.1 Semi-products of aluminium and aluminium alloys
2.6.2.1.1 Aluminium sheets, strips
2.6.2.1.2 Aluminium foils
2.6.2.1.3 Aluminium pipes and rods
2.6.2.1.4 Aluminium wires
2.6.2.1.5 Aluminium sections
2.6.2.1.6 Aluminium foam
2.6.2.1.7 Aluminium bodies for central heating

2.6.2.2 Sheets, rods, tubes and wires of copper
2.6.2.3 Sheets, rods, tubes and wires of brass
2.6.2.4 Semi-products of bronze
2.6.2.5 Semi-products of titanium
2.6.2.6 Semi-products of nickel alloys
2.6.2.7 Semi-products of magnesium alloys
2.6.2.8 Semi-products of lead alloys
2.6.2.9 Semi-products of precious metals alloys

2.6.3 Thermal bimetals

2.6.99 Non-ferrous metals and semi-products of non-ferrous metals – other

2.7 Metal powders and powder metallurgy products

2.8 Products of sintered carbides
2.8.1 Sinter pressed pieces

Some metal elements and components for mechanical engineering

2.9.1 Connecting materials
2.9.1.1 Screws

2.9.1.2 Nuts
2.9.1.2.1 Pressing and riveting nuts

2.9.1.3 Washers

2.9.1.4 Retaining rings
2.9.1.5 Screws
2.9.1.6 Rivets
2.9.1.7 Bolts
2.9.1.8 Clips
2.9.1.99 Connecting materials – other

2.9.2 Forgings
2.9.3 Clamps / grips

2.9.4 Springs
2.9.4.1 Coiled springs
2.9.4.2 Telescopic springs
2.9.4.3 Gas cylinders
2.9.4.4 Polyurethane springs

2.9.5 Expanded metal
2.9.6 Gas struts

2.9.7 Wire products
2.9.7.1 Wire nettings
2.9.7.2 Steel ropes
2.9.7.3 Wire nets
2.9.7.3.1 Welded mesh / nets
2.9.7.4 Wire fabrics
2.9.7.5 Bent wire components
2.9.7.6 Brushes with steel wires
2.9.7.99 Wire products – other

2.9.8 Steel structures
2.9.8.1 Components and structures (sub-supplies)
2.9.8.2 Heavy structures (sub-supplies)
2.9.8.3 Welded structures
2.9.8.3.1 Welded pieces
2.9.8.4 Poles
2.9.8.4.1 Lighting towers
2.9.8.5 Steel structures for waterworks (weirs, lock chambers)
2.9.8.6 Railway, road and pipeline steel bridges
2.9.8.7 Steel containers, silos
2.9.8.8 Steel gates, doors, barriers
2.9.8.9 Steel pallets
2.9.8.10 Hot galvanized steel structures
2.9.8.11 Assembly of steel structures
2.9.8.99 Steel structures – other

2.9.9 Tube structures
2.9.9.1 Metal pipelines and tubes
2.9.9.2 Fittings
2.9.9.2.1 Fittings for joining by pressing in
2.9.9.3 Flanges for tube structures
2.9.9.4 Coils, corrugated pipes
2.9.9.99 Tube products – other

2.9.10 Apparatus, vessels, tanks
2.9.10.1 Steel bottles
2.9.10.2 Pressure apparatus and vessels
2.9.10.2.1 Pressure apparatuses and vessels
2.9.10.2.2 Valves for pressure vessel safety
2.9.10.3 Non-pressure apparatuses and vessels
2.9.10.4 Storage tanks

2.9.11 Metal hoses
2.9.11.1 Connecting and fixing elements of metal hoses
2.9.11.2 Flexible hoses of high-grade steel
2.9.11.3 Armoured hose sets for product transport

2.9.12 Chains
2.9.13 Disk and other wheels
2.9.14 Piston rings
2.9.15 Distance rings
2.9.16 Pins
2.9.17 Draw bars
2.9.18 Connecting rods
2.9.19 Crankshafts

2.9.20 Absorbers
2.9.20.1 Hydraulic absorbers

2.9.99 Metal elements and components of general use – other

Seals
2.13.1 Metal seals
2.13.2 Plastic seals
2.13.2.1 Polymer-type sealing systems
2.13.3 Rubber seals
2.13.4 Cork seals
2.13.5 Asbestos seals
2.13.6 Asbestos-free seals
2.13.7 Graphite seals
2.13.7.1 Graphite films and boards for sealing technology
2.13.8 Shaped seals
2.13.9 Self-adhesive seals
2.13.10 Shaft seal rings
2.13.11 Flange seals
2.13.12 Flat seals with metal reinforcements
2.13.13 Bearing seals
2.13.14 Rotary seals
2.13.14.1 Seals for rotary shafts
2.13.15 O-rings
2.13.16 Seal strips
2.13.17 Sealing cords
2.13.18 Sealing sleeves
2.13.19 Universal sealing systems
2.13.99 Seals – other

Glass and glass products
2.14.1 Technical glass
2.14.2 Optical glass, prisms, lenses
2.14.3 Illumination glass
2.14.4 Glass tubes
2.14.5 Glass components for industry
2.14.6 Glass fibres
2.14.6.1 Glass fibre products
2.14.99 Glass products – other

2.15 Porcelain and technical ceramics
2.15.1 Engineering ceramics
2.15.2 Cutting ceramics
2.15.3 Fibre-reinforced industrial ceramics
2.15.4 Ceramic fibres
2.15.5 Ceramics for electronic components
2.15.6 Ceramic components
2.15.7 Porcelain components
2.15.99 Technical ceramics – other

2.16 Carbon components

2.18 Technical fabrics
2.18.1 Fabric dilatation compensators

2.19 Ebonite products and semi-products
2.20 Paper products for industrial use

2.21 Crystal-based products
2.21.1 Sapphire products and semi-products

2.22 Permanent magnets

2.23 Marking devices for lettering and marking
2.23.1 Self-adhesive materials
2.23.2 Marking of industrial components by imprinting

2.24 Face labels
2.24.1 Aluminium, anodized and photolayer face labels
2.24.2 Enamelled sheet metal plates and labels

2.25 Covers, closures
2.25.1 Folded covering bellows
2.25.2 Telescopic guards
2.25.3 Roller guards

2.26 Modular systems for the manufacture of single-purpose machines
2.26.1 Cabins for machine operation

2.27 Work protection aids for industrial use
2.28 Textile cleaning agents

2.29 Workshop equipment, industrial furniture
2.29.1 Vaults
2.29.2 Workbenches
2.29.3 Metal kit boxes
2.29.4 Mats for industrial operation
2.29.5 Ergonomic work chairs

2.30 Manufacture of prototypes, model design (Rapid Prototyping)
2.30.1 Prototype production by means of stereolitography
2.30.2 Prototype production by means of casting in silicon moulds
2.30.3 3D printers for prototyping

Sliding and antifriction bearings and their accessories

2.40.1 Components and accessories of antifriction bearings
2.40.1.1 Bearing bodies

2.40.2 Sintered slide bearings
2.40.3 Ball bearings
2.40.4 Roller bearings
2.40.5 Needle bearings
2.40.6 Joint bearings
2.40.7 Tapered roller bearings
2.40.8 Antifriction spherical-roller bearings
2.40.9 Sliding bearings
2.40.10 Self-lubricating bearings
2.40.11 Special bearings
2.40.12 Bearing lubrication devices
2.40.99 Bearings – other

Gears
2.41.1 Components for gears
2.41.2 Gear wheels for gearings
2.41.3 Gear rods – ridges

Mechanical gearboxes
2.41.4.1 Gearboxes with spur gear wheels
2.41.4.2 Gearboxes with bevel gear wheels
2.41.4.3 Worm gearboxes
2.41.4.4 Epicyclic gearboxes
2.41.4.5 High-speed gearboxes
2.41.4.6 Gearboxes with stepless gear change
2.41.4.7 High performance gearboxes
2.41.4.8 Gearboxes for lifting equipment
2.41.4.99 Mechanical gearboxes – other

2.41.5 Combined mechanical gearboxes
2.41.6 Hydraulic gearboxes
2.41.7 Variable speed gearboxes
2.41.8 Automatic gearboxes
2.41.9 Turbogears
2.41.10 Cam transmission mechanisms
2.41.11 Special gearboxes
2.41.99 Gears – other

Clutches
2.42.1 Components for clutches
2.42.2 Rigid clutches
2.42.3 Flexible clutches
2.42.4 Friction clutches
2.42.5 Centrifugal clutches
2.42.6 Safety clutches
2.42.7 Controlled overload clutches
2.42.8 Starting couplings
2.42.9 Idling couplings
2.42.10 Claw couplings
2.42.11 Hydraulic clutches and accessories
2.42.12 Electromagnetic clutches
2.42.13 Shaft couplings
2.42.14 Turboclutches
2.42.15 Pneumatic clutches
2.42.99 Clutches – other

Brakes and brake systems
2.43.1 Brake accessories
2.43.2 Disk brakes
2.43.3 Multi-plate brakes
2.43.4 Drum brakes
2.43.5 Spring brakes
2.43.6 Hydraulic brakes
2.43.7 Magnetic brakes
2.43.8 Eddy-current brakes
2.43.9 Safety brakes
2.43.10 Electromagnetic brakes
2.43.11 Brake systems
2.43.99 Brakes – other

2.44 Final drives and accessories

Lubrication technology
2.45.1 Lubrication devices
2.45.2 Components for lubrication devices
2.45.3 Central lubrication technology
2.45.4 Filters for lubrication technology
2.45.99 Lubrication technology – other

2.87 CAD, CAM, CIM for bearings and gears
2.88 Consultancy for bearings and gears
2.89 Engineering and design services in the field of production of bearings and gears

2.90 Service and repairs of bearings and gears
2.90.1 Diagnostics of bearings and gears
2.90.2 Spare parts for bearings and gears
2.90.3 Reconstruction and refurbishment of bearings, gears and couplings

2.91 Assembly of machines and equipment
2.92 Engineering of the assembly, servicing and repairs of technological equipment

2.99 Materials and components for mechanical engineering – other

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DRIVES, HYDRAULICS AND PNEUMATICS, COOLING TECHNOLOGY AND AIR-CONDITIONING

Drives

3.1.1 Converters for drives

3.1.2 Rotational electric motors
3.1.2.1 Electric motors with integrated gear box

3.1.3 Stepping motors
3.1.4 Linear motors
3.1.5 Hydraulic devices for drives
3.1.6 Pneumatic equipment for drives

3.2 Linear moving units

3.2.1 Linear drives and feeds
3.2.1.1 Linear guides
3.2.1.2 Ball screws

3.3 Adjustable systems

Belt and chain drives

3.4.1 Accessories of belt and chain drives
3.4.1.1 Pulley blocks
3.4.1.2 Indented belts
3.4.1.3 V-belts
3.4.1.4 Flat belts

3.4.1.5 Driving chains
3.4.1.5.1 Roller chains
3.4.1.5.2 Sleeve-type chains

3.4.1.6 Chain wheels

3.5 Shafts for drives

3.5.1 Propeller shaft
3.5.1.1 Cardan joints
3.5.1.2 Homokinetic joints

3.5.2 Flexible shafts

3.6 High frequency spindles

Hydraulic elements and systems

3.10.1 Components of hydraulic elements
3.10.1.1 Hydraulic valves
3.10.1.2 Seals for hydraulics
3.10.1.3 Connecting elements for hydraulics
3.10.1.4 Hydraulic heads

3.10.2 Hydraulic generators

3.10.3 Hydraulic motors
3.10.3.1 High-torque low-speed hydraulic motors
3.10.3.2 Hydrodynamic torque converters
3.10.3.3 Hydrodynamic couplings
3.10.3.4 Hydrodynamic retarders

3.10.4 Hydraulic turbines
3.10.5 Hydraulic sets
3.10.6 Hydrostatic gearboxes
3.10.7 Hydraulic clutches
3.10.8 Hydraulic control elements
3.10.9 Hydraulic pressure switches
3.10.10 Hydraulic liquid tanks

3.10.11 Hydraulic hoses with union nuts
3.10.11.1 Low-pressure hydraulic hoses
3.10.11.2 High-pressure hydraulic hoses
3.10.11.3 Hose clamps for hydraulics
3.10.11.4 Hydraulic hose terminals

3.10.12 Hydraulic flow distributors
3.10.13 Hydraulic filters
3.10.14 Pumps for hydraulics
3.10.15 Hydraulic fans
3.10.16 Pressure gauges for hydraulics
3.10.17 Hydraulic control systems
3.10.18 Tests of hydraulic elements
3.10.19 Educational systems for hydraulics
3.10.20 Hydraulic and telescopic cylinders
3.10.21 Hydraulics – proportional technology
3.10.22 Manufacture of hydraulic sets and systems on request
3.10.99 Hydraulic elements – other

3.15 Fans and compressors for air-condition equipment

Compressors and industrial vacuum pumps

3.20.1 Components for compressors and vacuum pumps
3.20.2 Piston compressors
3.20.3 Rotary compressors

3.20.4 Screw compressors
3.20.4.1 Oil-lubricated screw compressors
3.20.4.2 Oil-free screw compressors

3.20.5 Diaphragm compressors
3.20.6 High-pressure compressors
3.20.7 Turbo-compressors
3.20.8 Mobile compressors
3.20.9 Compressors for cooling equipment
3.20.10 Oil-free air compressors
3.20.11 Lubricated air compressors
3.20.12 Compressors for technical gases
3.20.13 Industrial vacuum pumps
3.20.14 Booster compressors
3.20.15 Hydro-pneumatic accumulators
3.20.16 Blowers
3.20.17 Equipment for the drying, treatment and filtration of compressed gas
3.20.18 Condensate cleaners for oil compressors
3.20.19 Control devices for compressors
3.20.99 Compressors and industrial vacuum pumps – other

Pneumatic elements
3.21.1 Components for pneumatic elements and devices
3.21.2 Pneumatic motors
3.21.3 Air pressure and flow control elements
3.21.4 Pneumatic pressure valves
3.21.5 Pneumatic closing valves
3.21.6 Pneumatic flow valves
3.21.7 Rapid vent valves
3.21.8 Pneumatic safety valves
3.21.9 Pneumatic control, throttle valves
3.21.10 Pneumatic special valves
3.21.11 Pneumatic working units
3.21.12 Pressure converters
3.21.13 Air treatment devices
3.21.14 Pneumatic distributors
3.21.15 Pneumatic cleaners and separators
3.21.16 Pneumatic filters
3.21.17 Pneumatic gearboxes
3.21.18 Pneumatic clutches
3.21.19 Pneumatic control systems
3.21.20 Pneumatic cylinders
3.21.21 Micro-pneumatic components and systems
3.21.99 Pneumatic elements – other

Cooling and freezing equipment for industry
3.22.1 Small cooling machines and equipment
3.22.2 Freezing equipment for skating rings
3.22.3 Flake ice machines
3.22.4 Special cooling and freezing equipment

3.22.5	Industrial fluid coolers
3.22.6	Evaporating condensers
3.22.7	Cooling towers
3.22.8	Control and regulation instruments for cooling equipment
3.22.9	Components and accessories of cooling equipment
3.22.99	Cooling and freezing equipment for industry – other
3.23	**Driers**

Industrial fittings

3.30.1	Components and accessories for fittings
3.30.1.1	Actuators for fittings and valves
3.30.1.1.1	Electric actuators for fittings and valves
3.30.1.1.2	Pneumatic actuators for fittings and valves
3.30.1.1.3	Hydraulic actuators for fittings and valves
3.30.1.1.4	Manual actuators for fittings and valves
3.30.1.2	Hardware and software for the control of fittings
3.30.2	Hydraulic valves
3.30.3	Closing and check valves
3.30.4	Safety valves
3.30.5	Control valves
3.30.6	Pressure reducing valves
3.30.7	Control servovalves
3.30.8	Electromagnetic valves
3.30.9	Thermostatic valves
3.30.10	Ball cocks
3.30.11	Cocks – other
3.30.12	Gate valves
3.30.13	**Flaps**
3.30.13.1	Non-return flap valves
3.30.13.2	Closing flaps
3.30.13.3	Control flaps
3.30.14	Fittings for the chemical industry
3.30.15	Fittings for power engineering
3.30.16	Fittings for vacuum technology
3.30.17	Fittings for aggressive materials
3.30.18	Fittings for abrasive materials
3.30.19	Fittings for flammable and explosive materials
3.30.20	Fittings for thin flowing materials
3.30.21	Fittings for waste and sludge water
3.30.22	Fittings for long distance water distributions
3.30.23	Plastic fittings
3.30.24	Plastic coated fittings
3.30.25	Corrosion-proof fittings
3.30.26	Coaxial fittings
3.30.27	Mixing fittings
3.30.28	Special fittings
3.30.99	Industrial fittings – other

Industrial pipelines, tanks

3.31.1	**Components for pipelines**
3.31.1.1	Flanges
3.31.1.2	Shaped pieces
3.31.1.3	Elbows
3.31.1.4	T-pieces
3.31.1.5	Blinders
3.31.2	Shock absorbers for pipelines
3.31.3	Pipeline seating and suspensions
3.31.4	Centre drilling and ballooning sets for pipelines
3.31.5	Chemical and physical effect resistant lined pipelines
3.31.6	Pipelines with continual indication of leakage of transported materials
3.31.7	Cisterns
3.32	**Jets, nozzles**
3.32.1	Air nozzles
3.32.2	Nozzles for liquids
3.32.3	Low pressure jets
3.32.4	High pressure jets

Pumps

3.40.1	Components and accessories for pumps
3.40.2	Pumps for nuclear power engineering
3.40.3	Pumps for classical power engineering
3.40.4	Pumps for high pressures and temperatures
3.40.5	**Pumps for chemical engineering**
3.40.5.1	Pumps for acids and lyes
3.40.5.2	Petrochemical pumps
3.40.5.3	Pumps for flammable and explosive materials
3.40.5.4	Ammonia pumps for cooling circuits
3.40.6	**Pumps for the food industry**
3.40.6.1	Pumps for thin flowing materials
3.40.6.2	Pumps for sugar factories
3.40.7	Pumps for mines
3.40.8	Sludge pumps
3.40.9	Pumps for mechanical engineering
3.40.10	Pumps for water management
3.40.11	Drainage pumps
3.40.12	Waste water pumps
3.40.13	Waste water pumping cranes
3.40.14	**Pumps for agriculture**
3.40.15	Irrigation technology
3.40.16	Potable water pumps
3.40.17	**Industrial pumps**
3.40.17.1	Pumps for the textile industry
3.40.17.2	Pumps for cement production
3.40.17.3	Pumps for the paper industry
3.40.17.4	Oil pumps for industrial equipment
3.40.18	**Pumps for small-scale consumers**
3.40.18.1	Plastic pumps
3.40.18.2	Hose pumps
3.40.18.3	Manual pumps
3.40.18.4	Barrel pumps
3.40.19	**High-pressure pumps**
3.40.20	**Pumps for solid materials**
3.40.21	**Pumps for abrasive materials**
3.40.22	**Pumps for fluid gases**
3.40.23	**Submersible pumps**
3.40.23.1	Submersible pumps for borings
3.40.24	Controlled volume pumps
3.40.25	Self-priming pumps
3.40.26	Heating-system pumps
3.40.99	Pumps – other
3.50	**Diluting devices**
3.77	**CAD, CAM, CIM for drives, hydraulics, air-conditioning and compressor technology**
3.78	**Consultancy on drives, hydraulics, air-conditioning and compressor technology**
3.79	**Engineering and design of drives, hydraulics, air-conditioning and compression technology**
3.80	**Service and repairs of drives, hydraulics, compressor technology, air-conditioning and cooling devices**
3.80.1	Refurbished drives, hydraulic systems, HVAC and cooling units, driers
3.80.2	Spare parts of drives, hydraulics for air-conditioning and compressor equipment

3.80.3	Reconstruction and upgrading of drives, air-conditioning and compressor equipment hydraulics
3.81	**Re-worked drives, hydraulic systems, HVAC and cooling units, driers**
3.82	**Technology for drives, hydraulics, air-conditioning, cooling equipment and driers**
3.83	**Implementation of complete air conditioning, cooling equipment and driers plants**
3.90	**CAD, CAM, CIM for fittings, pumps, water management and irrigation technology**
3.99	**Water management equipment and irrigation technology – other**

POWER ENGINEERING AND HEAVY-CURRENT ELECTRICAL ENGINEERING

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Conventional and nuclear power engineering, heating plants

Primary sources for the power industry

6.1.1 Brown coal
6.1.2 Bituminous coal
6.1.3 Briquettes
6.1.4 Coke
6.1.5 Natural gas
6.1.6 Fuel oils
6.1.7 Fuel cells for nuclear power plants
6.1.99 Primary sources for the power industry – other

Industrial boilers and their accessories

6.2.1 Components and accessories of industrial boilers
6.2.2 Industrial boilers
6.2.3 Industrial steam boilers
6.2.4 Steam generators
6.2.5 Tanks and pipelines for industrial boilers
6.2.6 Boiler burners

Equipment for heat energy generation

6.3.1 Components of equipment for heat energy generation

6.3.2 Furnaces
6.3.2.1 Grate furnaces
6.3.2.2 Dry pulverized coal furnaces
6.3.2.3 Fluidizing furnaces

6.3.3 Equipment for chemical water treatment in the power industry
6.3.4 Equipment for thermal water treatment in the power industry
6.3.5 Feed water preheaters
6.3.6 Gas preheaters
6.3.7 Boiler plants
6.3.8 Heating plants
6.3.9 Waste incinerating plants

6.3.10 Exchangers, exchanger stations
6.3.10.1 Heat exchangers
6.3.10.2 Exchanger stations

6.3.11 Machines and equipment for fuel handling

6.3.99 Equipment for thermal energy generation – other

Turbines

6.4.1 Components and accessories of turbines
6.4.2 Steam turbines
6.4.3 Expansion turbines
6.4.4 Combustion turbines
6.4.5 Gas turbines
6.4.99 Turbines – other

6.5. Nuclear technology
6.5.1 Components of nuclear equipment
6.5.99 Nuclear technology – other

Complete power plants

6.6.1 Steam power plants
6.6.2 Combined systems: power and district heating plant

6.6.3 Thermal power plants
6.6.3.1 Thermal power plants firing solid fuels
6.6.3.2 Thermal power plants firing liquid fuels
6.6.3.3 Thermal power plants firing gas
6.6.3.4 Combined cycle power plants
6.6.3.5 Thermal power plants – incineration plants
6.6.3.6 Nuclear power plants

Combustion engines

6.7.1 Elements of combustion engines
6.7.2 Oil engines, Diesel engines
6.7.3 Petrol engines
6.7.4 Double-fuel motors
6.7.5 Gas engines
6.7.99 Combustion engines – other

6.8 Electric power sets (motor-generator back-up sources)

6.9 Equipment for utilization of thermal power from thermal engines and turbines
6.9.1 Cogeneration units

6.10 Information and control technologies for the power industry

6.11 Equipment for sulphur and NOx reduction in flue gases
6.12 Auxiliary power plant equipment
6.13 Water treatment plants in power stations
6.14 Steam turbine condensers
6.15 Steam condensate separators
6.16 Equipment for electrical power distribution

6.17 Gas industry equipment
6.17.1 Gas regulating, measuring and safety fittings
6.17.2 Compressors and turbo-compressors designed for natural gas treatment and gas distribution systems
6.17.3 Gas regulation station

6.18 Equipment for thermal power distribution
6.19 Heat insulating materials for power equipment

6.20 Heating equipment
6.20.1 Components for heating equipment
6.20.2 Heating components
6.20.3 Gas radiant heating for industrial applications

6.21 Recuperation units, recuperators
6.22 Equipment, systems and aids for provision of safety in nuclear plants
6.23 CAD, CAM, CIM in the power industry
6.24 Consultancy in the power industry
6.25 Engineering and design services in the field of power industry equipment

6.26 Service and repairs of power industry equipment
6.26.1 Diagnostics of power industry equipment
6.26.2 Spare parts for power industry equipment and machines
6.26.3 Turn-key general repairs of power industry equipment

6.27 Refurbishment and modernization of power industry equipment
6.28 Civil and erection works for power industry
6.29 Oil tank cleaning

6.30 Technology for classic and nuclear power industry and heating plants
6.30.1 Technological projects for classic and nuclear power industry and heating plants
6.30.2 Transfer of technologies for classic and nuclear power industry and heating plants
6.30.3 Technology supplies for classic and nuclear power industry and heating plants

6.31 Execution of investment projects for classic and nuclear power industry and district heating plants
6.32 Manufacturers of electric power, gas and heat
6.33 Distributors of electric power, gas and heat
6.34 Classical and nuclear power industry and heating plants – other

Alternative power sources

6.35.1 Machines and equipment for production of pressed biofuels (pellets, briquets)
6.35.2 Biomass fired boilers

6.35.3 **Biomass fired boiler plants, heating plants**
6.35.4 **Solar heating systems**
6.35.5 **Photovoltaic electric power sources**
6.35.6 **Hydro-electric power plants**
6.35.7 **Wind power plants and their accessories**
6.35.8 **Heat pumps and their accessories**
6.35.9 **Power industry equipment for biogas utilization**
6.35.10 **Equipment and accessories for geothermal energy utilization**
6.35.11 **Waste heat utilization, recovery**
6.35.12 **Biofuels**
6.35.13 **Hybrid drives**
6.35.14 **Fuel cells using hydrogen, natural gas, alcohol for power generation**
6.35.15 **Electrical power distribution grids of Smart Grids type**
6.35.16 **Services, consultancy, financing in alternative power sources field**
6.35.17 **Institutions focused on renewable power sources field**
6.35.99 **Alternative power sources – other**

Trading in energies, in CO_2 emissions
6.36.1 **Trading in energies**
6.36.2 **Trading in CO_2 emissions**

Heavy-current electrical engineering

Cables and conductors
6.40.1 High and very high voltage cables
6.40.2 Power cables
6.40.3 Flame retarding cables
6.40.4 Earth cables
6.40.5 Self-supporting cables
6.40.6 Flexible cables for machine control
6.40.7 Connecting cables for instruments
6.40.8 Cable couplers, eyes
6.40.9 Cable connectors
6.40.10 Cable terminals
6.40.11 Heavy current installation lines
6.40.12 Leads for electrotechnical windings
6.40.13 Insulated conductors
6.40.14 Earthing materials
6.40.15 Cable lines (stands, supports, lines, trays, througs)
6.40.16 Fastening materials for cables and conductors
6.40.17 Cable coils
6.40.18 Superconductors
6.40.19 Heating resistance materials
6.40.20 Cable marking systems
6.40.21 Tools and equipment for working with cables and conductors
6.40.98 Complete production programme of cables, conductors and accessories
6.40.99 **Cables and conductors – other**

Electrotechnical insulators and insulants
6.41.1 Porcelain insulators
6.41.2 El. wiring and assembly porcelain
6.41.3 Ceramic components for el. engineering – other
6.41.4 Electrotechnical insulants (excluding ceramic)
6.41.5 Insulating tubes for high voltage technology
6.41.99 Electrotechnical insulators and insulants – other

6.42 **Power capacitors**

6.43 **Electrochemical power supplies**
6.43.1 **Batteries, electrochemical cells**
6.43.2 **Accumulators**
6.43.3 **Accumulator charging systems**
6.43.99 Electrochemical power supplies – other

Electric light sources

6.44.1 **Lamps**
6.44.1.1 Tungsten-halogen lamps
6.44.1.2 LED lamps
6.44.2 Fluorescent tubes
6.44.3 Discharge lamps

6.44.99 Electric light sources – other

Lighting fittings
6.45.1 **Outdoor lighting fittings**
6.45.2 **Lighting fittings for dangerous and demanding environments**
6.45.3 **Searchlights and headlights**
6.45.99 **Lighting fittings – other**

Transducers, rectifiers and other electrotechnical elements

6.47.1 Heavy-current power electronics (diodes, transistors, thyristors)

Accessories of transducers, rectifiers, switches
6.47.2.1 Transducers
6.47.2.2 Rectifiers
6.47.2.3 Stabilizers
6.47.2.4 Current inverters
6.47.2.5 Electric current converters
6.47.2.6 Frequency converters
6.47.2.7 DC voltage converters
6.47.2.8 Electric current switches and controllers

6.48 **Uninterruptible power supplies**

Electric current switchboards
6.49.1 Parts of switchboards
6.49.2 LV switchboards
6.49.3 HV switchboards
6.49.4 Compensation switchboards
6.49.5 I+C switchboards
6.49.6 Cable switching cabinets
6.49.7 Universal switchgear cubicles
6.49.8 Switchboards to order
6.49.9 Distribution boards

6.50 **Plugs and adapter plugs**

LV connecting and switching instruments
6.51.2 LV switches
6.51.3 LV contactors and circuit breakers
6.51.4 Fuses
6.51.5 Starters
6.51.6 Rheostats
6.51.7 LV electromagnets
6.51.8 Command devices

6.52 **Power switching devices**

Transformers
6.53.1 LV transformers
6.53.2 HV transformers
6.53.3 VHV transformers
6.53.4 Capacitive voltage transformers
6.53.5 Regulating (variable-voltage) transformers
6.53.6 Measuring transformers
6.53.7 Switches for transformers
6.53.8 Components and accessories of transformers
6.53.9 Choke coils
6.53.10 Service and repairs of HV and VHV transformers
6.53.11 Kiosk (concrete) transformer stations

6.54 **Electric HV and VHV instruments**
6.54.1 HV and VHV switches
6.54.2 HV contactors
6.54.3 HV and VHV lightning arresters
6.54.4 HV and VHV disconnectors
6.54.5 HV vacuum circuit breakers

6.54.6 Protective and safety aids for HV technology
6.54.7 Static electricity protection equipment
6.54.8 Earthing systems

Electric motors
6.55.1 Components for electric motors
6.55.2 Synchronous electric motors

6.55.3 Asynchronous electric motors
6.55.3.1 Asynchronous electric motors up to 1 kW
6.55.3.2 Asynchronous electric motors in the range of 1 kW to 100 kW
6.55.3.3 Asynchronous electric motors of more than 100 kW
6.55.3.4 Low-voltage asynchronous motors
6.55.3.5 High-voltage asynchronous motors
6.55.3.6 Asynchronous brakes

6.55.3.7 Starters for asynchronous motors
6.55.3.7.1 Soft starters

6.55.4 Commutator electric motors

6.55.5 DC electric motors
6.55.5.1 DC electric motors up to 1 kW
6.55.5.2 DC electric motors of more than 1 kW
6.55.5.3 Brushless DC el. motors

6.55.6 Stepping electric motors, micromotors
6.55.7 Piezomotors
6.55.8 Small gear motors
6.55.9 Linear electric motors
6.55.10 Servomotors DC
6.55.11 Servomotors AC

6.55.12 Electric motors for special purposes
6.55.12.1 Electric motors for explosive environments
6.55.12.2 Electric motors designed for operation in extreme temperatures

6.55.13 Custom-made electric motors
6.55.14 Repairs of electric motors
6.55.99 Electric motors – other

6.56 Rotary power supplies
6.56.1 Alternators
6.56.2 Synchronous generators
6.56.3 Power factor compensators
6.56.4 Dynamos
6.56.99 Rotary power supplies – other

6.57 Dynamometers

Electric industrial heating
6.58.1 Components for thermal electric equipment
6.58.2 Electric arc and resistance furnaces
6.58.3 Induction furnaces
6.58.4 Dielectric equipment
6.58.5 HF heating
6.58.6 Microwave heating
6.58.7 Infra-red heating
6.58.8 Special electric heating
6.58.9 Heating cables
6.58.10 Induction heating equipment

6.59 Electric rotary drives

Wiring material
6.60.1 House switches and sockets
6.60.2 Mounting boxes
6.60.3 Terminal boards
6.60.4 Electronic controllers and devices
6.60.5 Support and fixing materials
6.60.6 Plastic and metal cable terminals
6.60.7 Cable protectors
6.60.8 Industrial sockets and plugs
6.60.9 Connecting wiring material

6.61 Measuring transducers for heavy electrical engineering
6.62 Interference suppression filters
6.63 Electromagnets for mechanical engineering
6.64 Electric instruments for explosive environments
6.65 Electrotechnical tools for heavy electrical engineering
6.66 Protective aids for work on electric devices
6.67 Lightning rods, lightning stroke protection systems
6.68 Control systems for power plants, substations and transformer stations
6.77 CAD, CAM, CIM in heavy-current electrical engineering
6.78 Consultancy in heavy-current electrical engineering
6.79 Engineering and design services in heavy-current electrical engineering
6.80 Service and repairs of machines and equipment in heavy-current electrical engineering

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ELECTRONICS, AUTOMATION AND MEASURING TECHNOLOGY

Machines and equipment for the electrical industry

7.1.1	**Machines for manufacture of conductors and cables**
7.1.2	**Winding machines**
7.1.3	**Wire cutting and stripping machines**
7.1.4	**Cable, bunched cable and interconnecting system testing equipment**
7.1.5	**Pressing machines for the electrotechnical industry**
7.1.6	**Insulant production machines**
7.1.7	**Machines for insulation, impregnation and sealing in electrical engineering**
7.1.8	**Bandaging machines**
7.1.9	**Coil production lines**
7.1.10	**Transformer production lines**
7.1.11	**Electric motor production machines and equipment**
7.1.12	**Resistor production machines**
7.1.13	**Capacitor production machines**
7.1.14	**Cleaning machines and equipment in electrical engineering**
7.1.14.1	Ultrasound cleaning devices
7.1.15	**Vacuum equipment for the electrotechnical industry**
7.1.16	**Machines for production of semiconductors, SMD elements and hybrid circuits**
7.1.17	**Machines for printed circuit board production**
7.1.17.1	Drilling machines for printed circuit boards
7.1.17.2	Automatic and semi-automatic component mounting machines
7.1.17.3	Soldering devices for classic, mixed and surface mounting (SMT)
7.1.18	**Assembly devices for PCB technology**
7.1.19	**Printed circuit board assembly tools**
7.1.20	**Machines for installation of electrical part contacts**
7.1.21	**Testing systems for printed circuit boards**
7.1.22	**Handling modules for the electrotechnical industry**
7.1.23	**Automatic visual checking equipment**
7.1.24	**Palletizing systems for electrotechnical industry**
7.1.25	**Systems for soldered component dismantling**
7.1.26	**Single-purpose machines for electrotechnical production**
7.1.27	**Measuring and testing equipment for electrotechnical production**
7.1.28	**PCB repair systems**
7.1.29	**Auxiliary equipment for electrical engineering and electronics**
7.1.30	**Antistatic workplaces and aids**
7.1.87	**CAD, CAM, CIM in the electrotechnical industry**
7.1.88	**Consultancy for the electrotechnical industry**
7.1.89	**Engineering and design services for the electrotechnical industry**
7.1.90	**Service and repairs of machines and equipment for the electrotechnical industry**
7.1.90.1	Diagnostics of machines and equipment in the electrotechnical industry
7.1.90.2	Spare parts for equipment in the electrotechnical industry
7.1.90.3	Refurbishment and upgrading of equipment in the electrotechnical industry
7.1.91	**Reworked machines and equipment for the electrotechnical industry**
7.1.92	**Technologies for the electrotechnical industry**
7.1.99	**Machines and equipment for the electrotechnical industry – other**

Electronic components and elements

7.2.1	**Conductors**
7.2.1.1	Communication cables
7.2.1.2	Connecting wires and twisted conductors
7.2.1.3	Conductors and fine wires for windings
7.2.1.4	Conduit lines
7.2.1.5	Optical cables
7.2.1.6	Assembled cables for transmission technology
7.2.1.99	Conductors – other
7.2.2	**Passive electrical components**
7.2.2.1	Resistors for electronics
7.2.2.2	Potentiometers for electronics
7.2.2.3	Capacitors for electronics
7.2.2.4	Coils for electronics
7.2.2.5	Piezo-electric crystal elements
7.2.2.6	Ferrite cores
7.2.2.7	SMD passive elements
7.2.2.99	Passive electronic elements – other
7.2.3	**Instrument batteries and accumulators**
7.2.4	**Semiconductor elements**
7.2.4.1	Diodes
7.2.4.99	Semiconductor elements – other
7.2.5	**Analogue integrated circuits**
7.2.6	**Digital integrated circuits**
7.2.7	**IGBT modules**
7.2.8	**Hybrid circuits**
7.2.9	**Electronic components other than semiconductor ones – other**
7.2.10	**Optic and optoelectronic elements**
7.2.10.1	Miniature bulbs
7.2.10.2	Visualizing elements, indicators
7.2.10.3	LED displays
7.2.10.4	LCD displays
7.2.10.5	Laser displays
7.2.10.6	Plasma displays
7.2.10.7	Fluorescent displays
7.2.10.8	Solar cells
7.2.10.9	Connecting optical elements
7.2.10.10	Optical signal processing elements
7.2.10.11	Optoelectronical equipment
7.2.10.12	CCD elements
7.2.10.13	Laser equipment
7.2.10.14	SMD optic and optoelectronic elements
7.2.10.99	Optic and optoelectronic elements – other
7.2.11	**Converters**
7.2.12	**Amplifiers**
7.2.13	**DC/DC converters**
7.2.14	**Vacuum elements (electron tubes, cathode ray tubes, other)**
7.2.15	**Mechanical components for electronics**
7.2.15.1	Flat conductor connectors
7.2.15.2	Interface connectors
7.2.15.3	Internal interconnecting components (printed circuits)
7.2.15.4	Connectors for PCB
7.2.15.5	Connectors for optical waveguides
7.2.15.6	Mechanical elements of electronic structures (cabinets, coolers)
7.2.15.7	Cables, conductors for electronics
7.2.15.8	Electromechanical elements (motors, switches)
7.2.15.9	Rotary switches
7.2.15.10	Push-buttons
7.2.15.11	Microswitches
7.2.15.12	Keys
7.2.15.13	Film keyboards
7.2.15.14	Safety and security elements
7.2.15.15	Elements for power supplies (ferrite cores, transformers)
7.2.15.16	Transmitters, communication transformers
7.2.15.17	Toroidal transformers
7.2.15.18	Instrument transformers
7.2.15.19	Relays for electronics (SMD relays, relay sockets)
7.2.15.20	Magnets for electronics
7.2.15.99	Mechanical components for electronics and parts – others

7.2.16	**Piezoelectric sensors, controllers**
7.2.17	**Power sources for electronics**
7.2.87	**CAD, CAM, CIM for electronic components and elements**
7.2.88	**Consultancy for electronic components and elements**
7.2.89	**Engineering and design services in the field of electronic components and elements**
7.2.90	**Production of made-to-order printed circuit boards**
7.2.99	**Electronic components and elements – other**

Studio and broadcasting technology

7.3.1	**Components and accessories of transmitters**
7.3.1.1	Generator and broadcasting electronic elements
7.3.1.2	Antenna arrays
7.3.1.3	Cables and lines for broadcasting technology
7.3.2	Broadcasting, telegraph and communication transmitters
7.3.3	Television transmitters
7.3.4	Radio networks
7.3.5	Mobile radio-telecommunication equipment
7.3.6	Relay links
7.3.7	Radar equipment
7.3.8	Broadcasting studio technology
7.3.9	Call and telephone dispatcher systems
7.3.10	**Television studio technology**
7.3.11	**Cable television (cables, other components)**
7.3.12	**Closed-circuit television**
7.3.13	**Satellite television technology**
7.3.14	**Direction finders**
7.3.15	**GPS**
7.3.16	**Remote control wireless systems**
7.3.17	**Measuring instruments for broadcasting technology**
7.3.99	**Broadcasting equipment – other**

Instruments for automatic regulation and control

7.5.1	**Components for equipment for automation and control**
7.5.1.1	Process microprocessors, microcontrollers
7.5.1.2	Processor and memory modules
7.5.1.3	Signal processors
7.5.1.4	RAM/ROM disc memories
7.5.1.5	Communication modules, I/O modules – cards
7.5.1.6	Industrial bus-bar systems
7.5.1.7	Chassis, control technology cabinets
7.5.1.8	**Industrial control computers**
7.5.1.8.1	Minipanel PC
7.5.1.8.2	Single-board control computers
7.5.1.8.3	Network servers for industrial sites
7.5.1.8.4	Industrial data collection PC
7.5.1.8.5	Notebooks suitable for industrial sites
7.5.1.9	Monitors
7.5.1.10	Panel and large-size alphanumerical displays
7.5.1.11	Visualization panels for machine monitoring
7.5.1.12	Joysticks and trackballs for industrial sites
7.5.1.13	Industrial terminals
7.5.1.14	Industrial keyboards
7.5.1.15	Projection and presentation equipment for control rooms
7.5.1.16	Computer printers for industrial sites
7.5.1.17	Power supplies
7.5.1.18	Output and interconnecting cables, connectors
7.5.1.19	**Measuring peripherals for PC**
7.5.1.20	**Computer cards for industrial control computers**
7.5.1.21	**UPS for control, automation and regulation technology**
7.5.1.22	**Industrial information and control networks and their components**
7.5.1.22.1	LAN and WAN networks
7.5.1.22.2	Wireless LAN networks
7.5.1.23	**Operation systems for technology process control**
7.5.1.24	**Developing systems and programs for process simulation**
7.5.1.25	**Programs for technological process control**
7.5.1.26	**Programs for process visualization**
7.5.1.27	**Remote computer management systems**
7.5.1.28	**Data Warehousing / Data Mining – for industrial data**
7.5.1.99	**Components for automation and control technology equipment – other**
7.5.2	**Transducers of electric and non-electric variables**
7.5.2.1	Intelligent sensor systems
7.5.2.2	Incremental and absolute encoders
7.5.3	**Counters for regulation**
7.5.4	**Remote checking and control**
7.5.4.1	Remote electric measurement / control
7.5.4.2	Automatic central checking / control
7.5.4.3	Telephone controlled devices
7.5.4.4	Radio systems for remote control of industrial technology
7.5.4.5	**GSM / GPRS based data networks**
7.5.4.5.1	Communication modules for GSM / GPRS
7.5.5	**Electric and electromagnetic controllers**
7.5.5.1	Magnetic controllers
7.5.5.2	Hydraulic controllers
7.5.5.3	Pneumatic controllers
7.5.5.4	Electronic controllers
7.5.5.5	PID controllers
7.5.5.6	Control systems with fuzzy logic
7.5.5.7	Programmable logic controllers (PLC)
7.5.5.8	Interconnection of programmable logic controller with master computer
7.5.5.9	Control systems PCC (Programmable Computer Controller)
7.5.5.10	Optimizing systems
7.5.6	**Controllers and power elements**
7.5.6.1	Servomotors (pneumatic, integrated)
7.5.6.2	Power units (actuators)
7.5.6.3	Selsyns
7.5.6.4	Power amplifiers
7.5.6.5	Relays
7.5.6.6	Switches for control
7.5.7	**Control rooms**
7.5.7.1	Operation consoles for technology control
7.5.8	**Control and measuring systems**
7.5.8.1	Control and measuring systems for company power engineering
7.5.9	**Systems for automatic production process control**
7.5.9.1	Systems for automatic thermal process and air-conditioning control
7.5.9.2	Systems for automatic technological process control in mechanical engineering
7.5.9.3	Systems for automatic technological process control in chemical industry
7.5.9.4	Systems for automatic technological process control in power engineering
7.5.9.99	**Systems for automatic technological process control in other industrial branches**
7.5.10	**Automatic control systems for railway transport**
7.5.11	**Automatic control systems for air service**

7.5.12 **Measuring and automation equipment for support and distribution**
7.5.13 **GIS (Graphic Information Systems) for utility lines administration**

7.5.14 **Data collecting and processing equipment for control computers**
7.5.14.1 Bar code readers
7.5.14.2 RFID technologies

7.5.15 **Image processing systems**
7.5.15.1 Robot vision for 2D images
7.5.15.2 Robot vision for 3D images

7.5.16 **Data distribution technology in buildings**
7.5.17 **Redundant control systems with high reliability**
7.5.18 **Explosion-proof components and systems for control, automation and regulation equipment**

7.5.99 **Instruments and equipment for automatic control – other**

Warning and safety equipment
7.6.1 Railway, air and road warning and safety equipment
7.6.2 Mining safety equipment
7.6.3 Monitoring and warning systems for danger
7.6.4 Fault reporting systems
7.6.99 Warning and safety equipment – other

Supervising and control equipment

7.7.1 Access checking
7.7.1.1 Light barriers and other photoelectric devices
7.7.1.2 Access systems with magnetic and chip cards

7.7.2 Personnel and luggage checking equipment
7.7.3 TV monitoring equipment

7.8 **Fire, gas detecting systems**

7.9 **Antifire and antiexplosion safety equipment in industrial plants**
7.9.1 Fire safety systems for machine-tools and forming machines
7.9.2 Spray booth fire safety systems

Systems for detecting robberies, danger, entry of unauthorized persons
7.10.1 Systems with central security board

7.10.2 Electric and photoelectric supervision systems
7.10.2.1 CCD camera systems
7.10.2.2 Broken glass detectors

7.10.3 IR supervision systems
7.10.4 Ultrasonic supervision systems
7.10.5 Microwave supervision systems
7.10.6 Laser and radar supervision systems
7.10.7 Seismic sensor systems (geophones)

7.11 **Industrial robots and their assemblies**
7.11.1 Micro-positioning systems
7.11.2 Robotic cells
7.11.3 Turn-key integrated solutions of robotized production processes

General software for business management
7.12.1 Tangible and intangible property records
7.12.2 Invoicing
7.12.3 Book-keeping
7.12.4 Human resources
7.12.5 Wages and salaries
7.12.6 Software supporting development of new industrial products
7.12.7 Technical preparation for production
7.12.8 Production management
7.12.8.1 Operative workshop planning and management
7.12.8.2 APS (Advanced Planning System) systems for advanced production planning and scheduling

7.12.9 Quality monitoring, CAQ (Computer Aided Quality) systems
7.12.10 Norms setting
7.12.11 Technology
7.12.12 Service and maintenance
7.12.13 Statistics and analysis for top management
7.12.14 Information tracing and utilization for management
7.12.15 Decision-support systems
7.12.16 Business Intelligence (Data Warehausing/Data Mining)
7.12.17 CRM (Customer Relationship Management) systems
7.12.18 Marketing
7.12.19 Company processes modelling and optimizing (Workflow, Reengineering)
7.12.20 HelpDesk tools supporting business applications

7.12.99 General software for business management – other

Software for offices and institutions
7.13.1 Electronic mail
7.13.2 Team work support software
7.13.3 Document processing
7.13.4 Document archiving
7.13.5 Office automation support software
7.13.6 DMS systems (Document Management System) for control and management of structured and unstructured documents
7.13.99 Software for offices and institutions – other

System integration, complex solution of ERP systems
7.14.1 Systems for complete document administration, flow management and storage (Workflow)
7.14.2 PLM systems for complex product lifecycle management
7.14.3 Integrated business system for companies
7.14.4 Comprehensive production plant management system
7.14.5 Comprehensive non-production plant management system
7.14.6 Comprehensive management system for budget and publicly funded organizations
7.14.7 Comprehensive management system for production and business concerns
7.14.8 Comprehensive management for holding companies
7.14.9 Company management network system
7.14.10 Modular system of business management
7.14.11 Comprehensive information system for crisis management

7.14.99 System integration, complex solution of ERP – other

7.15 **System integration in the sector of industrial information, measuring and control systems**
7.15.1 Made-to-order development of software and hardware in the field of automation

7.16 **Training machines and equipment**
7.17 **CAD, CAM, CIM in control, automation and regulation technology**
7.18 **Consultancy in control, automation and regulation technology**
7.19 **Engineering design services in the field of control, automation and regulation technology**

7.20 **Service and repairs of equipment and instruments in control, automation and regulation technology**
7.20.1 Diagnostics of control, automation and regulation technology
7.20.2 Spare parts for control, automation and regulation technology
7.20.3 Refurbishment and upgrading of control, automation and regulation technology

7.29 **Elements and systems in control, regulation and automation technology**

Scales and weighing technology
7.31.1 Components and parts of scales
7.31.2 Weighbridge
7.31.3 Belt conveyer scales
7.31.4 Crane scales
7.31.5 Dosing scales
7.31.6 Sack and filling scales
7.31.7 Electronic balances and weighing
7.31.8 Laboratory balances

Time measuring instruments
7.32.1 Electric and electronic clocks
7.32.2 Checking clocks
7.32.3 Timers
7.32.4 Time control displays
7.32.5 Special purpose time measuring instruments
7.32.6 Operation hour counters

Optomechanical instruments
7.33.1 Components for optomechanical instruments
7.33.2 Microscopes and accessories
7.33.3 Geodetic and cartographic instruments
7.33.4 Photogrammetric instruments and accessories
7.33.5 Telescopes, magnifiers
7.33.6 Astronomic instruments
7.33.7 Optomechanical spectral analysers
7.33.8 Fibre optics
7.33.9 Industrial endoscopes
7.33.10 Profile projectors
7.33.99 Optomechanical instruments – other

Instruments for measuring of electric variables

7.34.1 Multimeters
7.34.2 Ammeters
7.34.3 Digital avometers (multimeters)
7.34.4 Voltmeters
7.34.5 Voltage testers
7.34.6 Charging meters
7.34.7 R-L-C-Z meters
7.34.8 Conductance meters

7.34.9 Universal analyzers of analog and digital LF systems
7.34.9.1 Universal measuring instruments

7.34.10 Instruments for measuring of voltage, current, resistance and output for HV
7.34.11 Switchboard measuring instruments
7.34.12 Oscilloscopes
7.34.13 Electric meters
7.34.14 Measuring bridges
7.34.15 Measuring photoelectric instruments
7.34.16 Measuring amplifiers
7.34.17 Measuring transducers
7.34.18 Harmonic distortion analyzers
7.34.19 Spectral analyzers of electric signals
7.34.20 Signal analyzers
7.34.21 Electric network analyzers
7.34.22 Local network cable analyzers
7.34.23 Phase meters
7.34.24 Attenuation level meters
7.34.25 Noise meters
7.34.26 Digital channel testers
7.34.27 HF power meters
7.34.28 Electronic component testers
7.34.29 Digital integrated circuit testers
7.34.30 Logic analyzers
7.34.31 Data interface analyzers
7.34.32 Computer cards for PC logic analyzer
7.34.33 Counters
7.34.34 Electromagnetic compatibility test units (EMC)
7.34.35 Electronic generators
7.34.99 Equipment and measuring instruments for electric variables – other

7.35 Universal power supplies
7.35.1 Universal supplies of stabilized voltage
7.35.2 Universal supplies of stabilized current

7.36 High voltage power supplies
7.37 Calibration standards for electrical engineering technology

Sensors for picking up mechanical variables

7.38.1 Sensors for picking up mechanical
7.38.1.1 Pressure sensors
7.38.1.2 Pressure difference sensors
7.38.1.3 Speed sensors
7.38.1.4 Acceleration sensors
7.38.1.5 Load sensors
7.38.1.6 Position sensors
7.38.1.7 Path sensors icluding gyroscopic systems
7.38.1.8 Length, distance sensors
7.38.1.9 Shift / feed sensors
7.38.1.10 Thickness sensors
7.38.1.11 Angle sensors
7.38.1.12 Revolution sensors
7.38.1.13 Sensors of speed, velocity, acceleration
7.38.1.14 Fluid flow sensors
7.38.1.15 Gas flow sensors
7.38.1.16 Fluid level sensors
7.38.1.17 Fluid level measured value sensors
7.38.1.18 Surface quality evaluating sensors
7.38.1.19 Force sensors
7.38.1.20 Sensors of force, strain, deformation and bending
7.38.1.21 Vibration sensors
7.38.1.22 Torque sensors
7.38.1.99 Sensors for picking up mechanical quantities – other

7.38.2 Sensors for picking up electric quantities and parameters
7.38.3 Sensors for picking up acoustic quantities and parameters

7.38.4 Sensors for picking up optical quantities and parameters
7.38.4.1 Optical sensors
7.38.4.2 Optoelectronic sensors
7.38.4.3 Sensors of light signal parameters in glass fibres
7.38.4.4 Picture sensors
7.38.4.5 Colour sensors
7.38.4.99 Sensors for picking up optical quantities and parameters – other

7.38.5 Temperature and thermal power sensors
7.38.5.1 Contactless temperature sensors
7.38.5.2 Thermal power sensors

7.38.6 Sensors for picking up magnetic quantities and parameters
7.38.6.1 Sensors for measuring of magnetic quantities
7.38.6.2 Magnetic field detectors
7.38.6.3 Sensors of magnetic field parameters

7.38.7 Humidity sensors
7.38.7.1 Absolute humidity sensors
7.38.7.2 Relative humidity sensors
7.38.7.3 Liquid leak detectors

7.38.8 Sensors for picking up chemical quantities and parameters

Measuring instruments of physical quantities

7.39.1 Measuring instruments for length, angle, thread
7.39.1.1 Length meters
7.39.1.2 Angle meters
7.39.1.3 Thread gauges
7.39.1.4 Geometric shape measuring devices
7.39.1.5 Position meters
7.39.1.6 Electronic levels

7.39.1.7 Laser levelling instruments
7.39.1.8 Equipment for contactless size measurements

7.39.2 Velocity meters
7.39.3 Acceleration meters

7.39.4 Flow meters
7.39.4.1 Flow meters for liquids
7.39.4.2 Water meters for cold water
7.39.4.3 Water meters for hot water
7.39.4.4 Gas flow meters
7.39.4.5 Gas meters (diaphragm, turbine)

7.39.5 Measuring instruments of phenomenon abundance
7.39.5.1 Pulse counters with and without preselection

7.39.6 Speed indicators

7.39.7 Temperature meters
7.39.7.1 Digital temperature meters
7.39.7.2 Contactless temperature meters
7.39.7.3 Pyrometers, infrapyrometers
7.39.7.4 Temperature meters with thermocouples
7.39.7.5 Resistance thermometers
7.39.7.6 Measured temperature recorders
7.39.7.7 Pointer thermometers

7.39.8 Thermal power and output meters
7.39.8.1 Industrial temperature monitoring systems
7.39.8.2 Cameras for infra-red thermography
7.39.8.3 Instruments for thermal analysis
7.39.8.4 Calorimeters
7.39.8.5 Heat meters

7.39.9 Optical measuring instruments
7.39.9.1 UV and IR radiation meters
7.39.9.2 Measuring instruments for optical waveguides
7.39.9.3 Luxmeters
7.39.9.4 Optoelectronic measuring instruments
7.39.9.5 Color meters
7.39.9.6 Gloss meters
7.39.9.7 Optical sources with defined characteristics

7.39.10 Force measuring instruments

7.39.11 Pressure measuring instruments

7.39.11.1 Gas pressure measuring instruments
7.39.11.1.1 Vacuum meters

7.39.11.2 Liquid pressure meters
7.39.11.3 Dynamic pressure meters

7.39.12 Mass, thickness, area meters
7.39.12.1 Equipment for continuous mix density measurements
7.39.12.2 Filling level sensors, liquid level sensors

7.39.13 Measuring instruments and analyzers of vibrations

7.39.14 Acoustic measuring instruments
7.39.14.1 Noise dosimeters
7.39.14.2 Sound level meters
7.39.14.3 Noise monitoring instruments
7.39.14.4 Hydroacoustic instruments
7.39.14.5 Ultrasonic measuring instruments

7.39.15 Filling level and surface height measuring instruments
7.39.16 Torque measuring instruments
7.39.17 Moisture measuring instruments

7.39.18 Measuring instruments of magnetic quantities
7.39.18.1 Metal detectors
7.39.19 Detectors of underground supply lines
7.39.20 X-ray and nuclear radiation measuring instruments
7.39.21 Viscosity meters
7.39.22 Surface tension and contact angle meters
7.39.23 Systems and instruments for physical quantity calibration
7.39.24 Testing and calibration measuring instruments and standards for physical quantities

7.39.99 Measuring instruments for other physical parameters

Measuring instruments for chemical quantities
7.40.1 Measuring instruments for pH, redox potential and conductance
7.40.2 Measuring instruments and analyzers of harmful gases
7.40.3 Oxygen meters
7.40.4 Stationary and portable detectors of flammable gases
7.40.5 Exhaust gas analyzers
7.40.6 Gas analysis and monitoring instruments
7.40.7 Measuring instruments and analyzers of toxic substances
7.40.8 Ion meters
7.40.9 Devices for fast chemical analysis
7.40.99 Instruments for measurements of chemical quantities – other

7.41 Laser measuring instruments

Measuring systems and instruments
7.42.1 Measuring instruments for meteorology

Measuring instruments for mechanical engineering
7.42.2.1 Gauges for mechanical engineering
7.42.2.2 Micrometers
7.42.2.3 Inside micrometers

7.42.2.4 Coordinate measuring devices and accessories
7.42.2.4.1 3D coordinate measuring devices and elements

7.42.2.5 Measuring instruments for bearings
7.42.2.6 Measuring instruments for gear wheels
7.42.2.7 Balancing machines
7.42.2.8 Operational balancing machines
7.42.2.9 Diagnostics of gears and bearings
7.42.2.10 Vibration diagnostics
7.42.2.11 Monitoring of rotary machine condition
7.42.2.12 Surface roughness and roundness measuring devices
7.42.2.13 Instruments for destructive and non-destructive testing of weld joinst

7.42.3 Measuring instruments for civil engineering
7.42.4 Measuring instruments for agriculture

7.42.5 Measuring devices for plastics and rubbers
7.42.5.1 Rheometers for measurements of rheological plastics properties
7.42.5.2 Viscometers for plastics and rubbers
7.42.5.3 Plastometers

7.42.6 Testing and calibration instruments and systems
7.42.7 Measuring instruments for metrology
7.42.8 Universal modular measuring devices with replaceable pickups
7.42.9 Automatic samplers

7.42.99 Measuring instruments and systems for other branches

Laboratory and scientific instruments
7.43.1 Laboratory glass
7.43.2 Laboratory china

7.43.3 Pipettes and liquid dosing devices
7.43.3.1 Titrators

7.43.4 Laboratory thermometers
7.43.5 Laboratory driers
7.43.6 Laboratory cooling equipment

7.43.7 Lyophylizers (freeze driers)
7.43.8 Distilling and extraction devices
7.43.9 Emulgation, homogenization and dispersing equipment for laboratories
7.43.10 Laboratory autoclaves

7.43.11 Climatic and temperature chambers for laboratories
7.43.11.1 Thermostats

7.43.12 Laboratory furnaces and accessories

7.43.13 Vacuum technology for laboratories
7.43.13.1 Laboratory vacuum pumps
7.43.13.2 Laboratory vacuum meters
7.43.13.99 Vacuum technology – other

7.43.20 Laboratory instrumentation

7.43.20.1 Laboratory analyzers
7.43.20.1.1 Polarographs
7.43.20.1.2 X-ray fluorescence equipment

7.43.20.2 Filtration instruments for laboratories
7.43.20.3 Separation equipment for laboratories
7.43.20.4 Laboratory centrifuges
7.43.20.5 Laboratory separators

7.43.20.6 Laboratory screening machines
7.43.20.7 Laboratory colouring instruments
7.43.20.8 Special scientific instruments

7.43.21 Optical laboratory instruments
7.43.21.1 Polarimeters

7.43.22 Spectrometers
7.43.22.1 X-ray spectrometers
7.43.22.2 Infra-red spectrometers
7.43.22.3 UV spectrometers
7.43.22.4 Atomic absorption spectrometers
7.43.22.5 Mass spectrometers
7.43.22.6 Spark spectrometers
7.43.22.7 Spectrum database

7.43.23 Laboratory microscopes
7.43.23.1 Electron microscopes
7.43.23.2 Infra-red microscopes
7.43.23.3 Laser microscopes

7.43.24 Instruments for chromatography (liquid, gas, accessories)

7.43.25 Diffractometers
7.43.25.1 Particle size analyzers

7.43.26 Refractometers
7.43.27 Spectrophotometers
7.43.28 Colorimeters
7.43.29 Turbidity meters
7.43.30 Metallography devices
7.43.31 High-pressure laboratory devices

7.43.32 Laboratory equipment for the petrochemical and oil industry
7.43.32.1 Devices for multicomponent analysis of oils and gases without separation

7.43.33 Measuring instruments for interphase chemistry

7.43.34 Equipment for work with radioactive substances
7.43.34.1 Instruments for isotope analysis

7.43.35 Linear accelerators

7.43.36 Auxiliary laboratory instruments
7.43.36.1 Laboratory material separators
7.43.36.2 Laboratory material crushers
7.43.36.3 Laboratory mills

7.43.37 Laboratory handling devices
7.43.38 Laboratory cleaning machines
7.43.39 Laboratory tools of precious metals
7.43.40 Equipment for school laboratories, school measuring instruments

7.43.99 Laboratory and scientific instruments – other

7.44 Laboratory furniture

Instruments for checking material properties and faults
7.45.1 Components of equipment for checking material properties and faults

7.45.2 Equipment for static tests of material properties
7.45.2.1 Material and layer thickness testing equipment
7.45.2.2 Surface roughness testing equipment
7.45.2.3 Porosity testing equipment
7.45.2.4 Roughness meters

7.45.3 Equipment for dynamic tests of material properties

7.45.3.1 Material hardness testing equipment
7.45.3.2 Material testing equipment for tension, pressure, bending and shear
7.45.3.3 Adhesion detectors
7.45.3.4 Tensile testing machines
7.45.3.5 Wear testing equipment, simulation of operating stress
7.45.3.6 Equipment for testing of fatigue cracks and fatigue toughness

7.45.3.7 Material elasticity testing equipment
7.45.3.7.1 Spring testers

7.45.3.8 Equipment for testing thermal properties of material
7.45.3.9 Dilatometers

7.45.4 Material structure testing devices
7.45.4.1 Ultrasonic testing instruments
7.45.4.2 Non-destructive testing instruments (flaw/crack detection)
7.45.4.3 Building material property testing equipment

7.45.5 Material crack testing
7.45.6 Pipeline, valve and tank leak testing
7.45.7 Cable fault localization

7.45.8 Corrosion testing and analysis equipment
7.45.8.1 Corrosion chambers

7.45.9 Sun radiation effect testers
7.45.9.1 Sun simulating chambers

7.45.10 Equipment for vibration effect testing
7.45.10.1 Vibration chambers

7.45.11 Product testing equipment
7.45.11.1 Industrial X-ray devices
7.45.11.2 Equipment for continuous quality checking in production
7.45.11.3 Testing equipment for the semiconductor and microprocessor industries
7.45.11.4 Testing equipment for the automotive industry
7.45.11.5 Testing equipment for products of heavy-current electrical engineering
7.45.11.6 Diagnostics of electric motors
7.45.11.7 Testing equipment for plastic and rubber products
7.45.11.8 Casting tightness testing machines

7.45.99 Testing and checking equipment for testing of material properties and faults – other

Systems for PC-based data measurement and analysis
7.46.1 Measured value collection systems, loggers
7.46.2 Mobile systems for measured data collection
7.46.3 Portable units for measured data collection with signal processor

7.46.4	Telemetric systems
7.46.5	Cables for measuring and laboratory devices
7.46.6	Measuring modules
7.46.7	Measuring PC cards
7.46.8	Software for data measuring and analysis
7.46.9	Measuring systems with data collection
7.46.99	Components of PC-based measuring system – other
7.47	**Recording instruments**
7.48	**Electronic picture processing in measurements**
7.48.1	Cameras for picture scanning
7.48.1.1	High-speed cameras
7.48.2	Laser scanning devices
7.48.3	Technologies for digital picture archiving and analysis in measurements
7.80	**Complete turnkey laboratory equipment**
7.83	**Technical drawing instruments and special drawing tools**
7.88	**Consultancy in measuring and laboratory technology**
7.89	**Engineering and design services in measuring and laboratory technology**
7.90	**Service and repairs of instruments for measuring and laboratory technology**
7.91	**Reworked laboratory and measuring technology**
7.92	**Materials testing services**
7.94	**X-Ray inspections**
7.99	**Instruments and equipment for measuring and laboratory technology – other**

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Air-conditioning equipment

8.1.1 Components for air-conditioning equipment
8.1.1.1 Air pipelines
8.1.1.2 Pneumatic haulage equipment
8.1.1.3 Air distribution equipment

8.1.2 Fans and accessories
8.1.2.1 Axial fans
8.1.2.2 Radial fans
8.1.2.99 Fans – other

8.1.3 Air and gas dedusting equipment
8.1.3.1 Centrifugal dust separators
8.1.3.2 Accessories for air and gas dedusting equipment
8.1.3.3 Air cleaners

8.1.4 Solid particle separators
8.1.4.1 Electrostatic separators

8.1.5 Solid particle filters
8.1.5.1 Filtration textiles
8.1.5.2 Cloth filters

8.1.6 Exhaust and flue gas cleaning equipment

8.1.7 Heat exchangers for air-conditioning
8.1.7.1 Heat recycling exchangers

8.1.8 Air-conditioning equipment for clean rooms
8.1.8.1 Ventilation equipment
8.1.8.2 Air heating
8.1.8.3 Exhausters
8.1.8.4 Industrial air cleaning systems for machine-tools, forming machines and production rooms

8.1.9 Equipment for separation of polluted gaseous substances from air and combustion products
8.1.9.1 Absorptive equipment for the purification of pollutant-loaded air
8.1.9.2 Adsorptive equipment for the purification of pollutant-loaded air
8.1.9.3 Biological equipment for the removal of waste substances from pollutant-loaded air
8.1.9.4 Catalytic incineration equipment for pollutant-loaded air purity
8.1.9.5 Thermal equipment for pollutant-loaded air purity
8.1.9.6 Condensation equipment for pollutant-loaded air purity
8.1.9.7 Dust recycling equipment for working rooms
8.1.9.8 Oil and emulsion fog exhausting equipment
8.1.9.99 Equipment for separation of polluted gaseous substances from air and combustion products – other

8.1.10 Equipment for desulphurization and denitrification of combustion products
8.1.11 Combustion product treatment plants for communal and industrial waste incinerators
8.1.12 Chimneys and accessories thereof
8.1.13 Breathing apparatuses and respirators

8.1.14 Air-conditioning equipment
8.1.14.1 Air-conditioning units
8.1.14.2 Equipment for creating certain climatic conditions
8.1.14.3 Air moisteners and demoisteners

8.1.15 Gas media driers
8.1.16 Solenoid and pneumatic controlled valves for flow control
8.1.17 Aerating equipment
8.1.45 Consultancy in air purity protection
8.1.46 Air purity planning
8.1.47 Reconstruction and upgrading of equipment for air treatment
8.1.48 Maintenance and repairs of pollutant-loaded air cleaning equipment

8.1.99 Air-conditioning equipment – other

8.2 Pumping stations

Technologies for the treatment of drinking, service and technological water

8.3.1 Design of water treatment plants
8.3.2 Water treatment plant sedimentation and filtration units
8.3.3 Aeration equipment for water treatment plants
8.3.4 Flocculation equipment for water treatment plants
8.3.5 Filters for the removal of mechanical impurities during water treatment
8.3.6 Screens and sieves for water treatment plants
8.3.7 Centrifugal impurity separators

8.3.8 Chemical and physical water treatment
8.3.8.1 Dosing equipment for water treatment plants
8.3.8.2 Equipment for the elimination of iron and manganese during water treatment
8.3.8.3 Water softening and demineralization equipment
8.3.8.4 Water desalting equipment
8.3.8.5 Water decarbonization equipment
8.3.8.6 Water dechlorination equipment
8.3.8.7 Filters for the elimination of unpleasant water odours and flavours
8.3.8.8 Equipment for the elimination of radon from water
8.3.8.9 Equipment for membrane separation processes
8.3.8.9.1 Microfiltration
8.3.8.9.2 Ultrafiltration
8.3.8.9.3 Reverse osmosis
8.3.8.10 Ionex systems for water treatment plants
8.3.8.11 Equipment for water disinfection in treatment plants
8.3.8.12 Magnetic water treatment
8.3.8.13 Degasifying equipment
8.3.8.99 Chemical and physical water treatment – other

8.3.9 Treatment of household water
8.3.9.1 Household water treatment filters

8.3.10 Auxiliary equipment and accessories for water treatment plants
8.3.11 Turn-key water treatment plants
8.3.12 Production of clean and ultra-clean water

8.3.99 Technology for the treatment of drinking, service and technological waters – other

8.4 Water reservoirs, tanks

Technology for sewage water treatment plants

8.5.1 Design of sewage water treatment plants

8.5.2 Equipment for mechanical clarification of sewage water
8.5.2.6 Filters, filtration equipment for sewage water treatment plants
8.5.2.99 Equipment for mechanical clarification of sewage water – other

8.5.3 Equipment for biological purification of waste waters
8.5.3.1 Aerobic equipment for the purification of sewage waters (aeration, biodisc)
8.5.3.2 Nitrification and denitrification equipment
8.5.3.3 Equipment for removing phosphorus from sewage waters
8.5.3.4 Biologically active filters
8.5.3.5 Biodegradation of crude oil substances and their derivatives in sewage waters
8.5.3.6 Anaerobic plants for the purification of sewage waters
8.5.3.99 Equipment for biological purification of sewage waters – other

8.5.4 Chemical and physical purification of sewage waters
8.5.4.1 Flotation and flocculation units
8.5.4.2 Absorption and adsorption equipment for the purification of sewage waters

8.5.4.3 Separators of crude oil substances
8.5.4.3.1 Separators of oils, emulsions, diluents

8.5.4.4 Microfiltration and ultra-filtration units for sewage water treatment plants
8.5.4.5 Units for electrical dialysis
8.5.4.6 Reverse osmosis units for the purification of sewage waters
8.5.4.7 Plants with ion exchangers for the purification of sewage waters
8.5.4.8 Equipment for disinfection and oxidation of sewage waters
8.5.4.9 Thermal equipment for the purification of sewage waters
8.5.4.99 Chemical and physical sewage water purification – other

8.5.5 Equipment for sewage sludge processing
8.5.5.1 Bioreactors
8.5.5.2 Digestion tanks
8.5.5.3 Gas holders for sludge gas
8.5.5.4 Equipment for sludge thickening and dewatering
8.5.5.5 Biogas engines
8.5.5.6 Equipment for the production of sewage sludge granulation products
8.5.5.7 Sludge management
8.5.5.8 Transportation and storage of sludge
8.5.5.99 Equipment for the processing of sewage – other

8.6 Pumps, blowers, agitators for water management
8.7 Power plants for water management
8.8 Construction components for water management
8.9 Chemical products for water treatment and purification

Sewage water treatment plants

8.10.1 Communal sewage treatment plants
8.10.2 Industrial sewage water treatment plants
8.10.3 Complete deliveries of sewage treatment plants

8.11 Sewerage networks and sewers
8.12 Water reservoirs for water accumulation
8.13 Advisory service for water purity protection
8.14 Reconstruction and upgrading of unsuitable sewage water treatment plants
8.15 Service and repair of water treatment and sewage plants equipment
8.16 Technology for the reduction of technological water consumption

Waste processing and utilization

8.20.1 Collection and transportation of waste
8.20.1.1 Waste bins
8.20.1.2 Containers for the collection of communal waste
8.20.1.3 Containers for the collection of industrial waste
8.20.1.4 Containers and barrels for the collection of hazardous waste
8.20.1.5 Silos and industrial tanks for waste
8.20.1.6 Hospital waste bins
8.20.1.7 Mobile and ecological toilets
8.20.1.8 Equipment for waste compaction and compression
8.20.1.9 Waste loading and handling equipment
8.20.1.10 Transport equipment for waste transportation
8.20.1.11 Complete programme for storing and handling of hazardous materials
8.20.1.99 Equipment for the collection and transportation of waste – other

8.20.2 Machines and equipment for waste treatment
8.20.2.1 High-pressure water cutting and demolition systems
8.20.2.2 Hydraulic shears
8.20.2.3 Cutting mills
8.20.2.4 Waste crushers
8.20.2.5 Bulk transport conveyers and waste feeders
8.20.2.6 Waste-storage bins
8.20.2.7 Waste sorting plants
8.20.2.8 Waste presses
8.20.2.8.1 Waste baling presses

8.20.2.99 Machines and equipment for waste treatment – other

8.20.3 Recovery of raw materials from waste, recycling
8.20.3.1 Recycling of metal-containing waste
8.20.3.2 Recycling of electrotechnical scrap
8.20.3.3 Recycling of used cars
8.20.3.4 Recycling of used cooling equipment and refrigerators
8.20.3.5 Recycling of plastic waste
8.20.3.6 Recycling of textile waste
8.20.3.7 Recycling of used tyres, rubber
8.20.3.8 Recycling of used glass
8.20.3.9 Recycling of used paper
8.20.3.10 Recycling of building debris
8.20.3.11 Processing of waste from the food industry into animal feed
8.20.3.12 Recycling of pollutant loaded air and gases
8.20.3.13 Recycling of liquid waste

8.20.4 Composting lines
8.20.5 Fermentation plants

8.20.6 Thermal processing of waste
8.20.6.1 Communal waste incinerators
8.20.6.2 Industrial waste incinerators
8.20.6.3 Hospital waste incinerators
8.20.6.4 Equipment for pyrolysis

8.20.7 Waste storage
8.20.7.1 Engineering and geological investigation
8.20.7.2 Design of dumping sites
8.20.7.3 Geotextiles
8.20.7.4 Insulation and sealing films and materials for dumping sites
8.20.7.5 Tubes for degasification and drainage of dumping sites
8.20.7.6 Biogas stations
8.20.7.7 Weighing equipment for dumping sites
8.20.7.8 Monitoring systems for dumping sites
8.20.7.9 Trenchless drainage of existing dumping sites
8.20.7.10 Operation of dumping sites

8.20.8 Elimination of waste by solidification
8.20.9 Elimination of waste by biodegradation
8.20.10 Hazardous waste elimination technology
8.20.11 Advisory service for waste disposal
8.20.12 Elaboration of waste management studies
8.20.13 Transportation of hazardous waste and substances
8.20.14 Comprehensive solutions in waste disposal
8.20.15 Complex waste management by own staff to order
8.20.16 Reduction of waste production

8.20.99 Waste processing and utilization – other

8.21 Soil and landscape protection

Environment-friendly technologies for and industry
8.22.1 Alternative power sources
8.22.2 Energy-saving devices and technologies
8.22.3 Packaging engineering and materials harmless for the environment
8.22.4 Environment-sound chemicals
8.22.5 Waste free technologies
8.22.99 Environment-friendly technologies for industry other

Removal of old environmental burden and consequences of ecological disasters
8.25.1 Equipment for the detection of contaminants in soil and soil air
8.25.2 Equipment for the detection of contaminants in water
8.25.3 Hydrogeological research for the detection of bedrock contamination

8.25.4 Elimination of contaminants from geological environment
8.25.5 Cleaning of soils
8.25.6 Maintenance and recultivation of old landfills
8.25.7 Removal of contaminants from ground and underground waters
8.25.8 Maintenance of chemical plants
8.25.9 Maintenance of contaminated industrial zones
8.25.10 Elimination of waste generated in the process of reclamation
8.25.11 Elimination of organic contamination
8.25.12 Equipment for signalling ecological disasters
8.25.13 Equipment preventing emergency leakage of contaminants
8.25.14 Protective clothes and aids for work with hazardous and toxic substances
8.25.15 Advisory service for old environmental burden and ecological incidents
8.25.16 Decontamination projects
8.25.99 Removal of old environmental burden and consequences of ecological incidents – other

Noise reduction
8.30.1 Soundproof insulation materials
8.30.2 Sound protection absorption walls and panels
8.30.3 Sound protection booths, sheaths, walls, barriers
8.30.4 Sound mufflers
8.30.5 Impact and vibration suppressors
8.30.6 Soundproof windows
8.30.7 Design of sound protection measures
8.30.99 Noise reduction – other

Instrumentation for environment control
8.33.1 Control and regulating systems for environmental technology
8.33.2 Instrumentation for air and flue gas analysis
8.33.3 Equipment for ionizing radiation measurements
8.33.4 Instrumentation for noise and vibration measurements
8.33.5 Instrumentation for soil analysis
8.33.6 Monitoring in the environmental sector
8.33.7 Accredited test laboratories
8.33.8 Production of measuring devices for the environmental sector to order
8.33.9 Complex equipment of laboratories
8.33.10 Hardware and software for environmental protection
8.33.11 Communication engineering for data transmission
8.33.99 Instrumentation for environment control other

Machines for industrial cleaning and washing

8.40.1 Cleaning machines
8.40.2 Baling presses for waste separation and handling

8.40.3 Industrial cleaning machines
8.40.3.1 High-pressure cleaning equipment
8.40.3.2 Ultrasonic washing equipment
8.40.3.3 Industrial washing tables
8.40.3.4 Industrial vakuum cleaners

8.40.4 Sweeping and floor washing machines
8.40.5 Machines for the cleaning of roads and airports

8.40.99 Machines for industrial cleaning and washing – other

Literature, services, research, environmental organizations

8.50.1 Literature and periodicals on the environment

Environmental services
8.50.2.1 Elaboration of environmental audits
8.50.2.2 Energy audit elaboration
8.50.2.3 Risk analysis
8.50.2.4 Investigation of environmental burden
8.50.2.5 Dispersion studies
8.50.2.6 Assessment of project impact on the environment
8.50.2.7 Expert opinions for the State Environmental Fund
8.50.2.8 Projects of ecological business management systems
8.50.2.9 Consultancy in the introduction of ISO 14000 Standards
8.50.2.10 Advisory service for environmental legislation
8.50.2.11 Legal representation
8.50.2.12 Patents, licences, know-how in environmental protection
8.50.2.13 Product certification complying with environmental protection
8.50.2.14 Assessment of environmental damages
8.50.2.15 Financing of environmental projects

8.50.3 Environment monitoring

8.50.4 Accredited testing laboratories for the environment
8.50.4.1 Accredited soil and waste analyses
8.50.4.2 Accredited water analyses
8.50.4.3 Accredited analyses of emissions and air pollution

8.50.5 Environment research
8.50.6 Environmental organisations

8.50.99 Literature, services, research, environmental organisations – other

Circular economy
8.60. 1 Recycling of water, nutrients and energy contained in it
8.60. 2 Recirculation of water in enterprises
8.60. 3 Application of greywater in construction
8.60. 4 Rain water management systems
8.60. 5 Energy self-sufficient systems for households
8.60. 6 New energy sources
8.60. 7 Biogas stations of a new generation
8.60. 8 Circular economy systems for civil engineering
8.60. 9 New building materials
8.60.10 Circular economy systems for waste management
8.60.11 Innovative sorting systems
8.60.12 New waste recycling technologies
8.60.13 Materials from waste in general
8.60.14 Materials from waste flows
8.60.15 Products from secondary raw materials
8.60.16 Digital technologies in circular economy
8.60.17 Smart systems for effective source usage control
8.60.18 Refurbishment and repair systems
8.60.19 Circular economy services
8.60.20 Consultancy in the field of circular economy
8.60.21 Rent of systems and equipment in circular economy
8.60.22 Circular economy research and development
8.60.23 Other circular economy

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RESEARCH, DEVELOPMENT, TRANSFER OF TECHNOLOGIES, FINANCIAL AND OTHER SERVICES

Science and research

9.1.1	**Basic and applied research**
9.1.1.1	Research in the field of raw materials and power resources
9.1.1.2	Research in the field of materials
9.1.1.3	Research in the field of nanotechnologies
9.1.1.4	Research in the field of physics
9.1.1.5	Research in the field of nuclear engineering
9.1.1.6	Research in the field of electrical engineering
9.1.1.7	Research in the field of information processing and communication
9.1.1.8	Research in the field of industrial automation
9.1.1.9	Research in the field of machine and equipment design
9.1.1.10	Research in the field of traffic and transport
9.1.1.11	Research in the field of economics and management
9.1.1.99	Basic and applied research in other technical fields

Economic, financial, advertising and other services, institutions

9.2.1	Banks and financial institutions
9.2.2	Financial consulting
9.2.3	Organizational, economic and entrepreneurial consultancy
9.2.4	Financing
9.2.5	Leasing
9.2.6	Insurance
9.2.7	Export consultancy
9.2.8	Searching of business contacts abroad
9.2.9	Assessment of company's financial standing
9.2.10	Securing import – export
9.2.11	Representation of foreign companies
9.2.12	Evaluation of patents, patent representation
9.2.13	Know-how
9.2.14	Licensing
9.2.15	Trade marks
9.2.16	Standards
9.2.17	Product certification
9.2.18	Quality certification
9.2.18.1	Consultancy in the field of introduction of ISO 9 000 and ISO 14 000 Standards
9.2.19	Take-over tests
9.2.20	Product and package design
9.2.21	**Marketing**
9.2.21.1	Market research
9.2.21.2	Market information
9.2.21.3	Addresses of prospective customers
9.2.21.4	Information data banks
9.2.21.5	Direct mailing

Advertising and publicity services

9.2.22.1	Advertising articles and gifts
9.2.22.2	Advertising services abroad
9.2.22.3	Advertising printed matter
9.2.22.4	Internet-based advertising services
9.2.23	**Publishing houses**
9.2.23.1	Specialist newspapers and journals
9.2.23.2	Specialist publications
9.2.24	**Technical information**
9.2.25	**Seminars and special training**
9.2.26	**Support of trading and export**
9.2.27	**Engineering services**
9.2.27.1	Product development
9.2.28	**Technical services**
9.2.29	**Testing**
9.2.30	**Quality control**
9.2.31	**Operation and equipment control**
9.2.32	**FM (Facility Management) services**

Organisations, institutions

9.2.33.1	State authorities, governmental institutions
9.2.33.2	**Non-governmental institutions**
9.2.33.2.1	Chambers of commerce
9.2.33.2.2	Interest unions, interest associations
9.2.33.3	**Multinational institutions**
9.2.33.3.1	European institutions
9.2.33.3.2	Cooperation and assistance programmes
9.2.34	**Schools**
9.2.99	**Services – other**

Offer of industrial real estates and localities, regional development

9.3.1	**Land planning**
9.3.2	**Programmes for regional development**
9.3.3	**Presentation of development and investment plans**
9.3.4	**Technology parks, business centres, free trade areas**
9.3.5	**Offer of development localities for industrial construction**
9.3.6	**Offer of industrial real estates**
9.3.7	**Demand for investors**
9.3.8	**Financial institutions, project financing, services**
9.3.99	**Business and investment activities – other**

TRANSPORTATION, HANDLING, INDUSTRIAL PACKING, WAREHOUSING AND LOGISTICS

MSV 2024

10.1 Ships
10.1.1 Parts and accessories for ships

10.2 Aircraft and aero instruments
10.2.1 Airplane parts and accessories
10.2.2 Aviation instruments
10.2.3 Security aircraft technology

10.2.4 Airport equipment

Rail vehicles

10.3.1 Parts and accessories for rail vehicles
10.3.1.1 Remote control of locomotives

10.3.2 Locomotives
10.3.3 Carriages
10.3.4 Special carriages
10.3.5 Undercarriages
10.3.6 Tramways
10.3.90 Overhauls, upgrading and reconstructions of rail vehicles
10.3.91 Turnouts and superstructures

Cranes

10.4.1 Parts and accessories for cranes
10.4.1.1 Remote control of cranes
10.4.1.2 Binding ropes, eyes and hooks
10.4.1.3 Crane tracks
10.4.1.4 Suspension equipment

10.4.2 Bridge cranes
10.4.3 Crane wagons
10.4.4 Tower cranes
10.4.5 Full-portal gantry cranes
10.4.6 Pillar and mast cranes
10.4.7 Truck cranes
10.4.8 Jib cranes
10.4.9 Bracket cranes
10.4.10 Erecting cranes
10.4.11 Grab cranes
10.4.12 Telescopic cranes
10.4.13 Cable cranes
10.4.14 Rotary cranes
10.4.15 Metallurgical industrial cranes
10.4.16 Cranes for works on electrical lines
10.4.17 Cranes for harbours and shipyards
10.4.90 Overhauls, upgrading and reconstructions of cranes
10.4.99 Cranes – other

Lifting mechanisms

10.5.1 Pulley blocks
10.5.1.1 Rope pulley blocks
10.5.1.2 Chain pulley blocks

10.5.2 Jacks
10.5.3 Pneumatic lifting mechanisms

10.5.4 Hydraulic lifting mechanisms
10.5.4.1 Hydraulic jacks

10.5.5 Lifting platforms and ramps
10.5.6 Lifting electromagnets
10.5.7 Permanent lifting magnets
10.5.8 Hand-operated lifting equipment
10.5.9 Load grasping equipment
10.5.10 Winches
10.5.11 Vacuum gripping and hoisting devices
10.5.99 Lifting mechanisms – other

Transport and lift trucks
10.6.1 Truck parts
10.6.2 Hand trucks

10.6.3 Battery trucks
10.6.3.1 Batteries and accessories for battery trucks

10.6.4 Gas-operated trucks
10.6.5 I.C. engine equipped trucks
10.6.6 Driverless trucks, induction trucks

10.6.7 Attachments for transport trucks
10.6.7.1 Attachments for high-lift trucks

10.6.99 Transport and lift trucks – other

10.7 Lifts

Transport equipment

10.8.1 Parts and accessories of transport equipment
10.8.1.1 Conveyer parts and accessories

Conveyers for loose materials transport
10.8.2.1 Band conveyers
10.8.2.2 Worm conveyers
10.8.2.3 Vibratory conveyers
10.8.2.4 Chain/Redler conveyers
10.8.2.5 Bucket elevators
10.8.2.99 Conveyers for loose materials transport – other

10.8.3 Conveyers for lump materials transport
10.8.3.1 Roller conveyers
10.8.3.2 Wheel conveyers
10.8.3.3 Ball conveyers
10.8.3.4 Overhead conveyers incl. overhead grooves
10.8.3.99 Conveyers for lump materials transport – other

10.8.4 Pneumatic transport
10.8.99 Transport equipment – other

10.9 Rope conveyers

Handling equipment

10.10.1 Equipment for loading and unloading lump materials
10.10.1.1 Arm loaders
10.10.1.2 Hydraulic arms

10.10.2 Equipment for loading and unloading loose materials

10.10.3 Transport means
10.10.3.1 Pallets
10.10.3.2 Pallet superstructures
10.10.3.3 Storing cases
10.10.3.4 Crates
10.10.3.5 Rolltainers
10.10.3.6 Containers incl. ISO
10.10.3.7 Containers for the transport of liquids
10.10.3.8 Omnitainers
10.10.3.9 Cistern semi-trailers
10.10.3.99 Transport means – other

10.10.4 Storing and disassembling machines
10.10.4.1 Palletizing and depalletizing machines
10.10.4.2 Stacking and destacking equipment
10.10.4.9 Storing and disassembling machines – other

10.10.5 Machines for adjusting handling equipment
10.10.5.1 Bundling equipment

10.10.5.2 Strapping equipment
10.10.5.2.1 Strappings

10.10.5.3 Binding equipment
10.10.5.3.1 Chain, textile and rope binding means

10.10.5.4 Baling presses
10.10.5.5 Handling equipment contour checking devices
10.10.5.9 Machines for adjusting handling equipment – other

10.10.6 Single purpose and municipal vehicles with superstructures

Handling aids
10.10.7.1 Hand clamps
10.10.7.2 Vacuum, magnetic suction equipment
10.10.7.3 Crowbars
10.10.7.4 Slide rails incl. wagon slide rails
10.10.7.5 Displacing rollers
10.10.7.6 Rolling undercarriages
10.10.7.7 Lifting wheels
10.10.7.8 Stands
10.10.7.9 Steps
10.10.7.10 Ladders
10.10.7.99 Handling aids – other

10.10.8 Automated handling systems
10.10.9 Container-type transport systems

10.10.99 Handling equipment – other

10.11 Scaffolds
10.11.1 Mobile scaffolds

10.12 Working, safety and evacuation technology for work at heights

Assembly machines and equipment

10.13.1 Accessories for assembly machines
10.13.2 Assembly machines

10.13.3 Assembly lines
10.13.3.1 Benches for assembly lines

10.13.4 Unit-construction assembly lines
10.13.5 Assembly controls
10.13.6 Assembly riveting machines
10.13.7 Automatic and control instruments for assembly machines and equipment

10.13.99 Assembly machines and equipment – other

10.14 Assembly and handling robots for industrial production
10.14.1 Robot peripherals and accessories

Storing technology and operation equipment

10.15.1 Shelves
10.15.1.1 Pallet shelves
10.15.1.2 Rack shelves
10.15.1.3 Bracket shelves
10.15.1.4 Paternoster shelves
10.15.1.5 Pull-out shelves for long materials
10.15.1.6 Mobile shelves
10.15.1.7 Library, archives and office shelves
10.15.1.8 Storing and wardrobe systems

10.15.2 S/R machines (storage and retrieval machines)
10.15.3 Storage tanks
10.15.4 Balance for logistics and transport
10.15.5 Ramps and bridges
10.15.6 Automated storing systems
10.15.7 Parking systems
10.15.7.1 Automated parking houses

10.15.8 Warehouse fire and explosion security

10.15.99 Storing technology and operation equipment – other

10.16 Industrial gates, bolts, automatic and turnstile doors
10.16.1 Gate packings and screens

10.17 CAD, CAM, CIM in transport, handling and assembly technology
10.18 Engineering and design services in transport, handling and assembly technology

Service and repairs in transport, handling and assembly technology
10.19.1 Diagnostics in transport, handling and assembly technology

10.19.2 Spare parts for transport, handling and assembly technology
10.19.2.1 Travelling wheels and rollers
10.19.2.2 Tyres for transport and handling equipment

10.19.3 Reconstructions and upgrading in transport, handling and assembly technology

10.20 Refurbished transport, handling and assembly technology

10.21 Technologies for transport, handling and assembly technology
10.21.1 Technological projects for transport, handling and assembly technology
10.21.2 Technological supplies for transport, handling and assembly technology

10.22 Execution of investment units for transport, handling and assembly technology

Packaging materials and packages, packaging machines for the industry
10.23.1 Materials for the production of packages

10.23.2 Packages for industrial packaging
10.23.2.1 Anticorrosive paper

10.23.3 Packing machines and equipment
10.23.3.1 Barrier film packaging machines
10.23.3.2 Machines for container forming, filling and sealing
10.23.3.3 Group packaging machines

10.23.4 Marking machines and equipment for packaging
10.23.5 Turn-key packaging solutions
10.23.6 Custom-made packaging
10.23.9 Packaging materials and packages, packaging machines for the industry – other

Services by carriers and forwarding agents

10.24.1 Domestic freight traffic
10.24.2 International freight traffic

10.24.3 Special loads transport
10.24.3.1 Transport of heavy and oversize loads
10.24.3.2 Transport of dangerous loads based on ADR

10.24.4 Tubular transport
10.24.5 City logistics
10.24.6 Storage rooms and storing services
10.24.7 Packing of transport consignments
10.24.8 Forwarding services
10.24.9 Collecting services
10.24.10 Loading and securing services in transport
10.24.11 Customs services
10.24.12 Express transport of lump consignments

10.24.99 **Services by carriers and forwarding agents – other**

Freight terminals

10.25.1 **Airports**
10.25.2 **Harbours**
10.25.3 **Container transshipment terminal**

10.25.4 **Logistic (distribution) centers, areals**
10.25.4.1 Logistic providers

Services in transport
10.26.1 **Services for truck crews abroad**
10.26.2 **Insurance in transport**
10.26.3 **Postal services**
10.26.4 **Providing permits for special load transport abroad**
10.26.5 **Banking services in transport**
10.26.99 **Services in transport – other**

Telematics, communication, information and control systems in logistics

10.27.1 **Printing, labelling and marking equipment**
10.27.1.1 Bar code printers

10.27.2 **Data collecting equipment**
10.27.2.1 Data collecting terminals

10.27.3 **Communication equipment for storage rooms and logistics**

10.27.4 **Identification equipment and systems**
10.27.4.1 Bar code based identification equipment and systems
10.27.4.2 RFID based identification equipment and systems
10.27.4.3 RTLS (Real Time Location Systems) and their accessories

10.27.5 **Dashboard PCs and their peripherals**
10.27.6 **GPS (Global Positioning System)**
10.27.7 **Navigation systems**
10.27.8 **Systems for tracing vehicle movement**
10.27.9 **Satellite systems for truck traffic control**
10.27.10 **Geographic information systems (GIS)**

10.27.11 **Software for transport, storage and materials handling**

10.27.11.1 Application software for transport and forwarding

10.27.11.2 Application software for provisioning
10.27.11.2.1 Software for controlling material and commodity flows

10.27.11.3 Application software for managing storage rooms
10.27.11.4 WMS (Warehouse Management Systems) for real time management
10.27.11.9 Software for transport, storage and materials handling – other

10.27.12 **Software for label printing**

10.27.13 **Software for enterprise resource planning – ERP**
10.27.13.1 Software for Business Intelligence (BI)
10.27.13.2 Software for supply chain management – SCM
10.27.13.3 Software for customer relationship management – CRM
10.27.13.4 Software for order flow management and for production automation

10.27.99 **Telematics, communication, information and control systems for logistics – other**

Literature, consultancy, training, service in transport and logistics
10.28.1 **Professional literature and periodicals for transport and logistics**
10.28.2 **Technical information in logistics**
10.28.3 **Consultancy in transport and distribution**
10.28.4 **Consultancy in customs affairs**
10.28.5 **Consultancy in dangerous loads transport**
10.28.6 **Drivers' training**
10.28.7 **Services for railway engineering**
10.28.8 **Consultancy in organizing assembly lines**
10.28.9 **Logistic system audit**
10.28.10 **Training, education and requalification in logistics and transport**
10.28.11 **Customer solutions of storing equipment**
10.28.12 **Design of logistic systems**
10.28.13 **Reengineering of logistic systems**
10.28.14 **Outsourcing of logistic systems**
10.28.15 **Turnkey supplies of logistic systems**
10.28.16 **Finance and insurance in logistics and transport**
10.28.17 **Information and service equipment for passengers' transport**
10.28.18 **Security services in storage and transport**
10.28.99 **Literature, consultancy, training, service in transport and logistics – other**

10.29 **Research and development in logistics and transport**
10.30 **Organizations, associations, unions for logistics and transport**

MACHINE-TOOLS

11.1.1	**Lathes**
11.1.1.1	Bench lathes
11.1.1.2	Production lathes (for lot production)
11.1.1.3	Universal centre lathes
11.1.1.4	Multi-tool production lathes
11.1.1.5	Vertical turning lathes
11.1.1.6	Copying lathes
11.1.1.7	Short-bed lathes (second operation lathes)
11.1.1.8	Facing lathes with tailstock
11.1.1.9	Facing lathes with bench
11.1.1.10	Cutting-off lathes
11.1.1.11	Watchmakers' lathes
11.1.1.12	Precision bench lathes
11.1.1.13	Relieving lathes
11.1.1.14	Oval turning lathes
11.1.1.15	Wheel set lathes
11.1.1.16	Wheelset tyre profiling lathes
11.1.1.17	Axle turning lathes
11.1.1.18	Axle journal turning and roller burnishing lathes
11.1.1.19	Crankshaft turning lathes
11.1.1.20	Camshaft turning lathes
11.1.1.21	Piston lathes
11.1.1.22	Roll turning lathes
11.1.1.23	Bar turning and peeling machines
11.1.1.99	Lathes – other
11.1.2	**Automatic lathes**
11.1.2.1	Single-spindle universal automatic lathes
11.1.2.2	Single-spindle chucking automatic lathes
11.1.2.3	Single-spindle bar automatic lathes
11.1.2.4	Multi-spindle chucking automatic lathes
11.1.2.5	Multi-spindle bar automatic lathes
11.1.2.6	Lathes with driven tool
11.1.2.7	Vertical turning automatic lathes
11.1.2.8	High-speed automatic lathes
11.1.2.9	Automatic multioperational lathes with tool magazine (turning centres)
11.1.2.99	Automatic lathes – other
11.1.3	**Drilling machines**
11.1.3.1	Bench type drilling machines
11.1.3.2	Pillar type drilling machines
11.1.3.3	Column type drilling machines
11.1.3.4	Gang drilling machines
11.1.3.5	Multi-spindle drilling machines
11.1.3.6	Radial drilling machines
11.1.3.7	Precision coordinate drilling machines
11.1.3.8	Deep hole drilling and boring machines
11.1.3.9	Turret head drilling machines
11.1.3.10	Horizontal drilling machines
11.1.3.11	Automatic multioperational drilling machines with tool magazine (drilling centres)
11.1.3.99	Drilling machines – other
11.1.4	**Boring machines**
11.1.4.1	Fine boring machines, horizontal
11.1.4.2	Fine boring machines, vertical
11.1.4.3	Bed type boring and milling machines, fixed column
11.1.4.4	Bed type boring and milling machines, moving column
11.1.4.5	Boring and milling machines, gantry type
11.1.4.6	Jig boring machines (coordinate boring and milling machines)
11.1.4.7	Cylinder block reboring machines
11.1.4.99	Boring machines – other
11.1.5	**Milling machines**
11.1.5.1	Horizontal knee-type milling machines
11.1.5.2	Vertical knee-type milling machines
11.1.5.3	Universal knee-type milling machines
11.1.5.4	Horizontal bed type milling machines
11.1.5.5	Vertical bed type milling machines
11.1.5.6	Universal bed type milling machines
11.1.5.7	Multi-head bed type milling machines
11.1.5.8	Copying milling machines
11.1.5.9	Circular able milling machines
11.1.5.10	Drum type milling machines
11.1.5.11	Die-sinking machines
11.1.5.12	Universal tool milling machines
11.1.5.13	Milling and boring machines
11.1.5.14	Universal milling and boring machines
11.1.5.15	Machining centres
11.1.5.16	Bench hand-controlled knee-type milling machines
11.1.5.17	Open-side gantry milling machines
11.1.5.18	Slot and keyway milling machines
11.1.5.19	Crankshaft and camshaft milling machines
11.1.5.20	Chamfering and pointing milling machines
11.1.5.21	Engraving machines
11.1.5.99	Milling machines – other
11.1.6	**Gear cutting and finishing machines**
11.1.6.1	Gear hobbing machines
11.1.6.2	Rack milling machines
11.1.6.3	Gear shaping machines
11.1.6.4	Bevel gear hobbing and shaping machines
11.1.6.5	Gear rolling machines
11.1.6.6	Gear grinding machines
11.1.6.7	Gear shaving machines
11.1.6.8	Gear polishing and lapping machines
11.1.6.9	Gear tooth rounding and deburring machines
11.1.6.10	Automatic multioperational gear cutting machines with tool magazine (gear cutting centres)
11.1.6.99	Gear cutting machines – other
11.1.7	**Screwing and threading machines**
11.1.8	**Planing, shaping, slotting and broaching machines**
11.1.8.1	Planing machines with other operation options
11.1.8.2	Horizontal shaping machines
11.1.8.3	Vertical shaping machines
11.1.8.4	Plate edge planing machines
11.1.8.5	Copy shaping machines
11.1.8.6	Keyseating, broaching and slotting machines
11.1.8.7	Planing and shaping machines – other
11.1.8.8	Internal broaching machines
11.1.8.9	Surface broaching machines
11.1.8.10	Transfer broaching machines
11.1.8.11	Broaching machines
11.1.8.12	Planing, shaping and broaching machines
11.1.8.99	Planing, shaping, slotting and broaching machines – other
11.1.9	**Sawing, filing and abrasive cutting-off machines**
11.1.9.1	Band sawing machines
11.1.9.2	Hack sawing machines
11.1.9.3	Circular sawing machines
11.1.9.4	Cutting-off machines, with abrasive discs
11.1.9.5	Friction sawing machines
11.1.9.6	Filing machines
11.1.9.7	Automatic cutting lines
11.1.9.99	Sawing, filing and abrasive cutting-off machines – other
11.1.10	**Grinding machines**
11.1.10.1	Horizontal spindle surface-grinding machines
11.1.10.2	Vertical spindle surface-grinding machines
11.1.10.3	Universal spindle surface-grinding machines (with adjustable wheelhead)
11.1.10.4	Horizontal surface-grinding machines with rotary table
11.1.10.5	Vertical surface-grinding machines with rotary table
11.1.10.6	Plain cylindrical grinding machines
11.1.10.7	Production plain cylindrical grinding machines with possible recess grinding (for lot production)
11.1.10.8	Internal grinding machines
11.1.10.9	Universal grinding machines

11.1.10.10	Centreless grinding machines
11.1.10.11	Copying grinding machines
11.1.10.12	High speed grinding machines
11.1.10.13	Abrasive band grinding machines
11.1.10.14	Double-spindle surface-grinding machines
11.1.10.15	Jig grinding machines
11.1.10.16	Automatic grinding machines with tool magazine (grinding centres)
11.1.11	**Special purpose grinding machines**
11.1.11.1	Electrolytic grinding machines
11.1.11.2	Superfinishing grinding machines
11.1.11.3	Profile grinding machines
11.1.11.4	Cylindrical grinding machines
11.1.11.5	Oval grinding machines
11.1.11.6	Polygon grinding machines
11.1.11.7	Spline shaft grinding machines
11.1.11.8	Calliper gauge grinding machines (surfaces, parallelity)
11.1.11.9	Centre hole grinding machines
11.1.11.10	Slideway grinding machines
11.1.11.11	Cam grinding machines
11.1.11.12	Camshaft grinding machines
11.1.11.13	Crankshaft grinding machines
11.1.11.14	Valve grinding machines
11.1.11.15	Piston grinding machines
11.1.11.16	Axle journal grinding machines
11.1.11.17	Roller bearing race grinding machines
11.1.11.18	Grinding machines with flexible shaft
11.1.11.99	Grinding machines special – other
11.1.12	**Tool grinding and sharpening machines**
11.1.12.1	Universal tool and cutter grinding machines
11.1.12.2	Single point cutting tool sharpening machines
11.1.12.3	Carbide tool sharpening machines
11.1.12.4	Broaching tool sharpening machines
11.1.12.5	Twist drill sharpening machines
11.1.12.6	Cutter and reamer sharpening machines
11.1.12.7	Sharpening machines for saw blades
11.1.12.8	Gear cutting tool sharpening machines
11.1.12.9	Tap grinding machines
11.1.12.10	Tool sharpening and lapping machines
11.1.12.11	Threading die and chaser grinding machines
11.1.12.12	Milling head sharpening machines
11.1.12.13	Shear blade and machine knife sharpening machines
11.1.12.14	Swing-frame grinding machines
11.1.12.99	Tool grinding and sharpening machines – other
11.1.13	**Abrasives**
11.1.13.1	Bonded abrasives
11.1.13.2	Coated abrasives
11.1.13.3	Grinding and polishing pastes
11.1.13.4	Abrasive products with diamond
11.1.13.5	Grinding and polishing wheels, discs and belts
11.1.13.5.1	Flexible grinders
11.1.13.6	Synthetic diamond powder
11.1.13.7	Superfinishing materials
11.1.13.8	Blast media
11.1.13.99	Grinding tools and accessories – other
11.1.14	**Honing, lapping, polishing and deburring machines**
11.1.14.1	Honing machines
11.1.14.2	Cylinder honing machines
11.1.14.3	Surface lapping and cylindrical lapping machines
11.1.14.4	Lapping machines – other
11.1.14.5	Polishing machines, abrasive belt
11.1.14.6	Polishing machines, abrasive disc
11.1.14.7	Centreless polishing machines
11.1.14.8	Double ended grinding and polishing machines
11.1.14.9	Grinding, polishing and tumbling barrels
11.1.14.10	Grinding vibrators
11.1.14.11	Deburring machines
11.1.14.12	Polishing machines – other
11.1.14.13	Electromechanical deburring machines
11.1.14.14	Thermal deburring machines
11.1.14.15	Ultrasonic polishing machines
11.1.15	**Special production machines and modular units**
11.1.15.1	Special production machines with rotating tools
11.1.15.2	Rotary indexing table machines
11.1.15.3	Positioning units with rotary table and drum
11.1.15.4	Transfer lines
11.1.15.5	Special production machines – other
11.1.15.6	Turning units
11.1.15.7	Drilling units
11.1.15.8	Milling units
11.1.15.9	Special modular units – other
11.1.15.10	Finishing machines – centring and end facing
11.1.16	**Electroerosion machine tools**
11.1.16.1	Electrochemical machine tools
11.1.16.2	Electrolytic machine tools
11.1.16.3	Spark erosion machine tools
11.1.16.3.1	Spark erosion sinking machines
11.1.16.3.2	Spark erosion cutting machines
11.1.16.3.3	Spark erosion boring machines
11.1.17	**Laser machine tools**
11.1.17.1	Laser tube and profile processing machine tools
11.1.17.2	Laser metal sheet processing machine tools
11.1.17.3	Laser cutting machines
11.1.18	**Machine tools with parallel kinematic structure**
11.1.19	**Micro-machine tools**
11.1.99	**Machine tools – other**

Forming machines

11.2.1	**Mechanical presses**
11.2.1.1	Open gap non-inclinable eccentric presses
11.2.1.2	Inclinable eccentric presses
11.2.1.3	Straight sided presses
11.2.1.4	Two-point crank presses
11.2.1.5	Toggle lever presses
11.2.1.6	Crank presses
11.2.1.7	Transfer presses
11.2.1.8	Mechanical table presses
11.2.1.9	High-duty mechanical presses with automatic feed
11.2.1.10	Friction screw presses
11.2.1.11	Fly presses
11.2.1.12	Mechanical column presses
11.2.1.13	Embossing/stamping presses
11.2.1.14	Geared drawing presses
11.2.1.15	Hand lever presses
11.2.1.16	Wide frame crank drawing presses
11.2.1.17	Four-point drawing presses
11.2.1.18	Turntable mechanical presses
11.2.1.19	Calibrating presses
11.2.1.20	Fine blanking presses
11.2.1.99	Special purpose mechanical presses – other
11.2.2	**Hydraulic presses**
11.2.2.1	Double-action presses
11.2.2.2	Double- and four-column hydraulic presses
11.2.2.3	Wide frame drawing presses
11.2.2.4	Hydraulic transfer presses
11.2.2.5	Hydraulic table presses
11.2.2.6	Straight double sided presses
11.2.2.7	Open gap presses
11.2.2.8	Embossing/stamping hydraulic presses
11.2.2.9	Turntable hydraulic presses
11.2.2.10	Stretch forming presses

11.2.2.11	Die spotting presses
11.2.2.12	Fine blanking presses
11.2.2.13	Special purpose hydraulic presses
11.2.2.14	Deep-drawing presses
11.2.2.15	Pneumatic and hydropneumatic presses
11.2.3	**Presses for special applications**
11.2.3.1	Trimming presses
11.2.3.2	Coining presses
11.2.3.3	Powder compacting presses
11.2.3.4	Calibrating presses for special applications
11.2.3.5	Scrap baling and briquetting presses
11.2.3.6	Flanging presses
11.2.3.7	Stamping presses
11.2.3.8	Bending and straightening presses
11.2.4	**Forging machines and hammers**
11.2.4.1	Hammers
11.2.4.2	Forging machines and presses
11.2.4.3	Automatic transfer forging machines
11.2.4.99	Forging machines – other
11.2.5	**Bar, section and tube working machines**
11.2.5.1	Straightening machines
11.2.5.2	Bar and section bending machines
11.2.5.3	Bending machines for reinforcing bars
11.2.5.4	Roller finishing and deep rolling machines
11.2.5.5	Section roll bending machines
11.2.5.6	Ring rolling machines
11.2.5.7	Tube forming, welding and cutting-off machines
11.2.5.8	Tube bending machines
11.2.5.9	Tube reducing and flaring machines
11.2.5.10	Tube finishing machines
11.2.5.11	Automatic transfer bar, profile and tube forming lines
11.2.5.99	Bar, section and tube working machines – other
11.2.6	**Wire forming machines**
11.2.6.1	Wire drawing machines
11.2.6.2	Wire straightening and cutting-off machines
11.2.6.3	Wire bending machines
11.2.6.4	Spring coiling machines and devices
11.2.6.5	Chain making machines
11.2.6.6	Wire netting and weaving machines
11.2.6.7	Threading, screwing and bolt rolling machines
11.2.6.8	Rope and cable making machines
11.2.6.9	Nail making machines
11.2.6.99	Wire forming machines – other
11.2.7	**Bolt, screw, nut and rivet making machines**
11.2.7.1	Hot and cold pressing machines for bolts and screws
11.2.7.2	Bolt shears
11.2.7.3	Bolt and screw chamfering machines
11.2.7.4	Nut presses
11.2.7.5	Nut tapping machines
11.2.7.6	Screw and bolt threading machines
11.2.7.7	Thread, screw and bolt rolling machines
11.2.7.8	Screw head turning and slotting machines
11.2.7.9	Bolt, nut and rivet deburring (trimming) machines
11.2.7.10	Wood screw making machines
11.2.7.11	Multistation-Partformer
11.2.7.99	Bolt, screw, nut and rivet making machines – others
11.2.8	**Sheet working machines, laser based equipment**
11.2.8.1	Sheet metal machining centers, incl. laser based machines or plasma units
11.2.8.2	Nibbling machines
11.2.8.3	Strip levelling and cutting-off machines
11.2.8.4	Cutting-to-length and slitting lines
11.2.8.5	Sheet-straightening machines
11.2.8.6	Sheet forming machines
11.2.8.7	Sheet metal forming machines
11.2.8.8	Spinning machines
11.2.8.9	Swing-arm bending machines
11.2.8.10	Mechanical press brakes
11.2.8.11	Hydraulic press brakes
11.2.8.12	Sheet bending rolls
11.2.8.13	Knurling, flanging, ribbing and curling machines
11.2.8.14	Seaming machines
11.2.8.15	Marking machines
11.2.8.16	Can making machines
11.2.8.17	Riveting machines
11.2.8.18	Winding devices
11.2.8.19	Pressure compression and joining machines and tools
11.2.8.99	Sheet and strip working machines – other
11.2.9	**Shears, press dies, blanking machines**
11.2.9.1	Metal forming centres for punching and pressing
11.2.9.2	Mechanically driven table shears
11.2.9.3	Hydraulically driven table shears
11.2.9.4	Circular shears
11.2.9.5	Gang slitting and circular tool shears
11.2.9.6	Combined curve-cutting and nibbling machines
11.2.9.7	Universal shearing and punching (and/or notching) machines
11.2.9.8	Concrete reinforcing bar cutters
11.2.9.9	Notching machines
11.2.9.10	Nibbling machines
11.2.9.11	Punching presses
11.2.9.99	Shearing, nibbling, notching and punching machines – other
11.2.10	**Micro-forming machines**
11.2.99	**Forming machines – other**
Machines for unconventional and special machining and forming technologies	
11.3.1	Rapid prototyping devices
11.3.2	Ultrasonic machine tools
11.3.3	Water jet cutting machines
11.3.4	Electron beam working machines
11.3.5	Plasma beam working machines
11.3.6	Machines for unconventional machining – other
11.3.7	Laminating (sandwiching) machines and equipment for composites
11.3.8	Die casting machines
11.3.9	Longitudinal and circular dividing machines
11.3.10	Finishing (make-up) machines
11.3.11	Embrossing, stamping and marking equipment
11.3.12	Laser lettering machines
11.3.13	Coating machines
11.3.99	**Machines for unconventional and special machining and forming technologies – other**

QUALITY CONTROL IN METAL-WORKING AND FORMING SECTOR

11.4.1	**Measuring and checking instruments for machining and forming**
11.4.1.1	Length measuring instruments
11.4.1.2	Angle and inclination measuring instruments
11.4.1.3	Vibration measuring instruments
11.4.1.4	Speed measuring instruments
11.4.1.5	Surface quality measuring instruments
11.4.1.6	Layer thickness measuring instruments
11.4.1.7	Noise level measuring instruments
11.4.1.8	Temperature measuring instruments for machining and forming
11.4.1.9	Force and torque measuring instruments
11.4.1.10	Clamping force measuring instruments
11.4.1.11	Pressure measuring instruments for machining and forming
11.4.1.12	Profile and shape measuring instruments
11.4.1.13	Thread measuring instruments
11.4.1.14	Circularity measuring instruments
11.4.1.15	Gauges and meters for machining and forming
11.4.1.16	Measuring and testing devices, machining and forming standards
11.4.1.17	Mechanical precision measuring instruments for machining and forming
11.4.1.18	Optical precision measuring instruments for machining and forming
11.4.1.19	Electric precision measuring instruments for machining and forming
11.4.1.20	Electronic precision measuring instruments for machining and forming
11.4.1.21	Pneumatic precision measuring instruments for machining and forming
11.4.1.22	Laser measuring instruments for machining and forming
11.4.1.23	Measured value transducers for machining and forming
11.4.1.24	Measured value amplifiers for machining and forming
11.4.1.25	Measuring tables for machining and forming
11.4.1.26	Digital read out systems
11.4.1.27	Breakage and wear detection systems
11.4.1.28	Measuring microscopes for machining and forming
11.4.1.29	Surface plates and flatness testing equipment
11.4.2	**Measuring machines**
11.4.2.1	Measuring and marking machines
11.4.2.2	Computerized measuring machines for machining and forming sector
11.4.2.3	Tool setting devices
11.4.2.4	Hob testing instruments
11.4.2.5	Gear testing equipment
11.4.2.6	Sorting machines and equipment
11.4.2.7	Measuring robots
11.4.2.8	Measuring machines for lot production in machining and forming sector
11.4.2.9	Measuring projectors
11.4.2.10	Coordinate and multicoordinate measuring machines
11.4.2.11	Systems for 3D scanning
11.4.2.12	Measuring machine accessories
11.4.3	**Testing machines for machining and forming sector**
11.4.3.1	Testing machines for tension, compression, bending and other features
11.4.3.2	Tension testing machines
11.4.3.3	Pendulum impact testing machines
11.4.3.4	Drop hammers for material testing
11.4.3.5	Hardness testing machines and devices
11.4.3.6	Spring testing machines
11.4.3.7	Material fatigue testing machines (tension, compression, bending)
11.4.3.8	Torsion testing machines
11.4.3.9	Deep-drawing testers
11.4.3.10	Machines and devices for non-destructive material testing
11.4.3.11	Gear testing machines
11.4.3.12	Balancing machines for machining and forming
11.4.3.13	Electronic balancing equipment for machining and forming
11.4.3.14	Ultrasonic testing machines for machining and forming
11.4.3.15	Power test benches for machining and forming
11.4.3.16	Surface testing machines for machining and forming
11.4.3.17	Stereomicroscopes
11.4.3.18	Eddy current testers
11.4.3.99	Testing machines for machining and forming sector – other
11.4.4	**Image data processing in machining and forming sector**
11.4.4.1	Image processing systems in machining and forming sector
11.4.4.2	Video systems and endoscopes
11.4.4.3	Sensor systems for image and signal pattern recognition for machining and forming sector
11.4.4.4	Visual geometry measuring devices
11.4.4.5	Measuring microscopes with digital image processing
11.4.5	**Quality assurance software in machining and forming sector**
11.4.5.1	Software for acquisition of measured electrical data in machining and forming sector
11.4.5.2	Software for acquisition of measured non-electrical data in machining and forming sector
11.4.5.3	Software for processing and evaluation of measured data in machining and forming sector
11.4.5.4	Diagnostic systems for machining and forming sector
11.4.5.5	Quality assurance software in machining and forming sector
11.4.5.6	Software for failure mode and effects analysis (FMEA) applications
11.4.5.7	Software for technological data acquisition in machining and forming sector
11.4.5.8	Software for operating data acquisition in machining and forming sector
11.4.5.9	Quality information and control systems in machining and forming sector
11.4.5.10	Software for testing equipment supervision and management in machining and forming sector
11.4.5.11	Software for test scheduling and test data evaluation in machining and forming sector
11.4.99	**Quality control for machining and forming sector – other**

FLEXIBLE MANUFACTURING SYSTEMS (FMS)

11.5.1 Computer systems and peripherals for flexible manufacturing systems

11.5.1.1 FMS data processing systems
11.5.1.2 Turnkey computer systems for flexible manufacturing systems
11.5.1.3 CAD workstations
11.5.1.4 Servers for flexible manufacturing systems
11.5.1.5 Data network elements for flexible manufacturing systems
11.5.1.6 Communication adapters
11.5.1.7 Operator workplaces for flexible manufacturing systems
11.5.1.8 Input devices for flexible manufacturing systems
11.5.1.9 Interactive terminals for flexible manufacturing systems
11.5.1.10 Digitizers, tablets for flexible manufacturing systems
11.5.1.11 Scanners for flexible manufacturing systems
11.5.1.12 Plotters for flexible manufacturing systems
11.5.1.13 Printers for flexible manufacturing systems
11.5.1.14 NC-programming systems
11.5.1.99 Computer systems and peripheral units for flexible manufacturing systems – other

11.5.2 Software for flexible manufacturing systems

11.5.2.1 CAD/CAM systems for machine tools and metal forming machines
11.5.2.1.1 CAD/CAM systems for machine tools
11.5.2.1.2 CAD/CAM systems for metal forming machines

11.5.2.2 Software for TPV and PDM (Product Data Management)
11.5.2.3 Software for CNC control
11.5.2.4 Software for PLC control
11.5.2.5 Software for calculation of stress analysis, dynamic design and heat balance by the finite-element method
11.5.2.6 Software for electrical design
11.5.2.7 Software for production planning and management in flexible manufacturing systems
11.5.2.8 Software for flexible assembling systems
11.5.2.9 Software for operating data processing in flexible manufacturing systems
11.5.2.10 Software for capacity and production date scheduling in flexible manufacturing systems
11.5.2.11 Software for stock management
11.5.2.12 Software for warehousing and material management
11.5.2.13 Software for material database
11.5.2.14 Software for industrial robots in flexible manufacturing systems
11.5.2.15 Software for simulation calculations in flexible manufacturing systems
11.5.2.16 Software for warehousing and conveyor systems in flexible manufacturing systems

11.5.2.99 Software for flexible manufacturing systems – other

11.5.3 Control and drive systems

11.5.3.1 CNC control systems
11.5.3.2 Programmable logic controllers (PLC)
11.5.3.3 Programming systems for CNC training
11.5.3.4 Axis position measuring systems
11.5.3.5 Robot controllers in flexible manufacturing systems
11.5.3.6 Feed drives in flexible manufacturing systems

11.5.3.7 Main drives in flexible manufacturing systems
11.5.3.7.1 Servo drives for machine tools and metal forming+C2034 machines

11.5.3.8 Actuators
11.5.3.9 Heavy-duty electronics for machine tool and metal working machine control and drives

11.5.3.99 Control and drives – other

11.5.4 Electrical and electronic equipment for machine tools and metal forming machines

11.5.4.1 Electric motors for machine tools and forming machines
11.5.4.2 Generators
11.5.4.3 Converters
11.5.4.4 Rectifiers for electrical and electronic equipment of machine tools and metal forming machines
11.5.4.5 Electric, electronic and magnetic switching and control gear
11.5.4.6 Electric and electronic measuring and counting devices
11.5.4.7 Electric and electronic detecting, measuring, testing and protecting devices
11.5.4.8 Electric and electronic C1797components and assemblies in flexible manufacturing systems
11.5.4.9 Piezoelectric motors, controllers, systems in flexible manufacturing systems
11.5.4.10 Optoelectronic parts for laser machine tools
11.5.4.11 Power electronics, closed-loop electronic systems in flexible manufacturing systems
11.5.4.12 Flexible energy supplies
11.5.4.13 Flexible control and power-supply cables for flexible manufacturing systems
11.5.4.14 Electric control panels and cubicles in flexible manufacturing systems
11.5.4.15 Electrical equipment for induction heating plants
11.5.4.99 Electric and electronic equipment for machine tools and metal forming machines – other

11.5.5 Assembling and industrial robots in flexible manufacturing systems

11.5.5.1 Flexible assembling systems
11.5.5.2 Individual assembling workplaces
11.5.5.3 Assembling equipment and automatic machines
11.5.5.4 Assembling lines in flexible manufacturing systems
11.5.5.5 Modular units for assembling systems
11.5.5.6 Handling equipment for warehousing, input and delivery of work-pieces, semi-products in flexible manufacturing systems
11.5.5.7 Handling equipment for aligning and positioning of workpieces
11.5.5.8 Feeding equipment for machine tools
11.5.5.9 Gripping tools and automatic fixtures
11.5.5.10 Exchangeable devices for robot grippers
11.5.5.11 Manipulators in flexible manufacturing systems
11.5.5.12 Industrial robots in flexible manufacturing systems
11.5.5.13 Working tools for industrial robots
11.5.5.99 Manipulators, feeding and sorting equipment – other

11.5.6 Automation of warehousing and transportation for machining and forming

11.5.6.1 Conveying systems for machining and forming
11.5.6.2 Conveyers for workpieces for machining and forming
11.5.6.3 Driverless ground conveyors for machining and forming
11.5.6.4 Driverless warehouse conveyors for machining and forming
11.5.6.5 Components to interlink separate production stages
11.5.6.6 Magazines for workpieces, pressed pieces and semi-products
11.5.6.7 Warehousing systems for machining and forming
11.5.6.8 Palletizing systems of workpieces and tools
11.5.6.9 Warehousing systems of workpieces and tools
11.5.6.10 Palletizing systems for machining and forming
11.5.6.11 Warehousing equipment for manufacturing plants for machining and forming
11.5.6.12 Metal chip crushers in flexible manufacturing systems
11.5.6.13 Chip conveyers for flexible manufacturing systems
11.5.6.14 Chip deoiling equipment

11.5.99 Flexible manufacturing systems – other

PRECISION TOOLS

11.6.1	**Machining tools**
11.6.1.1	Reamers
11.6.1.2	Boring bars
11.6.1.3	Tool bits
11.6.1.4	Broaching tools
11.6.1.5	Gear tools
11.6.1.6	Threading dies
11.6.1.7	Threading tools, cutting
11.6.1.8	Milling cutters and gear shaping cutters, disc-type
11.6.1.9	Countersinks and core drills
11.6.1.10	Circular saw blades, incl. metal carbide discs and tips
11.6.1.11	Metal hacksaw blades
11.6.1.12	Metal band saw blades
11.6.1.13	Inserted tooth saw blades
11.6.1.14	Cylindrical saws, slitting saws
11.6.1.15	Cutting ceramics inserts
11.6.1.16	Carbide tipped tools and cutting tips
11.6.1.17	Twist drills and center drills
11.6.1.18	Spade drills
11.6.1.19	Step drills
11.6.1.20	Gun drills
11.6.1.21	Boring tools
11.6.1.22	Fine boring tools
11.6.1.23	Turning tools and tool holders
11.6.1.24	Diamond tools, diamond paste, industrial diamonds
11.6.1.25	Dressing tools
11.6.1.26	Shaving cutters, deburring tools
11.6.1.27	Planing and shaping tools
11.6.1.28	Honing, lapping and polishing tools
11.6.1.29	Cutting tools, coated
11.6.1.30	Cutting tools with integrated code
11.6.1.31	Power tools
11.6.1.32	Graphite materials for EDM – Electro discharge machining
11.6.1.33	Electrodes, cutting wires, consumables for electro discharge machine tools
11.6.1.34	Special tools for machining
11.6.1.35	Tool care products for machining
11.6.1.99	Tools for machining – other
11.6.2	**Forming tools**
11.6.2.1	Cutting tools
11.6.2.2	Shear knives, machine knives
11.6.2.3	Blanking and punching dies
11.6.2.4	Forming dies
11.6.2.5	Stamping dies, embossing dies
11.6.2.6	Markers
11.6.2.7	Punches
11.6.2.8	Knurling tools
11.6.2.9	Thread rolling dies
11.6.2.10	Thread cutting tools (forming)
11.6.2.10.1	Heads for thread cold rolling
11.6.2.11	Roller burnishing tools, smoothing and straining tools
11.6.2.12	Drawing dies
11.6.2.13	Die blocks
11.6.2.14	Deep drawing dies
11.6.2.15	Forming tools coated
11.6.2.16	Quick-action fixtures for press tools
11.6.2.17	Press tool changing systems
11.6.2.18	Special tools for forming
11.6.2.19	Die-casting dies
11.6.2.20	Guide racks
11.6.2.21	Standardized parts for forming tools and moulds (punching, stamping tools, posts, sleeves)
11.6.2.22	Wedge units
11.6.2.99	Forming tools – other
11.6.3	**Chucking tools**
11.6.3.1	Standard fixture parts and clamping elements
11.6.3.2	Control elements for jigs and machines
11.6.3.3	Collet chucks
11.6.3.4	Machine vices
11.6.3.5	Drill chucks
11.6.3.6	Manual chucks for grinding machines
11.6.3.7	Power chucks for grinding machines
11.6.3.8	Lathe chucks, hand operated
11.6.3.9	Lathe chucks, power operated
11.6.3.10	Centers, carriers for lathes
11.6.3.11	Expanding mandrels
11.6.3.12	Magnetic chucks
11.6.3.13	Milling arbors
11.6.3.14	Sleeves
11.6.3.15	Dividing fixing heads
11.6.3.16	Magnetic fixing plates
11.6.3.17	Vacuum fixing plates
11.6.3.18	Fixture plates
11.6.3.19	Rotary holders
11.6.3.20	Tool holders
11.6.3.21	Rotary tables, also NC-controlled
11.6.3.22	Cross slide tables, also NC-controlled
11.6.3.23	Chucking tools with code
11.6.3.24	Chucking systems, incl. modular
11.6.3.99	Clamping tools – other
11.6.4	**Tool systems**
11.6.4.1	Tool systems, modular
11.6.4.2	Tool turrets
11.6.4.3	Tool changers and magazines
11.6.4.4	Tool management software
11.6.4.5	Multi-spindle heads
11.6.4.6	Boring and facing heads
11.6.4.7	Turret heads
11.6.4.8	Slotting heads
11.6.4.9	Inserted blade milling cutters
11.6.4.10	Toolholder with coupleable drive
11.6.4.11	Copying devices
11.6.4.12	Relieving devices
11.6.4.13	Grinding wheel trueing, dressing and forming devices
11.6.4.14	Threading devices
11.6.4.15	Milling devices
11.6.4.16	Boring devices
11.6.4.17	Grinding devices
11.6.4.18	Tool identification systems
11.6.4.19	Tool breakage identification devices
11.6.4.20	Tool measuring and setting units
11.6.4.21	Tool maintenance systems
11.6.4.22	Spherical turning attachments
11.6.4.99	Tool systems – other
11.6.99	**Precision tools – other**

ACCESSORIES FOR METAL-WORKING AND FORMING

11.7.1 Lubrication and cooling of metal-working and forming machines

11.7.1.1 Lubricating oils and consumables for metal-working and forming machines
11.7.1.2 Coolants and lubricants
11.7.1.3 Central lubricating systems
11.7.1.4 Oiling and greasing systems
11.7.1.5 Cooling systems
11.7.1.6 Separators for coolants and lubricants, filters, centrifuges
11.7.1.7 Metal cleaning and deoiling devices
11.7.1.8 Spraying attachment for forging machines
11.7.1.9 Cask cleaning equipment
11.7.1.10 Coolant hoses

11.7.2 Waste disposal in machining and forming sector

11.7.2.1 Air purity protection systems and components
11.7.2.2 Exhaust systems in machining and forming sector
11.7.2.3 Dust collection equipment, filtering systems, filters
11.7.2.4 Wastewater treatment equipment and components in machining and forming sector
11.7.2.5 Water treatment equipment and components in machining and forming sector
11.7.2.6 Emulsion recovery equipment
11.7.2.7 Processing of coolants and lubricants
11.7.2.8 Oil separation, oil mist separation
11.7.2.9 Waste oil collecting tanks
11.7.2.10 Filtration, ultrafiltration
11.7.2.11 Chip breakers
11.7.2.12 Chip conveyors
11.7.2.13 Chip briquetting presses
11.7.2.14 Oil recovery equipment (chip separators)
11.7.2.15 Tipping containers for chip removal
11.7.2.16 Industrial dust collectors for cleaning of machines
11.7.2.17 Process water treatment for superfinishing systems

11.7.3 Mechanical components and accessories for construction of machine-tools and forming machines

11.7.3.1 Fittings for machine tools and metal forming machines
11.7.3.2 Seals / gaskets for machine tools and metal forming machines
11.7.3.3 Flexible washers, levelling components
11.7.3.4 Springs for machine tools and metal forming machines
11.7.3.5 Drive components for machine tools and metal forming machines
11.7.3.6 Gear units for machine tools and metal forming machines
11.7.3.7 Infinitely variable speed gears for machine tools and metal forming machines
11.7.3.8 Reducing gears for machine tools and metal forming machines
11.7.3.9 Couplings for machine tools and metal forming machines
11.7.3.10 Friction couplings for machine tools and metal forming machines
11.7.3.11 Brakes for machine tools and metal forming machines
11.7.3.12 Plain and antifriction bearings for machine tools and metal forming machines
11.7.3.13 Linear lines for machine tools and metal forming machines
11.7.3.14 Ball and roller slides, pneumatic slides
11.7.3.15 Ball screws and nuts
11.7.3.16 Machine elements for machine tools and metal forming machines
11.7.3.17 Hydraulic power units, pumps, motors, cylinders, drives, assemblies
11.7.3.18 Hydraulic control engineering for machine tools and metal forming machines
11.7.3.19 High pressure lines and hoses, flexible tubing
11.7.3.20 Fittings, connections for machine tools and metal forming machines
11.7.3.21 High-pressure pumps and their accessories for water-jet cutting machines
11.7.3.22 Pneumatic drives, control engineering, components for machine tools and metal forming machines
11.7.3.23 Compressors for machine tools and metal forming machines
11.7.3.24 Compressed air conditioning unit
11.7.3.25 Small electric hoists, conveyance rollers
11.7.3.26 Pneumatic and oil pneumatic jacks
11.7.3.27 Winding and unwinding devices
11.7.3.28 Bar magazines and feeders
11.7.3.29 Sheet metal containers and loaders
11.7.3.30 Grinding spindles
11.7.3.31 High frequency spindles for machine-tools
11.7.3.32 Main spindles for turning, milling, drilling and boring machines
11.7.3.33 Guide way wipers for machine tools
11.7.3.34 Columns, beds and parts of machines by polymerized concrete
11.7.3.35 Machine lighting
11.7.3.36 Personal protective equipment
11.7.3.37 Protective devices
11.7.3.38 Guards for machine-tools, slideways and lead screws
11.7.3.39 Safety and protective equipment for machine tools and metal forming machines
11.7.3.40 Antiskid mats for machines
11.7.3.41 Tool cabinets for machine tools
11.7.3.42 Equipment of workshops for metal-working and forming sector

11.7.99 Accessories for metal working and forming – other

SERVICE AND REPAIRS OF MACHINE-TOOLS AND FORMING MACHINES, REWORKED MACHINES

11.8.1	Spare parts for machine tools
11.8.2	Spare parts for forming machines
11.8.3	**General overhauls of machine tools and forming machines**
11.8.3.1	General overhauls of machine tools
11.8.3.2	General overhauls of metal forming machines
11.8.4	**Redesign and upgrading of machine tools and metal forming machines**
11.8.4.1	Upgrading of el. equipment of machine tools and metal forming machines
11.8.4.2	Upgrading of peripheral units for NC and CNC machines
11.8.4.3	Redesign and upgrading of machine tools
11.8.4.4	Redesign and upgrading of metal forming machines
11.8.5	Reworked machine tools
11.8.6	Reworked metal forming machines
11.8.99	**Service and repairs of metal working and forming machines, reworked machines – other**

Hand-operated tools

11.9.1	**Pneumatic hand-operated tools**
11.9.1.1	Hand-operated pneumatic drills
11.9.1.2	Hand-operated pneumatic thread-cutting machines
11.9.1.3	Hand-operated pneumatic nut runners and screwdrivers
11.9.1.4	Hand-operated pneumatic grinding machines, angle grinders and polishing machines
11.9.1.5	Hand-operated pneumatic shears
11.9.1.6	Manual pneumatic rivet guns
11.9.1.99	Hand-operated pneumatic tools and accessories – other
11.9.2	**Electric hand-operated tools, incl. cordless programme**
11.9.2.1	Hand-operated electric drills and hammers
11.9.2.2	Hand-operated electric grinders, angle grinders and polishing machines
11.9.2.3	Hand-operated electric saws, shears and milling machines
11.9.2.4	Hand-operated electric nut runners, screwdrivers and threading machines
11.9.2.5	Hand-operated electric staplers
11.9.2.6	Manual electric rivet guns
11.9.2.7	Microtools
11.9.2.99	Hand-operated electric tools and sets – other
11.9.3	**Hand-operated hydraulic tools**
11.9.4	**Hand-operated tools driven by internal combustion engine**
11.9.5	**Mobile and suspension hand-operated tools**
11.9.99	**Hand-operated tools and parts – others**

Manual non-mechanized tools

11.10.1	Hand hammers
11.10.2	Pliers, alligator wrenches
11.10.3	Manual deburring tools, files
11.10.4	Chisels, axes
11.10.5	Screwdrivers
11.10.6	Wrenches, torque wrenches
11.10.7	Hand cutting tools
11.10.8	Vices
11.10.9	Clamps (cramps)
11.10.10	Pullers/removers
11.10.11	Hand-operated jacks
11.10.12	Cases and bags for tools
11.10.99	**Manual non-mechanized tools – other**

INSTITUTIONS, LITERATURE AND SERVICES IN METAL-WORKING AND FORMING SECTOR

11.11.1	Associations, organizations in metal-working and forming sector
11.11.2	Technical publishing houses, literature, specialized periodicals
11.11.3	**Consultancy in the field of machine tools and metal-forming machines**
11.11.4	**Engineering and design services in the field of machine tools and metal-forming machines**
11.11.4.1	Engineering and design services in the field of machine tools
11.11.4.2	Engineering and design services in the field of metal-forming machines
11.11.5	**Technologies for metal working and forming**
11.11.6	**Custom manufacture of single-purpose machine tools and metal forming machines**
11.11.6.1	Custom manufacture of single-purpose machine tools
11.11.6.2	Custom manufacture of single-purpose metal forming machines
11.11.7	**Execution of investments in the field of metal working and forming**
11.11.8	**Business services in the field of machine tools and metal forming machines**
11.11.9	**Leasing of metal working and forming machines**
11.11.10	**Custom coating of metal cutting and forming tools**
11.11.11	**Custom tool renovation and reconditioning**
11.11.11.1	Compression mould refurbishment
11.11.12	**Reverse engineering services**
11.11.13	**Custom rapid prototyping**
11.11.14	**Offer of production capacities in the metal-working and forming sector**
11.11.14.1	Custom material cutting
11.11.14.2	Custom sheet-metal processing
11.11.14.3	Custom metal-working manufacturing
11.11.14.4	**Offer of production capacities in the metal working sector**
11.11.14.4.1	Custom CNC machining
11.11.14.4.2	Custom high-speed (HSC) machining
11.11.14.4.3	Custom machining of hard-to-work materials
11.11.14.4.4	Custom laser marking, lettering, engraving
11.11.14.4.5	Custom piece polishing
11.11.14.5	Offer of production capacities in the metal forming sector
11.11.99	**Services in the sector of metal working and forming – other**
11.99	**Metal working and forming machines, manual tools, others**

19TH INTERNATIONAL FOUNDRY FAIR

CHARGE RAW MATERIALS FOR FOUNDRIES

12.1.1 Pig irons
12.1.2 Nonferrous metals, their alloys and master alloys
12.1.3 Waste metal (scrap)
12.1.4 Deoxidizing additives

12.1.5 Alloying additives
12.1.5.1 Feroalloys

12.1.6 Lag-forming additives
12.1.7 Foundry coke
12.1.99 Charge raw materials for foundries – other

12.2 EQUIPMENT OF MELTING PLANTS
12.2.1 Equipment of cast iron melting plants
12.2.2 Equipment of steel melting plants
12.2.3 Equipment of nonferrous metals metal plants

REFRACTORY MATERIALS
12.3.1 Non-shaped refractory materials
12.3.2 Shaped refractory materials, shaped pieces
12.3.3 Ceramic filters, sieves for the foundry industry
12.3.4 Melting and holding crucibles of furnaces and ladles
12.3.5 Chemical raw materials and additives for manufacturing refractory products
12.3.99 Refractory materials – other

12.4 TECHNICAL GASES FOR FOUNDRY INDUSTRY

PATTERN MAKING EQUIPMENT

12.5.1 Pattern making equipment (patterns, core boxes, sweep patterns)
12.5.1.1 Pattern making equipment from wood
12.5.1.2 Pattern making equipment from plastics, resin
12.5.1.3 Pattern making equipment from metal
12.5.1.4 Pattern making equipment from wax
12.5.1.99 Pattern making equipment (patterns, core boxes, sweep patterns) – other

12.5.2 Machines and aids for manufacturing pattern making equipment
12.5.3 Manufacturing patterns with the help of Rapid Prototyping System
12.5.4 Materials for manufacturing pattern making equipment

MATERIALS FOR MOULDING AND CORE MIXTURES

12.6.1 Grog

12.6.2 Binders
12.6.2.1 Inorganic binders
12.6.2.2 Organic binders

12.6.3 Additives into sand and core mixtures
12.6.4 Sand and core mixtures

12.7 EQUIPMENT FOR TREATMENT OF SAND AND CORE MIXTURES

12.7.1 Equipment for treatment of binding mixtures
12.7.2 Equipment for treatment of non-binding mixtures

12.7.3 Equipment for sand mixtures reclamation
12.7.3.1 Magnets, separators and metal detectors for foundry industry

12.8 Runner and gate technology

EQUIPMENT OF MOULDING SHOPS AND CORE SHOPS

12.9.1 **Equipment of moulding shops**
12.9.1.1 Machines for bentonite mixture moulding in flasks
12.9.1.2 Automatic moulding lines with flasks and their accessories
12.9.1.3 Automatic flaskless moulding lines and their accessories
12.9.1.4 Sand-aerators, sand-aerating lines and their accessories
12.9.1.5 Machines and equipment for self-hardening technology processes
12.9.1.6 Equipment for manufacturing shell moulds
12.9.1.7 Equipment for vacuum hardening of moulds (V-process)
12.9.1.8 Equipment mould manufacturing without binder with wax patterns
12.9.1.99 Equipment of moulding shops and their accessories – other

12.9.2 Equipment of core shops
12.9.2.1 Shooting machines
12.9.2.2 Equipment for core shooting from self-setting mixtures
12.9.2.3 Equipment for thermohardening of cores
12.9.2.4 Equipment for manufacturing Cold Box cores
12.9.2.5 Automated lines and their accessories for core manufacturing
12.9.2.99 Equipment of core shops and their accessories – other

12.9.3 Driers, drying chambers
12.9.4 Aids, auxiliary tools for moulding shops and core shops
12.9.5 Auxiliary materials and accessories for risers

FOUNDRY MELTING AND HOLDING FURNACES

12.10.1 Foundry fuel-heated furnaces

12.10.2 Foundry electric furnaces
12.10.2.1 Foundry induction crucible and channel-type furnaces (low and mid frequency)
12.10.2.2 Foundry arc furnaces
12.10.2.3 Foundry resistance furnaces

12.10.3 Foundry vacuum furnaces
12.10.4 Foundry plasma furnaces
12.10.5 Foundry electron-beam furnaces

12.10.6 Accessories of foundry furnaces
12.10.6.1 Fuel burners
12.10.6.2 Coils for induction furnaces

12.10.99 Foundry melting and holding furnaces – other

CASTING MACHINES AND EQUIPMENT, ACCESSORIES

12.11.1 Casting machines and equipment
12.11.1.1 Pouring ladles
12.11.1.2 Machines and equipment for tipping and gravity casting
12.11.1.3 Machines and equipment for low-pressure casting
12.11.1.4 Metal die casting machines
12.11.1.5 Pressure die casting machines
12.11.1.6 Centrifugal metal casting machiness and accessories
12.11.1.7 Automated casting equipment
12.11.1.99 Casting machines and equipment – other

12.11.2 Permanent moulds
12.11.2.1 Permanent moulds made of metal
12.11.2.2 Permanent moulds made of ceramic materials
12.11.2.99 Permanent moulds made of other materials

12.11.3 Auxiliary materials and accessories for casting machines and equipment
12.11.3.1 Tools for casting machines and equipment
12.11.3.2 Chemicals for casting and casting machines
12.11.3.3 Malleablizing equipment for pressure die casting moulds

12.11.99 Casting machines and equipment, accessories – other

12.12 EQUIPMENT AND AIDS FOR CASTING KNOCK-OUT FROM MOULDS

12.13 EQUIPMENT AND ACCESSORIES FOR FINISHING RAW CASTINGS
12.13.1 Equipment and accessories for surface cleaning of castings
12.13.2 Gating and feeding system separator equipment and accessories
12.13.3 Equipment and accessories for finishing of castings

12.14 **EQUIPMENT AND MATERIALS FOR WELDING, CUTTING AND REPAIRS OF CASTINGS**
12.15 **EQUIPMENT AND MATERIALS FOR TREATMENT AND MACHINING OF CASTINGS**
12.16 **AIR CONDITIONING FOR FOUNDRIES**
12.17 **TRANSPORT AND STORAGE EQUIPMENT FOR THE FOUNDRY INDUSTRY**
12.18 **ROBOTS, MANIPULATORS, HANDLING EQUIPMENT AND THEIR ACCESSORIES FOR THE FOUNDRY INDUSTRY**
12.19 **CONTROL AND REGULATION TECHNOLOGY FOR THE FOUNDRY INDUSTRY**
12.20 **MEASURING AND TESTING TECHNOLOGY FOR THE FOUNDRY INDUSTRY**
12.21 **COMPUTER EQUIPMENT, CONTROL, CALCULATIONS, SIMULATION**
12.21.1 **CAD, CAM, CIM FOR THE FOUNDRY INDUSTRY**

12.22 **ENVIRONMENT PROTECTION AND WASTE DISPOSAL IN THE FOUNDRY INDUSTRY WASTE**

CASTINGS

12.23.1 **Cast iron castings**
12.23.1.1 Grey cast iron castings
12.23.1.2 Nodular cast iron castings
12.23.1.3 Malleable cast iron castings
12.23.1.4 Compacted graphite cast iron castings
12.23.1.5 White cast iron castings
12.23.1.6 Hardened cast iron castings
12.23.1.7 Alloyed cast iron castings

12.23.2 **Steel castings**
12.23.2.1 Carbon steel castings
12.23.2.2 Alloy steel castings

12.23.3 **Nonferrous metal and alloy castings**
12.23.3.1 Aluminium alloy castings
12.23.3.2 Magnesium alloy castings
12.23.3.3 Copper alloy castings
12.23.3.4 Zinc alloy castings
12.23.3.99 Castings of other nonferrous metals and alloys

12.23.4 **Castings for selected branches of industry and end consumption**
12.23.4.1 Castings for the automotive industry
12.23.4.2 Castings for agricultural machines
12.23.4.3 Castings for general engineering
12.23.4.4 Castings for the chemical and petrochemical industries
12.23.4.5 Castings for the food processing industry
12.23.4.6 Castings for building industry
12.23.4.7 Castings for power engineering
12.23.4.8 Castings for electrical engineering, aviation, medical equipment
12.23.4.9 Castings for domestic appliances, garden machinery, hobby
12.23.4.10 Art castings, statues, statuettes, decorative objects
12.23.4.99 Castings for selected branches of industry and end consumption – other

12.23.99 **Castings – other**

RESEARCH, SERVICES, INSTITUTIONS, LITERATURE IN AREA OF THE FOUNDRY INDUSTRY

12.24.1 **Research in area of the foundry industry**

12.24.2 **Offer of manufacturing capacities in area of the foundry industry**
12.24.2.1 Manufacturing patterns to order
12.24.2.2 Manufacturing cores to order
12.24.2.3 Manufacturing moulds to order
12.24.2.4 Manufacturing castings to order
12.24.3 **Consultancy in area of the foundry industry**
12.24.4 **Engineering and design services in area of the foundry industry**
12.24.5 **Service and repairs of machines and equipment in the foundry industry**
12.24.6 **Refurbishment and modernization of machines and equipment in the foundry industry**
12.24.7 **Overhauled machines and equipment for the foundry industry**
12.24.8 **Manufacturing of prototype and single-purpose equipment for the foundry industry**
12.24.9 **Technology for the foundry industry**
12.24.10 **Execution of investment projects for the foundry industry**
12.24.11 **Professional literature, periodicals in area of the foundry industry**
12.24.12 **Institutions and organizations in area of the foundry industry**
12.24.13 **Vocation schools in area of the foundry industry**
12.24.14 **Professional courses and education in area of the foundry industry**

12.24.99 **Research, services, literature, institutions for foundry industry**

26TH INTERNATIONAL WELDING ENGINEERING FAIR

13.1 FLAME WELDING, SURFACING AND OXYGEN CUTTING MACHINERY AND EQUIPMENT

13.2 ARC-WELDING, SURFACING ANG CUTTING MACHINERY AND EQUIPMENT
- 13.2.1 Hand-operated welding, surfacing and cutting machinery and equipment
- 13.2.2 Machinery and equipment for gas shielded electric arc welding and surfacing (MIG, MAG)
- 13.2.3 Inert gas-shielded arc welding and surfacing machinery and equipment by using nonconsumable electrode (WIG or TIG)
- 13.2.4 Submerged-arc welding and surfacing machinery and equipment
- 13.2.99 Machinery and equipment for welding, surfacing and arc cutting, others

13.3 THERMAL SPRAY MACHINERY AND EQUIPMENT
- 13.3.99 Thermal spray machinery and equipment, others

13.4 RESISTANCE-WELDING MACHINERY AND EQUIPMENT
- 13.4.1 Machinery and equipment for spot welding
- 13.4.2 Seam welding machinery and equipment
- 13.4.3 Machines and equipment for resistance projection welding
- 13.4.4 Contact and flash welding machinery and equipment
- 13.4.5 Fused-slag welding machinery and equipment
- 13.4.99 Resistance welding machinery and equipment, others

13.5 MACHINERY AND EQUIPMENT FOR PRESSURE WELDING (FRICTION, DIFFUSION, COLD, ULTRASOUND WELDING)

MACHINERY AND EQUIPMENT FOR OTHER METHODS OF WELDING, CUTTING AND SOLDERING
- 13.6.1 Equipment for aluminothermic welding
- 13.6.2 Plasma welding machinery and equipment
- 13.6.3 Laser-beam welding machinery and equipment
- 13.6.4 Electron-beam welding machinery and equipment
- 13.6.5 Stud welding machinery and equipment
- 13.6.6 Root-penetration welding machinery and equipment
- 13.6.7 Machinery and equipment for welding plastics
- 13.6.8 Soldering machinery and equipment
- 13.6.9 Machinery and equipment for special methods of cutting
- 13.6.10 Machinery and equipment for plasma cutting
- 13.6.99 Machinery and equipment for other methods of welding, surfacing, cutting and soldering, others

ADDITIONAL AND AUXILIARY MATERIALS
- 13.7.1 Welding and cutting electrodes
- 13.7.2 Welding wires, tube electrodes, strips and rods
- 13.7.3 Solders
- 13.7.4 Fluxes for welding and soldering
- 13.7.5 Gases for welding, cutting and soldering
- 13.7.6 Agents for pickling and passivating alloyed corrosion-proof steel welds
- 13.7.7 Liquids, oils and sprays for welding and soldering
- 13.7.99 Consumables and auxiliary materials, others

13.8 ROBOTS, MANIPULATORS AND ACCESSORIES FOR WELDING TECHNOLOGIES
- 13.8.1 Welding robots
- 13.8.2 Single-purpose welding, material separating and positioning manipulators
- 13.8.3 Control, measurement, management and sensor systems, additional systems and subsystems
- 13.8.4 Hardware and software for welding technologies

WELDING COMPONENTS, MACHINERY AND EQUIPMENT – OTHER
- 13.9.1 Exhaust and filtration equipment for welding areas
- 13.9.2 Work protection aids (masks, goggles, working and protective garments, etc.)
- 13.9.3 Tools, fixtures and elements of machinery and equipment for welding and related technologies (pneumatic, hydraulic elements, etc.)
- 13.9.4 Machinery and equipment for treating welded structures (vibration treatment, thermal treatment, etc.)
- 13.9.5 Defectoscopic technology for destructive and non-destructive weld tests
- 13.9.6 Driers of consumables in welding areas
- 13.9.99 Other elements, machines and consumables for welding, others

13.10 METAL BONDING MACHINES

13.11 WELDED STRUCTURES, SUB-SUPPLIES OF WELDED PARTS
- 13.11.1 Weldments

RESEARCH, SERVICES AND INSTITUTIONS IN WELDING, CUTTING, SOLDERING AND METAL BONDING
- 13.12.1 Research in welding, cutting, soldering and metal bonding
- 13.12.2 Offers of manufacturing facilities in the areas of welding, cutting, soldering and metal bonding
- 13.12.3 Consulting in welding, cutting, soldering and metal bonding
- 13.12.4 Engineering and design services in welding, cutting, soldering and metal bonding
- 13.12.5 Welding, cutting, soldering and metal bonding machines and equipment service and repair
- 13.12.6 Refurbished machines and equipment for welding, cutting, soldering and metal bonding
- 13.12.7 Manufacture of prototype and single-purpose equipment for welding, cutting, soldering and metal bonding
- 13.12.8 Technologies for welding, cutting, soldering and metal bonding
- 13.12.9 Execution of investment projects for welding, cutting, soldering and metal bonding
- 13.12.10 Specialist literature, publications in the areas of welding, cutting, soldering and metal bonding
- 13.12.11 Institutions and organisations in the areas of welding, cutting, soldering and metal bonding
- 13.12.12 Vocational schools in the areas of welding, cutting, soldering and metal bonding
- 13.12.13 Specialist courses and training in the areas of welding, cutting, soldering and metal bonding
- 13.12.99 Research, services and institutions in welding, cutting, soldering, and metal bonding – other

9TH INTERNATIONAL SURFACE TECHNOLOGY FAIR

EQUIPMENT FOR CLEANING AND TREATMENT OF SURFACES

14.1.1 Tumbling machines

14.1.2 Blasting machines
14.1.2.1 High-pressure water jet blasting machines

14.1.3 Brush machines
14.2.3.1 Equipment for electrolytic oxidation of aluminium

14.1.4 Degreasing and cleaning equipment
14.1.4.1 Degreasing and cleaning equipment using organic solutions
14.1.4.2 Degreasing and cleaning equipment using aqueous solutions
14.1.4.3 Vacuum degreasing plants
14.1.4.4 Rust-removing equipment
14.1.4.5 Laser equipment for cleaning
14.1.4.6 Ultrasound equipment for cleaning
14.1.4.7 Micro-organism based cleaning and degreasing equipment
14.1.4.99 Degreasing and cleaning equipment, other

14.1.5 Pickling plants
14.1.6 Passivating plants
14.1.7 Phosphatizing plants
14.1.8 Chromating plants
14.1.9 Varnish layer stripping and devarnishing plants

14.1.10 Agents and consumables for surface cleaning and treatment equipment
14.1.10.1 Abrasive media for tumblers and blasting machines
14.1.10.2 Cleaning and degreasing agents
14.1.10.3 Rust removers
14.1.10.4 Varnish removers
14.1.10.5 Antirust agents
14.1.10.6 Pickling agents
14.1.10.7 Chromating and phosphatazing agents
14.1.10.99 Agents and consumables for surface cleaning and treatment equipment, other

14.1.99 Surface cleaning and treatment equipment, other

ELECTROPLATING EQUIPMENT

14.2.1 Electroplating equipment
14.2.2 Equipment for galvanic cleaning and polishing
14.2.3 Equipment for electrolytic oxidation and colouring
14.2.4 Equipment for electroforming
14.2.5 Electric etching equipment
14.2.6 Electroplating systems for printed boards
14.2.7 Strip galvanizing equipment
14.2.8 Galvanizing lines
14.2.9 Equipment for electroless (chemical) plating

14.2.10 Attachments and accessories for electroplating equipment
14.2.10.1 Electric current sources for electroplating equipment
14.2.10.2 Control and regulation devices for electroplating equipment
14.2.10.3 Containers for electroplating
14.2.10.4 Bath heaters for electrodeposition
14.2.10.5 Baskets for electroplated products
14.2.10.6 Centrifuge drums for electroplating equipment
14.2.10.7 Filtering equipment for electroplating equipment
14.2.10.8 Recycling equipment for electroplating
14.2.10.99 Accessories for electroplating equipment, other

14.2.11 Anodes for electroplating equipment
14.2.12 Chemicals for electroplating technology

14.2.99 Electroplating equipment, other

LACQUERING SYSTEMS, ENAMELLING SYSTEMS, PLASTIC COATING SYSTEMS

14.3.1 Equipment for pneumatic spraying of coating materials
14.3.2 Equipment for high-pressure spraying of coating materials
14.3.3 Equipment for spraying of heated coating materials
14.3.4 Equipment for dip coating
14.3.5 Equipment for glazing
14.3.6 Drum coating machines
14.3.7 Roller coating equipment
14.3.8 Electrostatic wet coating equipment

14.3.9 Powder coating equipment
14.3.9.1 Spray guns for electrostatic powder coating
14.3.9.2 Baking kilns for powder coating materials and their accessories

14.3.10 Equipment for electrophoretic coating

14.3.11 Booths for lacquering, drying and coat baking
14.3.11.1 Fire protection for lacquering boots
14.3.11.2 IR radiation baking of coating materials
14.3.11.3 Induction baking of coating materials
14.3.11.4 UV radiation curing of coating materials
14.3.11.5 Electron-beam curing of coating materials

14.3.12 Equipment for enamelling
14.3.13 Equipment for surface coating with plastics and rubber
14.3.14 Conveyors for lacquering equipment
14.3.15 Robots, manipulators and accessories for surface treatment
14.3.16 Compressors and pumps for lacquering equipment

14.3.17 Coating materials and putties
14.3.17.1 Synthetic coating materials
14.3.17.2 Oil coating materials
14.3.17.3 Bitumen coating materials
14.3.17.4 Acrylate coating materials
14.3.17.5 Acrylurethane coating materials
14.3.17.6 Epoxy resin coating materials
14.3.17.7 Epoxy ester coating materials
14.3.17.8 Epoxy acrylate coating materials
14.3.17.9 Polyurethane coating materials
14.3.17.10 Water-soluble paints
14.3.17.11 Powder coating materials
14.3.17.12 Thinners and solvents
14.3.17.13 Putties for surface finishing
14.3.17.14 Masking materials for lacquering plants
14.3.17.99 Coating materials and putties, other

14.3.18 Nano-varnishes
14.3.19 Dyestuffs, pigments
14.3.20 Enamels
14.3.21 Foil for product surface finish

EQUIPMENT FOR CHEMICAL AND HEAT METAL TREATMENT

14.4.1 Equipment for diffusion saturation of steel surface
14.4.1.1 Case hardening equipment
14.4.1.2 Nitriding equipment
14.4.1.3 Nitrocarburizing equipment
14.4.1.4 Equipment for carbonitriding
14.4.1.5 Equipment for sulpho-nitriding
14.4.1.6 Equipment for boriding
14.4.1.7 Equipment for alitizing

14.4.2 **Furnaces for chemical and thermal treatment of surfaces and their accessories**
14.4.3 **Solid, liquid and gaseous substances for chemical and thermal treatment of surfaces**

14.4.99 **Equipment for chemical and thermal treatment of surfaces, other**

LASER AND PLASMA COATING TECHNOLOGIES
14.5.1 **Laser coating technologies**
14.5.2 **Physical Vapour Deposition (PVD) plants**
14.5.3 **Chemical Vapour Deposition (CVD) plants**
14.5.4 **Plasma technologies for ion beam coating**
14.5.5 **Vacuum components and accessories for laser and plasma coating technologies**
14.5.99 **Laser and plasma coating technologies, other**

14.6 **EQUIPMENT FOR THERMAL SPRAYING**
14.6.1 **Flame metal spraying equipment**
14.6.2 **Arc metal spraying equipment**
14.6.3 **Plasma metal spraying equipment**
14.6.99 **Plants for thermal spraying, other**

SPECIAL SYSTEMS FOR SURFACE TREATMENT

14.7.1 **Thermal surface treatment systems**
14.7.1.1 Annealing plants
14.7.1.2 Hardening and tempering plants
14.7.1.3 Annealing, hardening and tempering furnaces and their accessories
14.7.1.4 Hardening baths and materials

14.7.2 **Browning and black-finishing plants**
14.7.3 **Equipment for metal spraying**
14.7.4 **Hot galvanization plants**
14.7.5 **Hot-dip tinning plants**
14.7.6 **Polishing, grinding and lapping equipment and accessories**
14.7.7 **Non-thermal surface hardening systems**
14.7.8 **Tampon printing, silkscreen printing**

14.7.9 **Industrial surface marking systems**
14.7.9.1 Equipment for electro-chemical marking
14.7.9.2 Micro-impact marking machines
14.7.9.3 Equipment for surface marking by film application
14.7.9.4 Self-adhesive materials

14.7.9.5 Scribing and engraving machines and equipment
14.7.9.5.1 Laser marking and scribing machines

14.7.9.6 Marking printers
14.7.9.7 Labelling devices
14.7.9.8 Embossing dies
14.7.9.9 Embossing guns
14.7.9.10 Embossing presses
14.7.9.99 Industrial equipment for surface marking, other

14.7.99 **Special surface treatment systems, other**

ENVIRONMENTAL PROTECTION SYSTEMS FOR SURFACE TREATMENT TECHNOLOGIES
14.8.1 **Water treatment plants for surface technology**
14.8.2 **Waste water treatment plants for surface technologies**
14.8.3 **Waste gas cleaning plants for surface treatment technology**
14.8.4 **Surface treatment waste disposal**
14.8.5 **Consultancy in environmental protection systems for surface treatment technologies**
14.8.99 **Environmental protection systems for surface treatment technologies, other**

COMPUTER, MEASURING AND TESTING DEVICES FOR SURFACE TREATMENT

14.9.1 **Computer management systems for surface treatment enterprises**
14.9.2 **Software for support of quality assurance and management (CAQ)**
14.9.3 **CAD, CAM and CIM for surface treatment**
14.9.4 **Regulation and control equipment for surface treatment technologies**

14.9.5 **Measuring and testing devices for surface treatment applications**
14.9.5.1 Nano-technologies testing and measuring instruments

14.9.99 **Computer, measuring and testing devices for surface treatment, other**

RESEARCH, SERVICES AND INSTITUTIONS IN SURFACE TREATMENT SECTOR

14.10.1 **Research in surface treatment technologies**

14.10.2 **Offers of production facilities in surface treatment sector**
14.10.2.1 Custom cleaning and pre-treatment of surfaces
14.10.2.2 Custom electroplating

14.10.2.3 Custom heat treatment of metals
14.10.2.3.1 Customized quenching and annealing

14.10.2.4 Custom chemical and heat treatment of metals

14.10.2.5 Custom technical coating applications
14.10.2.5.1 Custom PVD and CVD coating of tools

14.10.2.6 Custom lacquering
14.10.2.7 Custom hexabasic chromium free corrosion protection
14.10.2.8 Custom metal spraying of surfaces
14.10.2.9 Customized hot galvanizing
14.10.2.10 Customized thermal coating
14.10.2.11 Customized cladding

14.10.2.12 Custom application of plastic coatings
14.10.2.12.1 Custom fluoroplastic coating

14.10.3 **Consultancy in surface treatment technologies**
14.10.4 **Surface treatment engineering and design services**
14.10.5 **Service and repair of machines and equipment for surface treatment applications**
14.10.6 **Refurbished machines and equipment for surface treatment**
14.10.7 **Manufacture of prototype and single-purpose equipment for surface treatment**

14.10.8 **Surface treatment technologies**
14.10.8.1 Surface treatment technology projects
14.10.8.2 Technological supplies for the surface treatment industry

14.10.9 **Execution of investment projects in surface treatment sector**
14.10.10 **Financial services and leasing in surface treatment sector**
14.10.11 **Technical literature and publications for surface treatment applications**
14.10.12 **Institutions and organisations in surface treatment sector**
14.10.13 **Vocational training schools specializing in surface treatment systems**
14.10.14 **Specialist courses and education in surface treatment systems**

14.10.99 **Research, services, institutions in surface treatment sector, other**

POLYMERS – RAW MATERIALS AND AUXILIARIES

15.1.1 Thermoplastics

15.1.1.1 Polyolefins

15.1.1.1.1 Polyethylenes (PE)
15.1.1.1.1.1 Ultra low density polyethylenes (ULDPE)
15.1.1.1.1.2 Low density polyethylenes (LDPE)
15.1.1.1.1.3 Linear low density polyethylenes (LLDPE)
15.1.1.1.1.4 Medium-density polyethylenes (MDPE)
15.1.1.1.1.5 High-density polyethylenes (HDPE)
15.1.1.1.1.6 High molecular weight high-density polyethylenes (HMW-HDPE)
15.1.1.1.1.7 Ultra-high molecular weight high-density polyethylenes (UHMW-HDPE)
15.1.1.1.1.8 Modified PE, copolymers, degradable types
15.1.1.1.1.99 Polyethylenes, other

15.1.1.1.2 Polypropylenes (PP)
15.1.1.1.3 Polybutene (PB) and polyisobutylene (PIB)
15.1.1.1.99 Polyolefins – other

15.1.1.2 Polustyrene plastics
15.1.1.2.1 Polystyrene (PS)
15.1.1.2.2 Expandable polystyrene (EPS)
15.1.1.2.3 Rigid polystyrene (S/B, HIPS)
15.1.1.2.4 Styrene-acrylonitrile copolymers (SAN)
15.1.1.2.5 Acrylonitrile-butadiene-styrene (ABS)
15.1.1.2.99 Styrene copolymers, multipolymers and blends – other

15.1.1.3 Vinyl chloride plastics

15.1.1.4 Fluoroplastics
15.1.1.4.1 Polytetrafluorethylene (PTFE)
15.1.1.4.99 Fluoroplastics, other

15.1.1.5 Acrylates
15.1.1.5.1 Polymethylmetacrylate (PMMA)
15.1.1.5.2 Copolymers and acrylate blends

15.1.1.6 Polyoxymethylene (POM)

15.1.1.7 Polyamides (PA)
15.1.1.7.1 Polyamides PA 6
15.1.1.7.2 Polyamides PA 66
15.1.1.7.3 Polyamides PA 11
15.1.1.7.4 Polyamides PA 12
15.1.1.7.5 Polyamides PA 46, 610, 612
15.1.1.7.6 Polyamides – other types
15.1.1.7.7 Aromatic polyamides (polyarylamides)
15.1.1.7.8 Copolymers and polyamide alloys

15.1.1.8 Polyarylesters
15.1.1.8.1 Polycarbonates (PC)
15.1.1.8.2 Copolymers and polyarylester blends
15.1.1.8.3 Polyethylen terephthalate (PETP, PET)
15.1.1.8.4 Polybutylene terephthalate (PBTP)
15.1.1.8.5 Polyarylates (PAR, PEC)

15.1.1.9 Polysulfides
15.1.1.9.1 Polyphenylene sulfide (PPS)

15.1.1.10 Polysulfones
15.1.1.11 Thermoplastic polyimides (PI)
15.1.1.12 Liquid crystal polymers (LCP)
15.1.1.13 Polyphenylene oxides (POP, PPE) and their blends
15.1.1.14 Polyetheretherketone (PEEK)
15.1.1.15 Cellulose derivatives
15.1.1.16 Highly heat-resistant thermoplastics

15.1.1.99 Thermoplastics, other

15.1.2 Thermoplastic elastomers (TPE)

15.1.3 Thermosetting plastics
15.1.3.1 Phenol moulding compounds (PF)
15.1.3.2 Aminoplastic moulding compounds
15.1.3.3 Polyester resins unsaturated (UP)
15.1.3.4 Epoxy resins (EP)
15.1.3.5 Highly heat-resistant thermosetting plastics
15.1.3.99 Thermosetting plastics – other

15.1.4 Polyurethanes (PUR)
15.1.4.1 Unextended polyurethanes
15.1.4.2 PUR flexible foam systems
15.1.4.3 PUR rigid foam systems
15.1.4.4 PUR integral foam systems
15.1.4.5 Polyurethane elastomers
15.1.4.99 Polyurethanes (PUR) – other

15.1.5 Rubbers and vulcanized rubbers

15.1.6 Polymer materials for manufacture of coating materials
15.1.6.1 Polymers for manufacture of transparent lacquers
15.1.6.2 Polymers for manufacture of pigmented paints and enamels

15.1.7 Polymer materials for manufacture of adhesives

15.1.8 Polymers and fillers for manufacture of cements
15.1.8.1 Polymers for manufacture of thermoplastic cements

15.1.9 Additives and fillers for processing of plastics and rubber blends

15.1.9.1 Additives and fillers for processing of plastics
15.1.9.1.1 Dyestuffs, pigments for plastics
15.1.9.1.2 Dyestuffs and additives for plastics in the form of concentrates (masterbatches)
15.1.9.1.3 Fillers
15.1.9.1.4 Plasticizers
15.1.9.1.5 Stabilizers (thermo-oxidation, etc.)
15.1.9.1.6 Antistatic agents
15.1.9.1.7 Flame retarding agents
15.1.9.1.8 Crosslinking agents
15.1.9.1.9 Nucleating agents
15.1.9.1.10 Agents facilitating preparation of polymer blends (compatibilizators)
15.1.9.1.11 Blowing agents
15.1.9.1.12 Dispersing agents
15.1.9.1.13 Not genuine solvents
15.1.9.1.14 Lubricants, waxes for processing of plastics
15.1.9.1.15 Separating agents
15.1.9.1.99 Additives and fillers for processing of plastics – other

15.1.9.2 Additives and fillers for processing of rubber blends

15.1.10 Biopolymers
15.1.11 Synthetic polymer-based ion exchange resins

15.1.99 Polymers – raw materials and additives – other

MACHINES AND EQUIPMENT FOR PROCESSING OF PLASTICS AND RUBBERS

15.2.1 Machines for treatment of polymer materials
15.2.1.1 Mixing and kneading machines
15.2.1.2 Crushing machines
15.2.1.3 Filtration systems
15.2.1.4 Machines for manufacture of plastics and rubbers mixtures
15.2.1.99 Machines for treatment of polymer materials – other

15.2.2 **Calenders – rolling machines**
15.2.2.1 Machines and lines for production of plastic sheets and floorings

15.2.3 **Extruders – extruding machines for plastic and rubber blends**

15.2.3.1 Extruders for plastic materials
15.2.3.1.1 Machines and lines for production of boards, sheets, pipes and sections of thermoplastics

15.2.3.2 Extruders for rubber industry
15.2.3.2.1 Extruding equipment for rubber

15.2.4 **Moulding machines for thermosetting plastics and rubber**
15.2.4.1 Injection moulding machines for thermosetting plastics and rubber blends
15.2.4.2 Multibank presses for manufacture of laminated materials

15.2.5 **Injection moulding machines**
15.2.5.1 Hydraulic injection moulding machines
15.2.5.2 Hybrid (electrical and hydraulic) injection moulding machines
15.2.5.3 Electrical injection moulding machines
15.2.5.4 Multi-colour and multi-component injection moulding machines
15.2.5.5 Injection moulding machines for thermosetting plastics
15.2.5.6 Injection moulding machines for technical rubber articles
15.2.5.7 Injection moulding machines with pressurized inert gas
15.2.5.8 Power injection ioulding (PIM) machines
15.2.5.99 Injection moulding machines – other

15.2.6 **Machinery for manufacture of foamed materials and processing of reactive resins**
15.2.7 **Curing presses**
15.2.8 **Machines for manufacture of tyres**
15.2.9 **Machines for manufacture of rubber hoses**

15.2.10 **Blow moulding machines for manufacture of hollow articles**
15.2.10.1 Extruding blow moulding machines
15.2.10.2 Injection blow moulding machines

15.2.11 **Casting machines and equipment for liquid polymer processing**

15.2.12 **Equipment for plastic or rubber coating**

15.2.13 **Moulds, tools and jigs**
15.2.13.1 Injection moulds
15.2.13.2 Blow moulds
15.2.13.3 Compression moulds
15.2.13.4 Moulds, tools and jigs for extruders
15.2.13.5 Standardized parts for moulds, tools and jigs
15.2.13.6 Heated injection systems
15.2.13.7 Hot air-channel systems
15.2.13.99 Moulds, tools and jigs, other

15.2.14 **Ancillary machines and equipment for plastics and rubber industries**
15.2.14.1 Silos and their accessories
15.2.14.2 Granulate driers
15.2.14.3 Conveyors
15.2.14.4 Metal separators
15.2.14.5 Granulate suction equipment
15.2.14.6 Dosing equipment
15.2.14.7 Heating technology
15.2.14.8 Cooling technology
15.2.14.9 Flow meters
15.2.14.10 Digital scales
15.2.14.11 Equipment for separation of gate and culls from castings
15.2.14.12 Robots and handling devices for plastics and rubber processing machines
15.2.14.13 Systems for automatic mould changing
15.2.14.14 Belt conveyors for mouldings
15.2.14.99 Ancillary machines and equipment for plastics and rubber industries – other

15.2.15 **Dying units for plastic materials**
15.2.16 **Equipment for intake and treatment of air and other gases for technological purposes**
15.2.17 **Deflashing machines for plastic and rubber components**
15.2.18 **Plastics thermoforming machines**

15.2.19 **Machines and fixtures for welding of plastics**
15.2.19.1 Machines for welding plastic sheets

15.2.20 **Machines for chip working of plastics**
15.2.21 **Machines and equipment for finishing operations**
15.2.22 **Machines, equipment and materials for finishing, decorating, printing and marking plastic and rubbers products**
15.2.23 **Equipment and technologies for Rapid Prototyping, Rapid Tooling and Room Temperature Vulcanization**
15.2.24 **Process control equipment of machines for plastics and rubber industries**

15.2.25 **Parts and components of machines for plastics and rubber industries**
15.2.25.1 Screws
15.2.25.2 Hydraulic and pneumatic rollers
15.2.25.3 Rollers for calenders
15.2.25.4 Pumps for plastics and rubber processing machines
15.2.25.5 Nozzles
15.2.25.6 Heating elements
15.2.25.7 Machine blades
15.2.25.8 Clutches
15.2.25.9 Electric motors and drives
15.2.25.99 Parts and components of machines for plastics and rubber industries, other

15.2.26 **Equipment for neutralization and use of static electricity in manufacture**

15.2.99 **Machines and equipment for processing of plastics and rubber, other**

COMPOSITE MATERIALS

15.3.1 **Composite reinforcements**

15.3.1.1 Reinforcing fibres

15.3.1.1.1 Glass fibres
15.3.1.1.1.1 Glass rovings
15.3.1.1.1.2 Textile glass fabric
15.3.1.1.1.3 Textile glass mats

15.3.1.1.99 Reinforcing fibres, other

15.3.1.99 Composite reinforcements, other

15.3.2 **Materials for polymer matrices**
15.3.3 **Machines and equipment for manufacture of prepregs**

15.3.4 **Technologies, machines and equipment for manufacture of thermosetting matrix fibre composites**
15.3.4.1 Hot pressing technologies (BMC or DMC)
15.3.4.2 Manual wet coating
15.3.4.3 Winding technologies (rovings, fabric strips)

15.3.4.4 Resin Transfer Moulding (RTM) technologies
15.3.4.5 Vacuum Assisted RTM (VARTM) technologies
15.3.4.6 Seeman Composite Resin Infusion Moulding Process (SCRIMP) technologies
15.3.4.7 Pultrusion technologies
15.3.4.8 Sheet Moulding Composed (SMC) technologies
15.3.4.99 Technologies, machines and equipment for manufacture of thermosetting matrix fibre composites, other

15.3.5 Technologies, machines and equipment for manufacture of thermosetting matrix fibre composites
15.3.6 Technology of particle composites with polymer matrix
15.3.7 Technology of composites with metal matrix
15.3.8 Technology of composites with ceramic matrix
15.3.9 Nanocomposites

15.3.10 Semi-finished composite products
15.3.10.1 Composite structural sections, rods, pipes, boards
15.3.10.2 Composite panels with sandwich core

15.3.11 Composite products
15.3.11.1 Glass-fibre reinforced plastic products

15.3.99 Composites, other

SEMI-FINISHED AND FINISHED PLASTIC PRODUCTS

15.4.1 Semi-finished plastic products
15.4.1.1 Films, sheets, strips, bands
15.4.1.2 Blocks, boards
15.4.1.3 Sections
15.4.1.4 Rods
15.4.1.5 Fibres, lines, strings
15.4.1.6 Pipes, hoses
15.4.1.7 Semi-finished plastic castings
15.4.1.99 Semi-finished plastic products, other

15.4.2 Plastic products
15.4.2.1 Bearings and parts thereof
15.4.2.2 Gears
15.4.2.3 Shaft couplings
15.4.2.4 Springs and flexible elements
15.4.2.5 Sealings, bellows
15.4.2.6 Conveyer belts
15.4.2.7 Conveyer chains, chains tensioners
15.4.2.8 Conveyer and driving belts
15.4.2.9 Conveyer rollers, conveyer worms
15.4.2.10 Energy chains
15.4.2.11 Pipes
15.4.2.12 Tubes, drainage parts
15.4.2.13 Hoses
15.4.2.14 Fittings, quick couplers
15.4.2.15 Pumps
15.4.2.16 Castor wheels, rollers, pulleys, sheaves
15.4.2.17 Assembling elements
15.4.2.17.1 Joining elements – screws, nuts, rivets, pins
15.4.2.17.2 Leveling elements – distance columnes, articulated supporting feet, leveling screws
15.4.2.17.3 Protective elements – caps, plugs, blinds, sleeves, closures
15.4.2.17.4 Fastening elements – wall clips, clamps, wall holder sleeves, fixing strips, assembly strappings, dowels, hinges
15.4.2.18 Operating elements – handles, hand rails, balls, wheels, levers, star handles
15.4.2.19 Large tanks, silos, containers
15.4.2.20 Vessels, barrels, canisters, bottles
15.4.2.21 Pallets, crates, containers, cases, boxes, packs, trays
15.4.2.22 Ropes, cords, binding straps
15.4.2.23 Filters
15.4.2.24 Mesh screens
15.4.2.25 Linings and panelling of plants, equipment for transport and storage of bulk and abrasive materials
15.4.2.26 Masts
15.4.2.27 Sound protecting, thermal and waterproofing parts, panels and fillings
15.4.2.28 Facade lining and decorative panels, roofing
15.4.2.29 Electric insulation boards and components
15.4.2.30 Oversize and small boxes, covers and lids
15.4.2.31 Fillets, furniture strips and components
15.4.2.32 Sacks, bags
15.4.2.33 Cups, mugs, plates, trays and kitchen utensils
15.4.2.34 Floor coverings, industrial carpets
15.4.2.35 Synthetical leather, plastic coated paper or textile products
15.4.2.36 Protective and safety aids
15.4.2.99 Plastic products, other

15.4.3 Plastic constructional units
15.4.3.1 Injection moulded plastic constructional units
15.4.3.2 Pressed plastic constructional units
15.4.3.3 Blown plastic constructional units
15.4.3.4 Structural parts of thermoformed plastics
15.4.3.5 Expanded plastic structural parts
15.4.3.6 Structural parts of polycarbonates
15.4.3.7 Polyamide structural parts
15.4.3.8 Polyoxymethylene structural parts
15.4.3.9 Structural parts with inserts
15.4.3.10 Reinforced structural parts
15.4.3.11 Plastic machined structural parts
15.4.3.12 Sliding and wear-resistant structural parts
15.4.3.99 Plastic constructional units, other

15.4.4 Plastic parts and products for selected industries and end users

15.4.4.1 Plastic parts and products for mechanical engineering
15.4.4.2 Plastic parts and products for transport
15.4.4.3 Plastic parts and products for the automotive industry
15.4.4.3.1 Motor vehicle components for interior fittings
15.4.4.3.2 Motor vehicle components for exterior fittings
15.4.4.3.3 Plastic parts for vehicle driving sets
15.4.4.4 Plastic parts and products for power engineering
15.4.4.5 Plastic parts and products for the building industry
15.4.4.6 Plastic parts and products for the environment protection
15.4.4.7 Plastic parts and products for agriculture
15.4.4.8 Plastic parts and products for the food industry
15.4.4.9 Plastic parts and products for the printing and packaging industries
15.4.4.10 Plastic parts and products for electrical engineering
15.4.4.11 Plastic parts and products for electronics
15.4.4.12 Plastic parts and products for information and communication technologies and office machinery
15.4.4.13 Plastic parts and products for health services
15.4.4.14 Plastic parts and products for the textile and clothing industries
15.4.4.15 Plastic parts and products for the furniture-making industry
15.4.4.16 Plastic parts and products for home appliances, households
15.4.4.17 Plastic parts and products for school and office supplies
15.4.4.18 Plastic parts and products for garden, garden appliances
15.4.4.19 Plastic parts and products for games, hobbies, sports, leisure time
15.4.4.20 Plastic parts and products for advertising, promotional items
15.4.4.99 Plastic parts and products for other selected industries and end users

15.4.5 Semi-finished and finished products made of polyurethane elastomers
15.4.5.1 Boards, blocks
15.4.5.2 Sections
15.4.5.3 Bellows, sleeves, covers, rings
15.4.5.4 Dilatation compensators
15.4.5.5 PU elastomers including metal inserts
15.4.5.6 Shaft seal rings
15.4.5.7 Seals
15.4.5.8 Vibration dampers
15.4.5.9 Silentblocks
15.4.5.10 Shaped products
15.4.5.11 Casts
15.4.5.12 Glass fiber reinforced polyurethane
15.4.5.13 Wheels
15.4.5.14 Solid tyre wheels
15.4.5.15 Polyurethane coated rollers
15.4.5.99 Semi-finished and finished products made of polyurethane elastomers other

SEMI-FINISHED AND FINISHED RUBBER-BASED PRODUCTS

15.5.1 Rubber boards, blocks
15.5.2 Rubber sections
15.5.3 Rubber fibres, ropes
15.5.4 Rubber hoses
15.5.5 Rubber flooring
15.5.6 Rubber V-belts, indented belts
15.5.7 Rubber conveyor belts
15.5.8 Rubber bellows, sleeves, covers, rings
15.5.9 Rubber dilatation compensators
15.5.10 Rubber-metal
15.5.11 Shaft seal rings
15.5.12 Rubber seals
15.5.13 Rubber vibration dampers
15.5.14 Silentblocks
15.5.15 Shaped rubber products
15.5.16 Rubber textile products
15.5.17 Rubber wheels
15.5.18 Cellular rubber products
15.5.19 Tyres and tubes
15.5.20 Rubber containers and bags
15.5.21 Rubber-coated cylinders
15.5.22 Articles produced by dipping
15.5.23 Ebonite products
15.5.98 Rubber components for automotive applications of all kinds
15.5.99 Rubber semi-finished and finished products, other

MACHINES AND EQUIPMENT FOR RECYCLING AND USE OF PLASTIC AND RUBBER WASTE MATERILAS

15.6.1 Mills and crushers for plastic waste
15.6.1.1 Cryogenic mills and crushers for plastic and rubber waste
15.6.1.2 Tyre crushers

15.6.2 Machines, equipment and technologies for separation of contaminating materials from plastic and rubber waste
15.6.3 Technologies, machines and equipment for chemical and thermal recycling of waste polymer materials
15.6.4 Solid waste processing lines (plastics, cables, tyres)
15.6.5 Plastic re-granulates and waste (HDPE, LDPE, PP, PS, PVC, PUR)
15.6.6 Recycled elastomer materials
15.6.7 Consultancy in recycling and use of plastic and rubber waste materials

15.6.99 Machines and equipment for recycling and use of plastic and rubber waste materials – other

COMPUTER, TESTING AND MEASURING TECHNOLOGIES FOR PLASTICS AND RUBBERS

15.7.1 Control systems for plastics and rubber enterprises

15.7.2 Statistical Process Control (SPC) systems for long-term monitoring of production processes and quality

15.7.3 CAD, CAM and CIM for plastics and rubber plants
15.7.3.1 CAD systems for injection processes analysis and optimization
15.7.3.2 Regulation system for melt flow in the mould

15.7.4 Development software for designers
15.7.5 Pick-up sensors of dimensions, pressure, temperature and forces in plastics and rubber processing machines

15.7.6 Measuring equipment for length, thickness and surface geometry of plastic components
15.7.6.1 Systems for 2D and 3D scanning of complex shapes

15.7.7 Rheometers, plastometers, viscosimeters
15.7.8 Temperature measuring instruments for manufacture and processing of plastics and rubbers
15.7.9 Thermomechanical analysers
15.7.10 Measuring instruments of optical properties of plastics and rubbers
15.7.11 Multiparameter measuring stations
15.7.12 Material thermostability testers
15.7.13 Testers of mechanical and dynamic ruggedness of materials

15.7.99 Computer, testing and measuring technologies for plastics and rubbers, other

RESEARCH, SERVICES AND INSTITUTIONS IN PLASTICS AND RUBBERS

15.8.1 Research in plastics and rubbers

15.8.2 Custom plastic and rubber components manufacture
15.8.2.1 Custom plastic components manufacture
15.8.2.2 Custom rubber components manufacture
15.8.2.3 Custom adjustments and assembly of components

15.8.3 Consultancy in plastics and rubber manufacturing
15.8.4 Engineering and design services for plastics and rubber manufacturing

15.8.5 Service and repairs of machines for plastics and rubber industries
15.8.5.1 Spare parts for machines for plastics and rubber industries
15.8.5.2 Renovation of moulds, screws, chambers and cylinders
15.8.5.3 Turnkey systems of general overhauls of machines for plastics and rubber industries
15.8.5.4 Reconstruction and modernisation of machines for plastics and rubber industries

15.8.6 Refurbished machines for plastics and rubber industries
15.8.7 Manufacture of prototype and single-purpose equipment for plastics and rubber industries

15.8.8 Technologies for plastics and rubber industries
15.8.8.1 Technology projects for plastics and rubber industries
15.8.8.2 Technology supplies to plastics and rubber industries

15.8.9 Executiom of investment projects in plastics and rubber industries
15.8.10 Financial services, leasing for plastics and rubber industries
15.8.11 Technical literature and publications for plastics and rubber industries

15.8.12	Institutions and organisations in plastics and rubber industries
15.8.13	Vocational training schools for plastics and rubber industries
15.8.14	Vocational training courses and education for plastics and rubber industries
15.8.99	Research, services, institutions in plastics and rubbers sector, other

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CHEMICALS FOR ENGINEERING

Equipment for the chemical industry

16.1.1 Tanks, vessels, pressure vessels for the chemical industry
16.1.2 Columns

16.1.3 Filters for chemical production
16.1.3.1 Filters for liquid materials
16.1.3.2 Filters for gaseous materials
16.1.3.3 Filters with automatic cleaning of filter partition
16.1.3.4 Equipment for diaphragm technology, ultrafiltration and nanofiltration

16.1.4 Filtration systems for the chemical industry
16.1.4.1 Filtration systems for plastic and rubber melts
16.1.4.2 Filtration systems for the production of synthetic fibres
16.1.4.3 Filtration systems for plastic melt recycling

16.1.5 Mixing and kneading machines
16.1.6 Crushers

16.1.7 Mills for the chemical industry
16.1.7.1 Colloid mills
16.1.7.2 Pulverizers
16.1.7.3 Screens for the chemical industry

16.1.8 Separators
16.1.9 Air separators and screening machines
16.1.10 Dedusting equipment
16.1.11 Centrifuges

16.1.12 Evaporators, evaporating equipment
16.1.12.1 Vacuum evaporators

16.1.13 Homogenizers
16.1.14 Decanters
16.1.15 Crystallization equipment
16.1.16 Cleaning equipment for chemical engineering
16.1.17 Heat exchangers for chemical engineering
16.1.18 Industrial furnaces for chemical production
16.1.19 Dosing equipment for chemical engineering
16.1.20 Transport equipment for chemical plants
16.1.21 Silos
16.1.22 Synthetic fibre production equipment
16.1.23 Biochemical and biotechnological equipment
16.1.24 Process gas distribution
16.1.25 Process burners
16.1.26 Exhausting and dedusting equipment for the chemical industry

16.1.99 Equipment for the chemical industry – other

Machines and accessories for the chemical industry

16.2.1 Components and accessories for the chemical industry
16.2.2 Equipment for the petrochemical industry
16.2.3 Equipment for coal and tar processing
16.2.4 Natural gas processing equipment
16.2.5 Inorganic production equipment
16.2.6 Organic production equipment
16.2.7 Macromolecular material production
16.2.8 Coating substance production equipment
16.2.9 Agrochemical production equipment
16.2.10 Synthetic fibre production equipment
16.2.11 Explosive production equipment
16.2.12 Equipment for pharmaceutical production
16.2.13 Granulate production machines
16.2.14 Machines for the production of soap and cleaning agents
16.2.15 Machines for cosmetic production
16.2.16 Cream, solution, suspension and emulsion processing equipment
16.2.17 Stearin, glycerol and candle production equipment
16.2.18 Equipment for the production and storing of technical gases
16.2.99 Machines for other chemical branches

Lubricants, oils

16.3.1 Lubricating greases for industry
16.3.2 Lubricating oils for industry
16.3.3 Oils for industrial transmissions
16.3.4 Hydraulic oils
16.3.5 Oils for rolling
16.3.6 Oils, emulsions, pastes for corrosion protection
16.3.7 Cooling lubricants and liquids
16.3.8 Working emulsions and cutting oils
16.3.9 Additives for lubricants
16.3.10 Environmental lubricants
16.3.11 Oils for the food industry
16.3.99 Lubricants and oils – other

16.4 Mineral oil regeneration equipment
16.5 Corrosion and wear protection pastes
16.6 Sprays for metal surface finishing

16.7 Coating compositions
16.7.1 Synthetic coating compositions
16.7.2 Water soluble coating compositions
16.7.3 Powder paints

16.8 Colours, pigments
16.9 Enamels
16.10 Cements
16.11 Adhesives
16.12 Adhesive tapes and films

16.13 Gases
16.13.1 Pure and rare gases and their mixtures
16.13.2 Technical gases in liquid and gaseous phase

16.14 Active carbon, charcoal, soot

Chemicals for industrial production

16.15.1 Chemicals for mechanical engineering
16.15.1.1 Solvents, thinners
16.15.1.2 Varnish / lacquer removers
16.15.1.3 Degreasing and cleaning liquids
16.15.1.4 Corrosion inhibitors
16.15.1.5 Moulding equipment
16.15.1.6 Heat-carrying media
16.15.1.7 Chemicals for chemical and heat processing of iron and steel
16.15.1.8 Treatment salts for light metals
16.15.1.9 Chemicals for electroplating
16.15.1.10 Mordants for metals
16.15.1.11 Antifoaming agents
16.15.1.12 Emulsifiers
16.15.1.13 Additive concentrates
16.15.1.14 Technical fungicides
16.15.1.99 Chemicals for mechanical engineering – other

16.15.2 Chemicals for the petrochemical industry
16.15.3 Chemicals for the rubber industry
16.15.4 Chemicals for the pharmaceutical and cosmetic industries
16.15.5 Chemicals for industrial water treatment plants
16.15.6 Chemicals for the textile industry
16.15.7 Chemicals for the electric engineering industry
16.15.98 Washing and cleaning agents for industrial site cleaning

16.15.99 Chemicals for other industrial production branches

16.16 Industrial explosives
16.17 CAD, CAM, CIM for chemical plants
16.18 Consultancy for chemical production
16.19 Engineering and design services for chemical production

CHEMICALS FOR ENGINEERING

16.20 Service and repairs of machines for the chemical industry
16.20.1 Diagnostics of machines for the chemical industry

16.21 Re-worked machines for the chemical industry

16.22 Technologies for the chemical industry
16.22.1 Technology projects for the chemical industry

16.99 Chemistry for engneering others

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INDUSTRY 4.0 AND DIGITAL (SMART) FACTORY – INTEGRATED PROCESSES AND IT SOLUTIONS

Systems for additive manufacturing

17.1.1 Additive manufacturing systems
17.1.1.1 Additive manufacturing systems, 3D printers with 3DP technologies
17.1.1.2 Additive manufacturing systems, 3D printers with fused deposition modelling (FDM), thermal extrusion printing
17.1.1.3 Additive manufacturing systems, 3D printers with laminating technologies, laminated object modelling, LOM for non-metals
17.1.1.4 Additive manufacturing systems, 3D printers with multijet modelling (MJM)
17.1.1.5 Additive manufacturing systems, 3D printers with selective laser melting, SLM for metals
17.1.1.6 Additive manufacturing systems, 3D printers with selective laser sintering, SLS for non-metals
17.1.1.7 Additive manufacturing systems, 3D printers with stereolitography, SLA, STL
17.1.1.8 Other additive manufacturing systems, 3D printers for non-metals

17.1.2 Industry applications for additive manufacturing with non-metals

17.1.3 Supplementary systems and services for additive manufacturing with non-metals
17.1.3.1 3D digitisation systems for adaptive manufacturing
17.1.3.2 3D graphics software and 3D modelling software for additive manufacturing
17.1.3.3 3D modelling for additive manufacturing
17.1.3.4 3D scanners, 3D laser scanners for additive manufacturing
17.1.3.5 3D visualization of models (services)
17.1.3.6 Development and manufacture of 3D printing monofilaments
17.1.3.7 Other supplementary systems and services for additive manufacturing with non-metals

Basic software and software solutions

17.2.1 Communication software and network software for industrial IT

17.2.2 Data management software for industrial IT
17.2.2.1 Database systems
17.2.2.2 Knowledge management systems
17.2.2.3 Other data management software for industrial IT

17.2.3 Expert, diagnostic and simulation systems
17.2.3.1 Cognitive computing systems for production technologies and production processes
17.2.3.2 Expert systems and artificial intelligence
17.2.3.3 General simulation software for robotic applications
17.2.3.4 PLC simulation software (programmable logic controls)
17.2.3.5 Real time oriented interactive simulation in industrial applications
17.2.3.6 Simulation software for assembly technologies, handling systems and hydraulic and pneumatic systems
17.2.3.7 Simulation software for design, optimization and operation in production
17.2.3.8 Simulation systems for material flow optimisation and production layout
17.2.3.9 Software for fuzzy logic systems and fuzzy control in industrial applications
17.2.3.10 Systems and software for remote diagnosis systems for machines and installations
17.2.3.11 Tools for simulation and offline programming of industrial robots
17.2.3.12 Other expert systems, diagnosis systems and simulation systems

17.2.4 Image processing software
17.2.4.1 Future-oriented image processing software technologies
17.2.4.2 Image processing development systems
17.2.4.3 Software for identification systems
17.2.4.4 Software for pattern recognition, image analysis, image processing
17.2.4.5 Software tools for image processing

17.2.5 Internet solutions for industrial applications
17.2.5.1 Internet solutions for automation
17.2.5.2 On-line monitoring systems
17.2.5.3 Web-based solutions for automation systems
17.2.5.4 Other internet solutions for industrial applications

17.2.6 Multimedia software for industrial applications
17.2.6.1 Multimedia technical product documentation systems
17.2.6.2 Multimedia virtual product development systems

17.2.7 Operating systems for industrial IT

17.2.8 Extension of operating systems and system control software for industrial IT
17.2.8.1 Computer security software and network security software
17.2.8.2 OPC controllers, OPC servers, software for industrial IT, OPC UA
17.2.8.3 Other operating system extensions for industrial IT
17.2.8.4 Software for computer data backup
17.2.8.5 Software for computer management, maintenance and installation

17.2.9 Other basic software and system-oriented industrial software
17.2.10 Systems and software for public resource processing

17.2.11 Software for application development for industrial IT, development tools
17.2.11.1 Application development systems for CNC controls
17.2.11.2 Application development systems for embedded systems
17.2.11.3 Application development systems for mobile, industrial applications
17.2.11.4 Application development systems for process control systems, visualization systems
17.2.11.5 Application development systems for robot controls
17.2.11.6 Application development systems for Soft-PLC systems
17.2.11.7 Application development systems using C++, C, Basic
17.2.11.8 Application development systems with Java
17.2.11.9 Application development systems, expert systems, diagnosis systems, artificial intelligence systems
17.2.11.10 PLC programming systems, application development systems for automation equipment
17.2.11.11 Other software for application development for industrial IT, development tools

17.2.12 Videoconferencing systems

17.2.13 Virtual reality systems for industrial applications
17.2.13.1 General virtual reality in automation technology
17.2.13.2 Smart glasses
17.2.13.3 Virtual prototyping systems
17.2.13.4 Virtual reality in production planning
17.2.13.5 Virtual reality in robotics
17.2.13.6 Virtual reality software for industrial applications
17.2.13.7 Other virtual reality systems for industrial applications

17.2.14 Visualization systems
17.2.14.1 Visualization systems in industrial applications
17.2.14.2 Software for operating stations (man/machine interface)
17.2.14.3 Systems for Operating and Observing
17.2.14.4 Visualization software
17.2.14.5 Visualization systems (man-to-process communication)

17.2.15 Voice processing systems
17.2.16 Automation software solutions
17.2.17 Software and solutions for specific industrial branches

17.2.18 Specific software and specific solutions
17.2.18.1 Application software for quality assurance and quality control / CAQ
17.2.18.2 Application software for vertical IT integration
17.2.18.3 Product life cycle management, PLM software and solutions
17.2.18.3.1 CAD software and solutions for product data generation

INDUSTRY 4.0 AND DIGITAL (SMART) FACTORY – INTEGRATED PROCESSES AND IT SOLUTIONS

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17.2.18.3.2	**Complete product life cycle management, PLM systems and solutions**
17.2.18.3.3	**Software and solutions for computer equipment, CAE, technical computations and simulation**
17.2.18.3.4	**Software and solutions for experiments, prototyping and development**
17.2.18.3.5	**Software and solutions for media management, media databases**
17.2.18.3.6	**Software and solutions for product requirement management**
17.2.18.3.7	**Software and solutions for production planning, product planning**
17.2.18.3.8	**Software and solutions for technical documentation**
17.2.18.3.9	**Software and solutions for product data provision and management (PDM, EDM)**
17.2.18.3.10	**Software and solutions for total life cycle management, TLM**
17.2.18.4	Software and solutions for business analysis, big data, intelligent data for the industry
17.2.18.4.1	**Software and solutions for big data, intelligent data for the industry**
17.2.18.4.2	**Software and solutions for business analysis, intelligent data for the industry**
17.2.18.4.3	**Software and solutions for data storages and data acquisition for the industry**
17.2.18.4.4	**Other software and solutions for business analysis, big data for the industry**
17.2.18.5	Software and solutions for CRM, distribution and marketing
17.2.18.5.1	**Application software customer relations management, CRM and technical sales**
17.2.18.5.2	**Application software for technical sales**
17.2.18.5.3	**eCommerce and eBusiness solutions**
17.2.18.5.4	**Software and solutions for marketing, eMarketing, mobile marketing**
17.2.18.5.5	**Software and solutions for distribution**
17.2.18.6	Software and solutions for customer service and support
17.2.18.7	Software and solutions for production planning
17.2.18.7.1	**Software and solutions for enterprise resource planning, ERP and production planning, PPC**
17.2.18.7.2	**Software and solutions for enterprise resource planning, ERP and order processing**
17.2.18.7.3	**Software and solutions for production and planning integrated control**
17.2.18.7.4	**Software and solutions for production and control planning, PPC**
17.2.18.7.5	**Software and solutions for production planning / computer planning, CAP**
17.2.18.8	Software and solutions for maintenance and repairs
17.2.18.8.1	**MPS, maintenance systems**
17.2.18.8.2	**Software and solutions for maintenance management**
17.2.18.8.3	**Software for maintenance in the industry**
17.2.18.8.4	**Other software and solutions for maintenance and repairs**
17.2.18.9	Software and solutions for management and business activities
17.2.18.9.1	**Software and solutions for asset management**
17.2.18.9.2	**Content management software**
17.2.18.9.3	**Document management systems (DMS)**
17.2.18.9.4	**Software for personnel working hours management**
17.2.18.9.5	**Software and solutions for business process optimisation and business process control**
17.2.18.9.6	**Software and solutions for company management, organisation and control**
17.2.18.9.7	**Software and solutions for human resources, personnel management**
17.2.18.9.8	**Software and solutions for project management**
17.2.18.9.9	**Software and solutions for risk management**
17.2.18.9.10	**Software for the calculation of production costs**
17.2.18.9.11	**Systems for workflow**
17.2.18.9.12	**Other software and solutions for administration and commercial sector**
17.2.18.10	Software and solutions for production, production data management and CAM
17.2.18.10.1	**Computer systems for production, CAM solutions**
17.2.18.10.2	**Information management systems**
17.2.18.10.3	**Production systems, MES**
17.2.18.10.4	**Software and solutions for machine monitoring and machine control**
17.2.18.10.5	**Software and solutions for production management systems**
17.2.18.10.6	**Software and solutions for production systems, control production stations**
17.2.18.10.7	**Software and solutions for production data acquisition, collection of data from the plant, FDC, MDA**
17.2.18.10.8	**Software and solutions for production data management**
17.2.18.10.9	**Software and solutions for production management**
17.2.18.11	Software and solutions for job allocations, material management and logistics
17.2.18.11.1	**Advanced planning solutions (APS)**
17.2.18.11.2	**Software and solutions for logistics management**
17.2.18.11.3	**Software and solutions for distribution and shipment**
17.2.18.11.4	**Software and solutions for electronic notice boards, automatic material inventory management**
17.2.18.11.5	**Software and solutions for material flow management and material flow optimisation**
17.2.18.11.6	**Software and solutions for material management**
17.2.18.11.7	**Software and solutions for material consumption management and optimisation**
17.2.18.11.8	**Software and solutions for warehouse management**
17.2.18.11.9	**Software and solutions for supplier chain management (SCM)**
17.2.18.11.10	**Software and solutions for transport, traffic logistics**
17.2.18.11.11	**Other software and solutions for job allocation, material management and logistics**

Cloud & industrial IT services, digital factory services

17.3.1	**Cloud services, IT services and outsourcing**
17.3.1.1	Applications and hosting systems
17.3.1.2	Application service provision (ASP) for the industry
17.3.1.3	Industrial cloud services
17.3.1.3.1	**Cloud services for condition monitoring, predictive maintenance**
17.3.1.3.2	**Cloud services for mobile sensor systems**
17.3.1.3.3	**Infrastructure as a Service, SaaS, for industrial applications**
17.3.1.3.4	**Other cloud services for industrial applications**
17.3.1.3.5	**Platform as a Service, PaaS, for industrial applications**
17.3.1.3.6	**Software as a Service, SaaS, for industrial applications**
17.3.1.4	IT and network services (outsourcing)
17.3.1.5	Enterprise process outsourcing
17.3.1.6	IT and outsourcing consulting
17.3.1.7	Controlled services for industrial applications
17.3.1.8	Shop floor services and solutions
17.3.1.9	Attendance and maintenance software
17.3.2	**Automation software development**
17.3.2.1	Development of customer-specific control modules
17.3.2.2	PLC development and programming
17.3.2.3	Other customary automation software
17.3.3	**Industrial engineering services**
17.3.3.1	Application programming and engineering for automation in factories
17.3.3.2	Documentation services
17.3.3.3	Other industrial engineering services
17.3.3.4	Production planning and control simulation
17.3.3.5	Software consulting
17.3.4	**Internet services for automation and industrial use**
17.3.4.1	Internet portals for industrial software and engineering
17.3.4.2	Other internet services for automation and industrial use
17.3.4.3	Services for on-line marketplaces (industrial software and engineering)

17.3.5	**Organisations and associations for industrial software, digital factories**
17.3.6	**Other digital factory services**
Internet systems for the industry and industrial automation	
17.4.1	**General intelligent components**
17.4.2	**Components, Internet of Things systems, IoT in industrial applications**
17.4.3	**Cyber physical systems in industrial applications**
17.4.4	**Industrial internet solutions, industrial internet systems**
17.4.5	**Integrated industrial solutions**
17.4.6	**Other Industry 4.0 based industrial and internet solutions**
17.4.7	**Software solutions for the Industry 4.0 and the Internet of Things, Industrial Internet of Things (IioT)**
Automated production systems usable for the Smart Factory	
17.5.1	**Production planning and automatic control systems related to ERP systems**
17.5.2	**Automatic customer requirement processing systems**
17.5.3	**Automatic input material and raw material storage systems**
17.5.4	**Automatic tool storage systems**
17.5.5	**Other automatic storage systems**
17.5.6	**Automatic systems for in-house transport of semi-products and products**
17.5.7	**Automatic handling systems**
17.5.7.1	Handling robots with image analysis skills
17.5.7.2	Robotic systems for technology and machine tool operators
17.5.7.3	Other robotic systems
17.5.8	**Automatic control and measuring stations integratable in technological processes**
17.5.9	**Machines and equipment used in automatic facilities**
17.5.10	**Automatic monitoring and evaluation systems**
17.5.11	**Industry-specific automation software solutions**
17.5.11.1	Automation software solutions for general industrial applications
17.5.11.2	Automation software solutions for general mechanical engineering
17.5.11.3	Automation software solutions for measuring technologies and control technologies
17.5.11.4	Automation software solutions for other branch-specific applications
17.5.11.5	Automation software solutions for the design of other vehicles
17.5.11.6	Automation software solutions for the automotive industry
17.5.11.7	Automation software solutions for civil engineering
17.5.11.8	Automation software solutions for the electrical engineering industry, electronic industry
17.5.11.9	Automation software solutions for the metal producing and metal working industry
17.5.11.10	Automation software solutions for the packaging industry
17.5.11.11	Automation software solutions for the printing industry