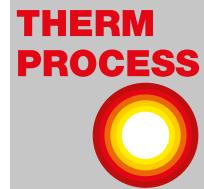




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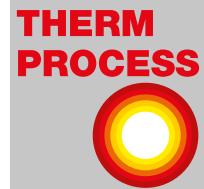
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12th International
Trade Fair and
Symposium for Thermo
Process Technology

Düsseldorf
25/06–29/06/19

1	Industrial Furnaces, Industrial Heat Treatment Plants and thermal processes for	1.7.7 Reducing 1.7.8 Purification 1.7.9 Melting 1.7.9.1 Alloying 1.7.9.2 Remelting 1.7.9.3 Cleaning 1.7.9.4 Other 1.7.10 Sintering 1.7.11 Spray Forming 1.7.12 Drying 1.7.13 Heat treating 1.7.13.1 Precipitation hardening 1.7.13.2 Stress-relieving annealing 1.7.13.3 Homogenization annealing 1.7.13.4 Solution annealing 1.7.13.5 Artificial ageing 1.7.13.6 Soft annealing 1.7.13.7 Other annealing processes 1.7.14 Heating 1.7.14.1 Heating, Preheating 1.7.14.2 Holding at temperature (solid phase) 1.7.14.3 Holding at temperature (liquid phase) 1.7.14.4 Postheating 1.7.15 Other thermal processes
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1.2	Ores 1.2.1 Calcinating 1.2.2 Reducing 1.2.3 Roasting 1.2.4 Sintering 1.2.5 Drying 1.2.6 Other thermal processes	
1.3	Ferrites 1.3.1 Homogenizing annealing 1.3.2 Orientation annealing 1.3.3 Sintering 1.3.4 Presintering 1.3.5 Other thermal processes	
1.4	Glass, Enamel 1.4.1 Cooling 1.4.2 Burning 1.4.3 Melting 1.4.4 Drying 1.4.5 Heat treating 1.4.6 Heating 1.4.7 Other thermal processes	1.8 Steel and Iron 1.8.1 Prime metallurgy 1.8.1.1 Primary melting 1.8.1.2 Melting 1.8.1.3 Alloying 1.8.1.4 Remelting 1.8.1.5 Holding at temperature (solid phase) 1.8.1.6 Holding at temperature (liquid phase) 1.8.1.7 Cleaning 1.8.1.8 Burning off 1.8.1.9 Postheating 1.8.1.10 Other thermal processes 1.8.2 Primary shaping 1.8.2.1 Casting 1.8.2.2 Precision casting 1.8.2.3 MIM (Metall Injection Moulding) 1.8.2.4 Sintering 1.8.2.5 Other thermal processes 1.8.3 Heat treating 1.8.3.1 Heating 1.8.3.2 Heating, Preheating 1.8.3.3 Hardening and tempering 1.8.3.4 Tempering 1.8.3.5 Annealing 1.8.3.6 Patenting 1.8.3.7 Hardening 1.8.3.8 Quenching 1.8.3.9 Press quenching 1.8.3.10 Tempering 1.8.3.11 Case hardening 1.8.3.12 Oxidizing 1.8.3.13 Drying 1.8.3.14 Other thermal processes 1.8.4 Diffusion processes 1.8.4.1 Carburizing 1.8.4.2 Salt bath carburizing 1.8.4.3 Gas carburizing 1.8.4.4 Low pressure carburizing (LPC) 1.8.4.5 Plasma carburizing
1.5	Hard Metals 1.5.1 CIM (Chemical Injection Moulding) 1.5.2 Debinding 1.5.3 Dewaxing 1.5.4 High pressure sintering 1.5.5 Vacuum sintering 1.5.6 Sintering 1.5.7 MIM (Metall Injection Moulding) 1.5.8 Compressing 1.5.9 Brazing 1.5.10 Other thermal processes	
1.6	Ceramics 1.6.1 Burning 1.6.2 Sintering 1.6.3 Drying 1.6.4 Brazing 1.6.5 Other thermal processes	
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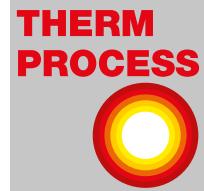
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1.8.4.6	Carbo nitriding	2.5	Heat-transfer plants
1.8.4.7	Other carburizing processes	2.6	Chimney technology
1.8.4.8	Nitriding	3	Componentes, equipment and other supplies
1.8.4.9	Nitrocarburizing	3.1	Fittings for
1.8.4.10	Saltbath nitriding	3.1.1	Gas
1.8.4.11	Gas nitriding	3.1.2	Liquids
1.8.4.12	Plasma nitriding	3.1.3	Solid
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1.8.4.14	Implantation	3.2.1	Electric heating devices
1.8.4.15	Other thermal processes	3.2.1.1	Inductive heating devices
1.8.5	Surface hardening	3.2.1.2	Conductive heating devices
1.8.5.1	Flame hardening	3.2.1.3	Resistance heating devices
1.8.5.2	Induction hardening	3.2.1.4	Microwave heating devices
1.8.5.3	Laser hardening	3.2.1.5	Plasma heating devices
1.8.5.4	Other thermal processes	3.2.1.6	Arc heating devices
1.8.6	Surface treatment	3.2.1.7	Transformators
1.8.6.1	Coating	3.2.1.8	Other electric heating devices
1.8.6.2	Inorganic coating	3.2.2	Firing equipment for solid
1.8.6.3	Enamelling	3.2.3	Gas firing equipment
1.8.6.4	Electroplating	3.2.3.1	Burner
1.8.6.5	Plastic-coating (evtl. wäre Polymer coating besser)	3.2.3.2	Recuperator burner
1.8.6.6	Varnish and lacquer drying	3.2.3.3	Safety devices
1.8.6.7	Plasma spraying	3.2.4	Oil firing equipment
1.8.6.8	Galvanizing	3.2.4.1	Burner
1.8.6.9	Tin-coating	3.2.4.2	Recuperator burner
1.8.6.10	CVD	3.2.4.3	Safety devices
1.8.6.11	PVD	3.2.5	Multicomponent firing equipment
1.8.6.12	Other coating processes	3.2.6	Ladle firing
1.8.7	Joining technologies	3.2.7	Regenerators
1.8.7.1	Welding	3.2.8	Recuperators
1.8.7.2	Brazing	3.2.9	Radiant tubes
1.8.7.3	Other joining technologies	3.2.10	Burner controls
1.9	Harmful substances	3.2.11	Flame detectors
1.9.1	Adsorption	3.2.12	Heating conductor, rods, wire
1.9.2	Catalytic combustion	3.2.13	Graphite and carbon shapes
1.9.3	Wet separation	3.3	Handling and transmission technology
1.9.4	Thermal combustion	3.3.1	Conveyors
1.9.5	Thermal Recycling, Pyrolysis	3.3.2	Belt conveyors
1.9.6	Other processes	3.3.3	Conveyor chains
2	Equipment for special use	3.3.4	Other Handling and transmission equipment
2.1	Cooling	3.4	Gas generation (inert and reaction gas, regeneration included)
2.1.1	Cooling equipment	3.4.1	Absorber
2.1.2	Recooling equipment	3.4.2	Pressure alternating equipment
2.2	Laboratory equipment	3.4.3	Gas-air mixing equipment
2.2.1	Laboratory-type annealing furnaces	3.4.4	Gas generators for
2.2.2	Laboratory-type melting furnaces	3.4.4.1	Inert endothermic gas
2.2.3	Laboratory-type drying cabinet	3.4.4.2	Inert exothermic gas
2.2.4	Other laboratory-type furnaces	3.4.4.3	Inert gas
2.3	Purification	3.4.4.4	Nitrogen
2.3.1	Degreasing equipment	3.4.4.5	Hydrogenated inert gas
2.3.2	Pickling equipment	3.4.5	Closed circuit plants for gas
2.3.3	Mechanical cleaning plants	3.4.6	Hot-gas generator
2.3.4	Spray scrubber	3.4.7	Mixing chamber
2.3.5	Dipping scrubber		
2.3.6	Other cleaning and purification plants		
2.4	Quenching equipment		



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3.5	Furnace engineering materials	3.12.1.4	Insulating bricks, tiles, profiles
3.5.1	Metallic furnace engineering materials	3.12.1.5	Insulating materials
3.5.2	Ceramic furnace engineering materials	3.12.1.6	High temperature insulation wool
3.5.3	Other furnace engineering materials	3.12.2	Machinery and plants
3.6	Measuring instruments and components	3.12.2.1	Gunning equipments
3.6.1	Cooling rate	3.12.2.2	Compressors
3.6.2	Atmospheric measurement	3.12.2.3	Other machinery and plants
3.6.3	Atmospheric control device		
3.6.4	Pressure measurement		
3.6.5	Pressure controlling plant		
3.6.6	Moisture content measuring		
3.6.7	Gas analyser		
3.6.8	Temperature measurement		
3.6.9	Temperature control device		
3.6.10	Water warning device		
3.6.11	Other measuring equipment		
3.7	Controlling and automatisation		
3.7.1	Electrical equipment		
3.7.2	Engineering and technical consulting		
3.7.3	Process control technology		
3.7.4	Automatisation		
3.7.5	Process control equipment		
3.7.6	Process simulation and software		
3.7.7	Process optimization		
3.7.8	Maintenance and diagnosis systems		
3.7.9	Other control equipment		
3.8	Process-Material		
3.8.1	Hardening salt		
3.8.2	Hardening oil		
3.8.3	Gas		
3.8.4	Oil		
3.8.5	Heat-transfer agents		
3.8.6	Detergent reactants		
3.9	Test technology		
3.9.1	Analysis technology and lab equipment		
3.9.2	Measuring instruments		
3.9.3	Quality test		
3.9.4	Material test		
3.10	Pumps, Blowers and Fans		
3.10.1	Hot-gas recirculators		
3.10.2	Cooling pumps and systems		
3.10.3	Vaccum pumps and systems		
3.10.4	Lubricating pumps and systems		
3.10.5	Other Pumps		
3.10.6	Blowers		
3.10.7	Fans		
3.10.8	Compressors		
3.11	Molten metal processing equipment		
3.11.1	Electromagnetic conveying channels		
3.11.2	Inoculation equipment		
3.11.3	Inductive stirring equipment		
3.11.4	Crucibles		
3.12	Heat-insulating and refractory		
3.12.1	Material		
3.12.1.1	Refractory bricks, tiles, profiles		
3.12.1.2	Refractory materials		
3.12.1.3	Acid-resistant bricks		