

Düsseldorf

			21/06 – 25/06/27
1	Foundry plants and installations, planning, construction, engineering	2.6.4	Melt treating agents and covering agents for non ferros cast alloys
	construction, engineering	2.6.5	Recarburizers
		2.6.6	Gas, industrial
2	Melting shop	2.6.7	Gas, hydrogen
2.1	Cupolas		
2.1.1	Cupolas, coke-fired	3	Refractories technology
2.1.2	Cupolas, cokeless, gas-fired or oil-fired		
		3.1	Refractory materials and products, insulating materials
2.2	Electric melting and holding furnaces	3.1.1	Refractory ramming mixtures
	(pouring equipment see 10.1)	3.1.2	Refractory bricks
2.2.1	Electric arc furnaces for foundries	3.1.3	Refractory gating system parts
2.2.2	Crucible induction furnaces	3.1.4	Insulating materials and products
2.2.3	Channel type induction furnaces		
2.2.4	Melting and holding furnaces, electric resistance type	3.2	Equipment for the lining of melting and pouring
2.2.5	Hearth-type electric melting and holding furnaces		equipment
2.2.6	Crucible lifting furnaces	3.2.1	Compaction apparatus for refractory ramming materials
2.2.7	Bale-out furnaces, electric	3.2.2	Spraying machines for refractory material
2.2.8	Vacuum melting furnaces	3.2.3	Break-out equipment for furnace and ladle lining
2.2.9	Other electric melting and holding furnaces		
2.2.10	Dosing furnaces, gas and electric heated	4	Metallic charge materials
2.3	Fuel-heated melting and holding furnaces		Channe make dala fan inan akarl and mallackle inan
2.3.1	Crucible melting and holding furnaces, fuel-heated	4.1	Charge materials for iron, steel and malleable iron
2.3.2	Hearth-type melting and holding furnaces, fuel-heated	, , , ,	casting
2.3.3	Rotary furnaces	4.1.1	Pig iron
2.3.4	Bale-out furnaces, fuel-heated	4.1.2	Scrap, scrap iron
2.3.5	Melting and holding furnaces, fuel-heated	4.1.3 4.1.4	Ferro-alloys
0.7	A	4.1.4	Alloying metals, master alloys (iron, steel and malleable iron casting)
2.4	Auxiliary melting and melt processing facilities	4.1.5	Inoculants
2.4.1	Charging plants	4.1.6	Nodularizing additions for spheroidal graphite cast iron
2.4.2	Charge preheating facilities	4.1.0	Nodutarizing additions for spheroidal graphite cast from
2.4.3	Electromagnetic conveying channels for molten metal Blowing-in equipment for cupolas	4.2	Charge materials for non-ferrous metal castings
2.4.5	Oxygen addition equipment for cupolas	4.2.1	Aluminium, aluminium alloys
2.4.6	Inoculation devices, injection equipment	4.2.2	Magnesium, magnesium alloys
2.4.7	Induction stirring installations	4.2.3	Copper, copper alloys
2.4.8	Recuperators	4.2.4	High-grade zinc alloys
2.4.9	Slag treatment equipment	4.2.5	Tin, zinc, alloys
2.4.10	Melt treatment stations	4.2.6	Alloying metals, master alloys
2.4.11	Inert gas installations		(non-ferrous metal castings)
2.4.12	Gas flushing installations	4.2.7	Alloys for rheocasting, thixocasting and squeeze-casting
2.4.13	Vacuum degassing equipment	4.2.8	Non-ferrous metal scraps
2.5	Melting and holding furnaces, accessories		Moulding and care making
2.5.1	Crucibles	5	Moulding and core making
2.5.2	Graphite electrodes	F 1	Manifolium mankimas and misuka fan hankanika handad
2.5.3	Heating wires and heating bars for electric resistance type furnaces	5.1	Moulding machines and plants for bentonite-bonded sands
2.5.4	Emergency collecting pit	5.1.1	Moulding machines
2.5.5	Melting and holding furnaces, other accessories	5.1.2	Moulding plants, flaskless
2.5.6	Power electronics / converter	5.1.3	Moulding plants with flasks
2.5.7	Automation (melting and holding furnaces, accessories)	F 2	Maulding markings and plants for you
2.5.8	Safety engineering	5.2	Moulding machines and plants for non bentonite-bonded moulds
0.5.0	(melting and holding furnaces, accessories)	1	
2.5.9	Melting and holding furnaces, services	5.2.1 5.2.2	Cold-setting resin moulding processes, equipment
2.6	Oncombing materials and something for the life of	5.2.2	Shell moulding process, equipment Waterglass process, equipment
2.6	Operating materials and supplies for the melting shop	5.2.4	Lost-foam processes, equipment
2.6.1	Foundry coke	5.2.5	Vacuum moulding process, equipment
2.6.2	Slag-forming additives	J.E.J	racaum moutaing process, equipment

5.2.6

5.2.7

Melt treating agents and covering agents for ferrous

2.6.3

cast alloys

Investment casting processes, equipment

Moulding machines and plants, other processes



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			21/06 – 25/06
5.3	Core making machines and plants	7.1.5	Measuring and control equipment for moulding sand
5.3.1	Core blowing and shooting machines and plants		preparation
5.3.2	Core making machines, other	7.1.6	Sand coolers
		7.1.7	Sand aerators
5.4	Moulding and core making machines, accessories	7.1.8	Sand precoating plants (for shell moulding)
5.4.1 5.4.2	Gassing equipment for moulds and cores	7.1.9	Screening machines and installations
5.4.3	Dosing devices for binders and additives Mould handling equipment	7.1.10	(silos and hoppers see 15.7) Separators for chromite and silica sand, zircon and
5.4.4	Core handling equipment	7.1.10	silica sand
5.4.5	Core treatment equipment	7.1.11	Moulding sand preparation, further equipment
51.115	(deflashing, coating, drilling), core glueing equipment	******	
5.4.6	Automated core / mould manipulation systems	7.2	Sand reclamation, plants and machines
5.4.7	Coating preparation	7.2.1	Sand reclamation of clay bonded moulding sands
5.4.8	Moulding and coremaking machines, other accessories	7.2.2	Sand reclamation of sodium silicate and cement bonder sands
5.5	Moulding boxes and accessories	7.2.3	Sand reclamation of synthetic resin bonded sands
		7.2.4	Crushing and grinding plants for used sand
5.6	Salt core production		
5.6.1	Salt cores, pressed and sintered	0	Maril 19 and a control of the contro
5.6.2	Core shot salt cores	8	Moulding auxiliaries
5.6.3 5.6.4	Salt cores, die casted	8.1	Pneumatic rammers
5.0.4	Salt cores in hot chamber die casting process	8.2	Moulding auxiliaries, general
		8.3	Foundry tools
6	Moulding sands	8.4	Mould and core adhesives
		8.5	Cores, prefabricated
6.1	Sands	8.6	Chaplets
6.1.1	Silica sand		•
6.1.2	Chromite sand and flour		
6.1.3	Zircon sand and flour	9	Gating and feeding
6.1.4	Moulding sands with natural clay binder		
6.1.5	Sands, other	9.1	Covering compounds for feeders
6.2	Moulding and bindays	9.2	Breaker cores
6.2 6.2.1	Moulding sand binders Bentonites and clays	9.3 9.4	Filterelements for liquid metals Exothermic materials
6.2.2	Synthetic resin binders for cold setting processes	9.5	Cooling elements
6.2.3	Synthetic resin binders for gassing processes	9.6	Strainer cores
6.2.4	Synthetic resin binders for thermosetting processes	9.7	Feeder sleeves
6.2.5	Sodium silicate binders	9.8	Funnels and filter Systems
6.2.6	Cement binders	9.9	Gating and feeding, other auxiliaries
6.2.7	Binders for investment casting		
6.2.8	Moulding sand binders, others	10	Casting machines and pouring equipment
6.3	Moulding sand additives, coatings for moulds and cores		
6.3.1	Lustrous carbon formers	10.1	Pouring equipment
6.3.2	Moulding sand additives, others	10.1.1	Pouring equipment, mechanical
6.3.3	Mould and core coatings	10.1.2	Pouring equipment, dosing
<i>C 1</i>	Moulding and works to use	10.1.3	Pouring equipment, heated (pouring furnaces)
6.4 6.4.1	Moulding sands ready-to-use Precoated sands for shell moulding	10.1.4 10.1.5	Pouring ladles Launders
6.4.2	Betonite-bonded sands ready-to-use, waterless	10.1.5	Pig casting machines
6.4.3	Moulding sands ready-to-use, wateriess	10.1.7	Pouring equipment and plants, other
0.4.5	Moduling Sanus ready-to-use, others	10.1.8	Precision fine casting units
7	Moulding sand preparation and sand	10.2	Die casting machinery and plant
	reclamation	10.2.1	Cold chamber die casting machinery
7.4	Marilding and group ti	10.2.2	Vacuum assisted cold chamber special process
7.1 7.1.1	Moulding sand preparation Moulding sand preparation machines and plants	10.2.3 10.2.4	Thixocasting die casting machinery Squeeze casting die casting machinery
7.1.1 7.1.2	Moulding sand preparation machines and plants Moulding sand mixer	10.2.4	Warm chamber die casting machinery
7.1.2	Crushing and grinding plants	10.2.5	Complete die casting systems / die casting cells
7.1.4	Magnetic separators		



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			21/00 - 25/00/
10.3	Peripheral equipment and auxiliary materials for die	11.4.2	Sawing machines
10 2 1	casting (die casting dies see 17.3.1)	11.4.3	Gating and feeding system separator machines and installations
10.3.1 10.3.2	Ladling and dosing equipment for die casting Die heater /-cooler units and accessories	11.4.4	Abrasive cut-off machines and wheels
10.3.3	Die spraying units	11.4.5	Fettling facilities, other
10.3.4	Release agents for die casting	======	rotting ruthing, out of
10.3.5	Operating and auxiliary materials for die casting	11.5	Grinding machines and accessories
10.3.6	Extracting equipment for die castings	11.5.1	Grinding machines, automatic controlled
10.3.7	Trimming machines for die casting	11.5.2	A-type grinding machines, hand operated or mechanized
10.3.8	Trimming tools for die casting	11.5.3	Hand-grinding machines
10.3.9	Ascension pipes for dosing installations and low pressure casting	11.5.4 11.5.5	Grinding wheels Abrasives, others
10.3.10	Other accessories for die casting	11.5.6	Grinding technology, others
10.3.11	Vacuum technology for die casting machines	11.5.0	drinding technology, others
		11.6	Fettling tools and fettling accessories, general
10.4	Die casting machines and accessories	11.6.1	Fettling chambers, fettling benches, fettling cabins
10.4.1	Gravity die casting machines / plants	11.6.2	Fettling tools and sundries
10.4.2	Low pressure die casting machines / plants		
10.4.3	Accessories, operating and auxiliary material for die casting machines	11.7	Interlacing and automation of fettling shops
	-	11.8	As-cast casting inspection equipment
10.5	Centrifugal casting machines and accessories		
10.5.1	Centrifugal casting machines	12	Curface treatment
10.5.2	Centrifugal casting moulds	12	Surface treatment
10.6	Continuous casting machines and accessories	12.1	Enamelling plants
10.6.1	Continuous casting machines / plants	12.2	Paint spraying units and tools
10.6.2	Continuous casting moulds	12.3	Impregnation plants
		12.4	Galvanizing plants
10.7	Accessories	12.5	Surface treatment materials
10.7.1	Inductors	12.6	Surface treatment plants
10.7.2	Pouring Control System		
10.7.3 10.7.4	Power Electronics Automation (accessories for casting machines and	13	Welding and cutting
10.7.4	pouring equipment)	13	wetaning and catering
10.7.5	Safety Engineering (accessories for casting machines	13.1	Flame cutting installations and accessories
	and pouring equipment)	13.2	Welding installations and accessories
10.7.6	Accessories, service	13.3	Filler metals
11	Knock-out, fettling and finishing	14	Heat treating and drying furnaces
11.1	Knock-out	14.1	Mould and ladle dryers
11.1.1	Knock-out and cooling drums and conduits	14.2	Core drying stoves
11.1.2 11.1.3	Knock-out machines Cooling conveyors	14.3	Sand drying plants and stoves Heat treating furnaces and installations
11.1.3	Decoring equipment	14.4	Burners and heaters
11.1.4	becoming equipment	14.6	Microwave dryer
11.2	Blasting plant and accessories		
11.2.1	Pneumatic blast cleaning machines		
11.2.2	Airless shot-blasting machines	15	Transportation and storage
11.2.3	Pressure water blasting plants		
11.2.4	Dry ice blasting machines	15.1	Trucks, industrial
		15.2	Cranes, hoists, rack trucks and accessories
11.3	Shot-blasting abrasives	15.3	Pneumatic conveyors
11.3.1	Shot-blasting abrasives, metallic	15.4	Roller conveyors
11.3.2 11.3.3	Shot-blasting abrasives, inorganic, nonmetallic Shot-blasting abrasives, organic	15.5 15.6	Oscillating conveyors Continuous conveyors (belt conveyors, bucket conveyors
11.3.4	Shot-blasting abrasives, organic Shot-blasting abrasives, others	15.0	and others)
		15.7	Bunkers, silos and accessories
11.4 11.4.1	Fettling installations Deflashing machines	15.8	Transport containers, pallets, racks
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16	Manipulation	19.2	Scales and weighing machines
16.1	Manipulators	19.3	Testing of materials and workpieces
16.2	Industrial robots	19.3.1	Tightness testers
16.3	Manipulators, mechanical	19.3.2	Endoscopes
16.4	Positioning devices	19.3.3	Hardness testers
		19.3.4	Crack detection equipment, test media
		19.3.5	X-ray testing equipment
17	Pattern and die making	19.3.6	Ultrasonic testing equipment
1/	rattern and are making	19.3.7	Materials testing, further equipment
17.1	Pattern and die making, machines and tools	19.3.8	Surface inspection
17.1.1	Wood working machines	13.3.0	Surface inspection
17.1.1	Metal machining, machine-tools	19.4	Chemical analyses and metallography
17.1.2	-	19.4.1	Gas analysis apparatus
	Foam pattern production, machines	19.4.2	Laboratory equipment
17.1.4	Spotting presses	19.4.2	Spectographic analysis equipment
17.1.5	Wax pattern injection machines		
17.1.6	Patternmaking and die making tools	19.4.4	Metallographice testing equipment
17.1.7	Cleaning equipment for permanent moulds	19.4.5	Microscopes
		19.4.6	Grinding and polishing installations for metallography
17.2	Pattern and die making materials and standard elements	19.4.7	Analytical apparatus, others
17.2.1	Metals and alloys		
17.2.2	Standard elements for permanent moulds and dies	19.5	Mould and moulding sand testing
17.2.3	Hot working steels for die casting dies	19.5.1	Mould testing equipment
17.2.4	Die making, accessories	19.5.2	Moulding sand testing equipment
17.2.5	Heating and cooling devices for moulding and castings		
	tools	19.6	Quality control
17.2.6	Plastics		
17.2.7	Ceramics		
17.2.8	Pattern wood	20	Compressed-air technology
17.2.9	Pattern varnishes		
17.2.10	Pattern making sundries	20.1	Compressed-air plants and accessories
17.2.11	Plaster	20.2	Pneumatic tools
17.2.12	Investment casting waxes, waxes for wax injection	20.3	Compressors and accessories
17.2.12	machines, special waxes		,
	machines, special waxes		
17.3	Pattern equipment, permanent moulds and accessories	21	Exhaust and ventilation technology
17.3.1	Die casting dies		
17.3.2	Permanent moulds, gravity dies	21.1	Exhaust systems
17.3.2	Gauges and fixtures	21.2	Blowers and fans
17.3.4	Patterns and core boxes made of wood and plastic	21.3	Ventilating and air-conditioning equipment
17.3.5	Metal patterns and core boxes		remaining and an commissioning equipment
	•		
17.3.6	Pattern plates	22	Environmental protection and waste removal
17.3.7	Lost foam patterns	~ ~	Environmental protection and waste removal
47 /	C-114 for a farma manufacturing	22.1	Flue gas cleaning plants
17.4	Solid freeform manufacturing	22.2	Waste water cleaning plants
17.4.1	Object generation, equipment and processes		<u>.</u>
17.4.2	Rapid prototyping, equipment and processes	22.3	Dust extraction systems
17.4.3	Rapid tooling, materials, technologies and processes	22.4	Filters and filter materials
		22.5	Operating supplies for waste management plants
4.0		22.6	Foundry waste preparation plants
18	Control systems	22.7	Pelletization plants
		22.8	Residue recycling
18.1	Process control, models, simulation	22.9	Slag dressing plants
18.2	Control equipment, automation technology	22.10	Water treatment plants
		22.11	Environmental protection and waste removal, further
			installations
19	Measurement and test technology		
19.1	Measuring instruments	23	Safety and security
19.1.1	Temperature measuring instruments		
19.1.2	Thermal analysis equipment	23.1	Personal protective equipment
19.1.3	Aluminium melt testing equipment	23.2	First aid, rescue
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Product categories GIFA Page 5 of 5



16th International Foundry Trade Fair with Technical Forum

23.3	Workstation architecture, ergonomy
23.4	Security at work
23.5	Services, consulting
24	Data processing and digitalization of
24	production processes
24.1	Data processing, product development and optimisation software CAD / CAE
24.2	Artificial intelligence, machine learning and data science solutions
24.3	Simulation of casting processes
24.4	Computer programs for the construction of models and moulds $% \left(\mathbf{r}\right) =\left(\mathbf{r}\right) $
24.5	Software for business and process data capture
24.6	Quality assurance software
24.7	E-business, e-commerce, IT solutions
24.8	Engineering services
25	Additive manufacturing
25.1	Software and digitalization solutions
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	Manufacturer of metal wires
25.4	Manufacturer of metal blocks, plates, bars
25.5	Manufacturer of metal pastes
25.6	Manufacturer of metal parts
25.7	Manufacturer of cores and moulding materials
25.8	Machinery, equipment and process for additive manufacturing
25.8.1	Powder bed printing
25.8.1.1	SLS (Selective Laser Sintering)
25.8.1.2	SLM (Selective Laser Melting)
25.8.1.3	LBM (Laser Beam Melting)
25.8.1.4	LMF (Laser Metal Fusion)
25.8.1.5	DMLS (Direct Metal Laser Sintering)
25.8.1.6	LMD (Laser Metal Disposition)
25.8.1.6.1	
25.8.2 25.8.3	Binder jetting Surface coating
25.8.3.1	Laser material processing / DED Directed Energy
25.8.3.2	Deposition CLAD process / cladding
25.8.3.3	

25.8.4	Other installations and procedures for additive manufacturing
25.9	Systems for mould and core materials
25.10	3D sand printing
25.10.1	Organic binder systems
25.10.2	Inorganic binder systems
25.11	Post processing
25.11.1	Machining
25.11.2	EDM (Electrical Discharge Machining)
25.11.3	Peening
25.11.4	Grinding
25.11.5	Polishing
25.11.6	Surface treatment
	(post processing, additive manufacturing)
25.11.7	Heat treatment
25.11.8	HIP (Hot Isostatic Pressing)
25.11.9	Controlling (post processing, additive manufacturing)
25.11.10	Vibratory grinding
25.11.11	Cleaning
	December development consistions
26	Research, development, associations, institutions
27	Consulting, design, service and engineering
28	Technical publications, technical periodicals
29	Training, further education