



<b>1</b>	<b>Foundry plants and installations, planning, construction, engineering</b>	<b>3</b>	<b>Refractories technology</b>
<b>2</b>	<b>Melting shop</b>	<b>3.1</b>	<b>Refractory materials and products, insulating materials</b>
<b>2.1</b>	<b>Cupolas</b>	3.1.1	Refractory ramming mixtures
2.1.1	Cupolas, coke-fired	3.1.2	Refractory bricks
2.1.2	Cupolas, cokeless, gas-fired or oil-fired	3.1.3	Refractory gating system parts
<b>2.2</b>	<b>Electric melting and holding furnaces (pouring equipment see 10.1)</b>	3.1.4	Insulating materials and products
2.2.1	Electric arc furnaces for foundries	<b>3.2</b>	<b>Equipment for the lining of melting and pouring equipment</b>
2.2.2	Crucible induction furnaces	3.2.1	Compaction apparatus for refractory ramming materials
2.2.3	Channel type induction furnaces	3.2.2	Spraying machines for refractory material
2.2.4	Melting and holding furnaces, electric resistance type	3.2.3	Break-out equipment for furnace and ladle lining
2.2.5	Hearth-type electric melting and holding furnaces	<b>4</b>	<b>Metallic charge materials</b>
2.2.6	Crucible lifting furnaces	<b>4.1</b>	<b>Charge materials for iron, steel and malleable iron casting</b>
2.2.7	Bale-out furnaces, electric	4.1.1	Pig iron
2.2.8	Vacuum melting furnaces	4.1.2	Scrap, scrap iron
2.2.9	Other electric melting and holding furnaces	4.1.3	Ferro-alloys
<b>2.3</b>	<b>Fuel-heated melting and holding furnaces</b>	4.1.4	Alloying metals, master alloys
2.3.1	Crucible melting and holding furnaces, fuel-heated	4.1.5	Inoculants
2.3.2	Hearth-type melting and holding furnaces, fuel-heated	4.1.6	Nodularizing additions for spheroidal graphite cast iron
2.3.3	Rotary furnaces	<b>4.2</b>	<b>Charge materials for non-ferrous metal castings</b>
2.3.4	Bale-out furnaces, fuel-heated	4.2.1	Aluminium, aluminium alloys
2.3.5	Melting and holding furnaces, fuel heated	4.2.2	Magnesium, magnesium alloys
<b>2.4</b>	<b>Auxiliary melting and melt processing facilities</b>	4.2.3	Copper, copper alloys
2.4.1	Charging plants	4.2.4	High-grade zinc alloys
2.4.2	Charge preheating facilities	4.2.5	Tin, zinc, alloys
2.4.3	Electromagnetic conveying channels for molten metal	4.2.6	Alloying metals, master alloys
2.4.4	Blowing-in equipment for cupolas	4.2.7	Alloys for thixocasting and squeeze-casting
2.4.5	Oxygen addition equipment for cupolas	4.2.8	Non-ferrous metal scraps
2.4.6	Inoculation devices, injection equipment	<b>5</b>	<b>Moulding and core making</b>
2.4.7	Induction stirring installations	<b>5.1</b>	<b>Moulding machines and plants for bentonite-bonded sands</b>
2.4.8	Recuperators	5.1.1	Moulding machines
2.4.9	Slag treatment equipment	5.1.2	Moulding plants, flaskless
2.4.10	Melt treatment stations	5.1.3	Moulding plants with flasks
2.4.11	Inert gas installations	<b>5.2</b>	<b>Moulding machines and plants for non bentonite-bonded moulds</b>
2.4.12	Gas flushing installations	5.2.1	Cold-setting resin moulding processes, equipment
2.4.13	Vacuum degassing equipment	5.2.2	Shell moulding process, equipment
<b>2.5</b>	<b>Melting and holding furnaces, accessories</b>	5.2.3	Waterglass process, equipment
2.5.1	Crucibles	5.2.4	Lost-foam processes, equipment
2.5.2	Graphite electrodes	5.2.5	Vacuum moulding process, equipment
2.5.3	Heating wires and heating bars for electric resistance type furnaces	5.2.6	Investment casting processes, equipment
2.5.4	Emergency collecting pit	5.2.7	Moulding machines and plants, other processes
2.5.5	Other accessories	<b>5.3</b>	<b>Core making machines and plants</b>
2.5.6	Power Electronics/Converter	5.3.1	Core blowing and shooting machines and plants
2.5.7	Automation	5.3.2	Core making machines, other
2.5.8	Safety Engineering	<b>5.4</b>	<b>Moulding and core making machines, accessories</b>
2.5.9	Service	5.4.1	Gassing equipment for moulds and cores
<b>2.6</b>	<b>Operating materials and supplies for the melting shop</b>		
2.6.1	Foundry coke		
2.6.2	Slag-forming additives		
2.6.3	Melt additives and covering fluxes for ferrous cast alloys		
2.6.4	Melt additives and covering fluxes for non-ferrous cast alloys		
2.6.5	Recarburizers		
2.6.6	Gas, industrial		



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- 5.4.2 Dosing devices for binders and additives
- 5.4.3 Mould handling equipment
- 5.4.4 Core handling equipment
- 5.4.5 Core treatment equipment (deflashing, coating, drilling), core glueing equipment
- 5.4.6 Automated core/mould manipulation systems
- 5.4.7 Coating preparation
- 5.4.8 Moulding and coremaking machines, other accessories

#### 5.5 Moulding boxes and accessories

### 6 Moulding sands

- 6.1 Sands
  - 6.1.1 Silica sand
  - 6.1.2 Chromite sand and flour
  - 6.1.3 Zircon sand and flour
  - 6.1.4 Moulding sands with natural clay binder
  - 6.1.5 Sands, other

- 6.2 Moulding sand binders
  - 6.2.1 Bentonites and clays
  - 6.2.2 Synthetic resin binders for cold setting processes
  - 6.2.3 Synthetic resin binders for gassing processes
  - 6.2.4 Synthetic resin binders for thermosetting processes
  - 6.2.5 Sodium silicate binders
  - 6.2.6 Cement binders
  - 6.2.7 Binders for investment casting
  - 6.2.8 Moulding sand binders, others

- 6.3 Moulding sand additives, coatings for moulds and cores
  - 6.3.1 Lustrous carbon formers
  - 6.3.2 Moulding sand additives, others
  - 6.3.3 Mould and core coatings

- 6.4 Moulding sands ready-to-use
  - 6.4.1 Precoated sands for shell moulding
  - 6.4.2 Bentonite-bonded sands ready-to-use, waterless
  - 6.4.3 Moulding sands ready-to-use, others

### 7 Moulding sand preparation and sand reclama-

- 7.1 Moulding sand preparation
  - 7.1.1 Moulding sand preparation machines and plants
  - 7.1.2 Moulding sand mixer
  - 7.1.3 Crushing and grinding plants
  - 7.1.4 Magnetic separators
  - 7.1.5 Measuring and control equipment for moulding sand preparation
  - 7.1.6 Sand coolers
  - 7.1.7 Sand aerators
  - 7.1.8 Sand precoat plants (for shell moulding)
  - 7.1.9 Screening machines and installations (silos and hoppers see 15.7)
  - 7.1.10 Separators for chromite and silica sand, zircon and silica sand
  - 7.1.11 Moulding sand preparation, further equipment

- 7.2 Sand reclamation, plants and machines
  - 7.2.1 Sand reclamation of clay bonded moulding sands
  - 7.2.2 Sand reclamation of sodium silicate and cement bonded sands

- 7.2.3 Sand reclamation of synthetic resin bonded sands
- 7.2.4 Crushing and grinding plants for used sand

### 8 Moulding auxiliaries

- 8.1 Pneumatic rammers
- 8.2 Moulding auxiliaries, general
- 8.3 Foundry tools
- 8.4 Mould and core adhesives
- 8.5 Cores, prefabricated
- 8.6 Chaplets

### 9 Gating and feeding

- 9.1 Covering compounds for feeders
- 9.2 Breaker cores
- 9.3 Filterelements for liquid metals
- 9.4 Exothermic materials
- 9.5 Cooling elements
- 9.6 Strainer cores
- 9.7 Feeder sleeves
- 9.8 Funnels and filter Systems
- 9.9 Other auxiliaries

### 10 Casting machines and pouring equipment

- 10.1 Pouring equipment
  - 10.1.1 Pouring equipment, mechanical
  - 10.1.2 Pouring equipment, dosing
  - 10.1.3 Pouring equipment, heated (pouring furnaces)
  - 10.1.4 Pouring ladles
  - 10.1.5 Launderers
  - 10.1.6 Pig casting machines
  - 10.1.7 Pouring equipment and plants, other
  - 10.1.8 Precision fine casting units
- 10.2 Die-casting machinery and plant
  - 10.2.1 Cold chamber die-casting machinery
  - 10.2.2 Vacuum die-casting machinery
  - 10.2.3 Thixocasting die-casting machinery
  - 10.2.4 Squeeze casting die-casting machinery
  - 10.2.5 Warm chamber die-casting machinery
  - 10.2.6 Complete die-casting plant
- 10.3 Peripheral equipment and auxiliary materials for die casting (die casting dies see 17.3.1)
  - 10.3.1 Ladling and dosing equipment for die-casting
  - 10.3.2 Die heater/-cooler units and accessories



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10.3.3	Die spraying units
10.3.4	Release agents for die-casting
10.3.5	Operating and auxiliary materials for die-casting
10.3.6	Extracting equipment for die-castings
10.3.7	Trimming machines for die casting
10.3.8	Trimming tools for die casting
10.3.9	Ascension pipes for dosing installations and low pressure casting
10.3.10	Other accessories for die-casting
<b>10.4</b>	<b>Diecasting machines and accessories</b>
10.4.1	Gravity diecasting machines/plants
10.4.2	Low pressure diecasting machines/plants
10.4.3	Accessories, operating and auxiliary material for diecasting machines
<b>10.5</b>	<b>Centrifugal casting machines and accessories</b>
10.5.1	Centrifugal casting machines
10.5.2	Centrifugal casting moulds
<b>10.6</b>	<b>Continuous casting machines and accessories</b>
10.6.1	Continuous casting machines and plants
10.6.2	Continuous casting moulds
<b>10.7</b>	<b>Accessories</b>
10.7.1	Inductors
10.7.2	Pouring Control System
10.7.3	Power Electronics
10.7.4	Automation
10.7.5	Safety Engineering
10.7.6	Service
<b>11</b>	<b>Knock-out, fettling and finishing</b>
<b>11.1</b>	<b>Knock-out</b>
11.1.1	Knock-out and cooling drums and conduits
11.1.2	Knock-out machines
11.1.3	Cooling conveyors
11.1.4	Decoring equipment
<b>11.2</b>	<b>Blasting plant and accessories</b>
11.2.1	Pneumatic blast cleaning machines
11.2.2	Airless shot-blasting machines
11.2.3	Pressure water blasting plants
11.2.4	Dry ice blasting machines
<b>11.3</b>	<b>Shot-blasting abrasives</b>
11.3.1	Shot-blasting abrasives, metallic
11.3.2	Shot-blasting abrasives, inorganic, nonmetallic
11.3.3	Shot-blasting abrasives, organic
11.3.4	Shot-blasting abrasives, others
<b>11.4</b>	<b>Fettling installations</b>
11.4.1	Deflashing machines
11.4.2	Sawing machines
11.4.3	Gating and feeding system separator machines and installations
11.4.4	Abrasive cut-off machines and wheels
11.4.5	Fettling facilities, other
<b>11.5</b>	<b>Grinding machines and accessories</b>
11.5.1	Grinding machines, automatic controlled
11.5.2	A-type grinding machines, hand operated or mechanized

11.5.3	Hand-grinding machines
11.5.4	Grinding wheels
11.5.5	Abrasives, others
11.5.6	Grinding technology, others
<b>11.6</b>	<b>Fettling tools and fettling accessories, general</b>
11.6.1	Fettling chambers, fettling benches, fettling cabins
11.6.2	Fettling tools and sundries
<b>11.7</b>	<b>Interlacing and automation of fettling shops</b>
<b>11.8</b>	<b>As-cast casting inspection equipment</b>
<b>12</b>	<b>Surface treatment</b>
<b>12.1</b>	<b>Enamelling plants</b>
<b>12.2</b>	<b>Paint spraying units and tools</b>
<b>12.3</b>	<b>Impregnation plants</b>
<b>12.4</b>	<b>Galvanizing plants</b>
<b>12.5</b>	<b>Surface treatment materials</b>
<b>12.6</b>	<b>Surface treatment plants</b>
<b>13</b>	<b>Welding and cutting</b>
<b>13.1</b>	<b>Flame cutting installations and accessories</b>
<b>13.2</b>	<b>Welding installations and accessories</b>
<b>13.3</b>	<b>Filler metals</b>
<b>14</b>	<b>Heat treating and drying furnaces</b>
<b>14.1</b>	<b>Mould and ladle dryers</b>
<b>14.2</b>	<b>Core drying stoves</b>
<b>14.3</b>	<b>Sand drying plants and stoves</b>
<b>14.4</b>	<b>Heat treating furnaces and installations</b>
<b>14.5</b>	<b>Burners and heaters</b>
<b>14.6</b>	<b>Microwave dryer</b>
<b>15</b>	<b>Transportation and storage</b>
<b>15.1</b>	<b>Trucks, industrial</b>
<b>15.2</b>	<b>Cranes, hoists, rack trucks and accessories</b>
<b>15.3</b>	<b>Pneumatic conveyors</b>
<b>15.4</b>	<b>Roller conveyors</b>



<b>15.5</b>	Oscillating conveyors
<b>15.6</b>	Continuous conveyors (belt conveyors, bucket conveyors and others)
<b>15.7</b>	Bunkers, silos and accessories
<b>15.8</b>	Transport containers, pallets, racks
<b>16</b>	<b>Manipulation</b>
<b>16.1</b>	Manipulators
<b>16.2</b>	Industrial robots
<b>16.3</b>	Manipulators, mechanical
<b>16.4</b>	Positioning devices
<b>17</b>	<b>Pattern and die making</b>
<b>17.1</b>	Pattern and die making, machines and tools
17.1.1	Wood working machines
17.1.2	Metal machining, machine-tools
17.1.3	Foam pattern production, machines
17.1.4	Spotting presses
17.1.5	Wax pattern injection machines
17.1.6	Patternmaking and die making tools
17.1.7	Cleaning equipment for permanent moulds
<b>17.2</b>	Pattern and die making materials and standard elements
17.2.1	Metals and alloys
17.2.2	Standard elements for permanent moulds and dies
17.2.3	Hot working steels for diecasting dies
17.2.4	Die making, accessories
17.2.5	Heating and cooling devices for moulding and castings tools
17.2.6	Plastics
17.2.7	Ceramics
17.2.8	Pattern wood
17.2.9	Pattern varnishes
17.2.10	Pattern making sundries
17.2.11	Plaster
17.2.12	Investment casting waxes, waxes for wax injection machines, special waxes
<b>17.3</b>	Pattern equipment, permanent moulds and accessories
17.3.1	Diecasting dies
17.3.2	Permanent moulds, gravity dies
17.3.3	Gauges and fixtures
17.3.4	Patterns and core boxes made of wood and plastic
17.3.5	Metal patterns and core boxes
17.3.6	Pattern plates
17.3.7	Lost foam patterns
<b>17.4</b>	Solid Freeform Manufacturing
17.4.1	Object generation, equipment and processes
17.4.2	Rapid prototyping, equipment and processes
17.4.3	Rapid tooling, materials, technologies and processes

<b>18</b>	<b>Control systems</b>
<b>18.1</b>	Process control, models, simulation
<b>18.2</b>	Control equipment, automation technology
<b>19</b>	<b>Measurement and test technology</b>
<b>19.1</b>	Measuring instruments
19.1.1	Temperature measuring instruments
19.1.2	Thermal analysis equipment
19.1.3	Aluminium melt testing equipment
<b>19.2</b>	Scales and weighing machines
<b>19.3</b>	Testing of materials and workpieces
19.3.1	Tightness testers
19.3.2	Endoscopes
19.3.3	Hardness testers
19.3.4	Crack detection equipment, test media
19.3.5	X-ray testing equipment
19.3.6	Ultrasonic testing equipment
19.3.7	Materials testing, further equipment
19.3.8	Surface inspection
<b>19.4</b>	Chemical analyses and metallography
19.4.1	Gas analysis apparatus
19.4.2	Laboratory equipment
19.4.3	Spectrographic analysis equipment
19.4.4	Metallographic testing equipment
19.4.5	Microscopes
19.4.6	Grinding and polishing installations for metallography
19.4.7	Analytical apparatus, others
<b>19.5</b>	Mould and moulding sand testing
19.5.1	Mould testing equipment
19.5.2	Moulding sand testing equipment
<b>19.6</b>	Quality control
<b>20</b>	<b>Compressed-air technology</b>
<b>20.1</b>	Compressed-air plants and accessories
<b>20.2</b>	Pneumatic tools
<b>20.3</b>	Compressors and accessories
<b>21</b>	<b>Exhaust and ventilation technology</b>
<b>21.1</b>	Exhaust systems
<b>21.2</b>	Blowers and fans
<b>21.3</b>	Ventilating and air-conditioning equipment



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## 22 Environmental protection and waste removal

- 22.1 Flue gas cleaning plants
- 22.2 Waste water cleaning plants
- 22.3 Dust extraction systems
- 22.4 Filters and filter materials
- 22.5 Operating supplies for waste management plants
- 22.6 Foundry waste preparation plants
- 22.7 Pelletization plants
- 22.8 Residue recycling
- 22.9 Slag dressing plants
- 22.10 Water treatment plants
- 22.11 Environmental protection and waste removal, further installations

## 23 Industrial safety and ergonomics

- 23.1 Protective clothing
- 23.2 Body protection
- 23.3 Alarms
- 23.4 Protection equipment, other
- 23.5 Sound control devices
- 23.6 Work station layout

## 24 Information processing

- 24.1 Data processing, product development and optimisation software CAD/CAE
- 24.2 Simulation of casting processes
- 24.3 Computer programs for the construction of models and moulds
- 24.4 Software for business and process data capture
- 24.5 Quality assurance software
- 24.6 e-business, e-commerce, IT solutions
- 24.7 Engineering services

## 25 Additive Manufacturing

- 25.1 Software
  - 25.1.1 3D-Visualization
  - 25.1.2 3D-Modelling
  - 25.1.3 Data Preparation
- 25.2 Manufacturer of Metal Powders
  - 25.2.1 Aluminium based powders
  - 25.2.2 Stainless Steel based powders
  - 25.2.3 Cobalt-Chromium based powders
  - 25.2.4 Copper based powders
  - 25.2.5 Nickel based powders
  - 25.2.6 Titanium based powders
  - 25.2.7 Carbon Steel based powders
  - 25.2.8 Other metal powders
- 25.3 Machinery, equipment and process for additive manufacturing
  - 25.3.1 Powder bed printing
    - 25.3.1.1 SLS (Selective Laser Sintering)
    - 25.3.1.2 SLM (Selective Laser Melting)
    - 25.3.1.3 LBM (Laser Beam Melting)
    - 25.3.1.4 LMF Laser Metal Fusion
    - 25.3.1.5 DMLS (Direct Metal Laser Sintering)
    - 25.3.1.6 LMD (Laser Metal Disposition )
      - 25.3.1.6.1 LPF (Laser Powder Forming)
  - 25.3.2 Binder Jetting
  - 25.3.3 Surface coating
    - 25.3.3.1 Laser Material Processing / DED Directed Energy Deposition
    - 25.3.3.2 CLAD Process / Cladding
    - 25.3.3.3 Turning, grinding, milling
  - 25.3.4 Other installations and procedures for additive manufacturing
- 25.4 Post Processing
  - 25.4.1 Machining
  - 25.4.2 EDM (electrical discharge machining)
  - 25.4.3 Peening
  - 25.4.4 Grinding
  - 25.4.5 Polishing
  - 25.4.6 Surface treatment
  - 25.4.7 Heat treatment
  - 25.4.8 HIP (hot isostatic pressing)
  - 25.4.9 controlling

- 25.5 Research, development, associations, institutions

## 26 Consulting, design, service and engineering

## 27 Technical publications, technical periodicals, associations

## 28 Training, further education