



Product Index

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Messe München GmbH, Messegelände, 81823 München, Germany

A Cluster Semiconductor

1 Semiconductor production

- 1.1 Wafer front-end processing
- 1.2 Wafer back-end processing
- 1.3 Production of power electronics (IGBT, Power MOSFET, Thyristors, etc.)
- 1.4 Measurement, detection and control systems for semiconductor production
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8 Electronic Manufacturing Services (EMS)

- 8.1 EMS for component/chip carrier manufacturing
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- 8.3 Development-related services



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C Cluster SMT

9 Component mount technology, pick & place

- 9.1 Component preparation
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- 14.4 Logistics management
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- 17.9 Process and quality control/Automation

E Cluster Future Production—Smart Factory

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- 18.3 Machine software
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19 Production technologies for batteries and electrical energy storage

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- 19.2 Equipment for batteries and electrical energy storage
- 19.3 Inspection and test systems for batteries and electrical energy storage
- 19.4 Accumulators

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- 20.3 Inspection and test systems
- 20.4 Applications and devices

21 3D Printing, Additive Manufacturing

- 21.1 Production equipment and process technology
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- 21.3 Materials

F Overall Production Support

22 Production materials/equipment and environmental technology

- 22.1 Preliminary products and semi-finished goods, metallic
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- 22.3 Process materials
- 22.4 Plant equipment
- 22.5 Decontamination, cleaning, disposal (environmental management)
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- 23.1 Information provision
- 23.2 Production services except EMS
- 23.3 Used machines, systems, plants
- 23.4 Brainware and Sales
- 23.5 Other services

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A Cluster Semiconductor

1 Semiconductor production

1.1 Wafer front-end processing

1.1.1 Wafers and substrates

1.1.1.1 Materials

1.1.1.1.1 Wafers made of semiconductor material

1.1.1.1.2 Ceramic substrates

1.1.1.1.3 Thin-film substrates (glass/ceramic)

1.1.1.1.4 Glass wafers

1.1.1.1.5 Semiconductor semi-finished parts, miscellaneous

1.1.1.1.6 Ceramic foils

1.1.1.1.7 Process gases

1.1.1.2 Production equipment

1.1.1.2.1 Crystal growing systems and substrate treatment

1.1.1.2.1.1 Melt growth

1.1.1.2.1.2 Gas-phase growth

1.1.1.2.1.3 Tempering ovens

1.1.1.2.2 Polishing tools

1.1.1.2.3 Other tools for wafer processing

1.1.2 Mask and artwork generation

1.1.2.1 Mask production equipment

1.1.2.2 Resist-coating systems

1.1.2.3 Beam sources for exposure equipment

1.1.2.3.1 Lasers for exposure equipment

1.1.2.3.2 UV exposure light sources

1.1.3 Lithography

1.1.3.1 Lithography equipment

1.1.3.1.1 Microlithography equipment

1.1.3.1.2 Contact exposure equipment

1.1.3.1.3 Optical steppers

1.1.3.1.4 Laser writing equipment

1.1.3.2 Lithography materials

 1.1.3.2.1 Resists, Developers & Ancillaries
(incl. Adhesion promoter HMDS); Primer

1.1.3.2.2 AR coatings

1.1.3.2.3 Developers

1.1.4 Thin-film generation

1.1.4.1 Materials

1.1.4.1.1 Epitaxial materials

1.1.4.1.2 Process materials, thin-film technology, miscellaneous

 1.1.4.1.3 Quartzware (silicon carbide, fused quartz glass, sapphire),
ceramics

1.1.4.1.4 Vapor deposition materials

1.1.4.1.5 Strippers

1.1.4.1.6 Sputter targets

1.1.4.1.7 Lapping, polishing and grinding agents

1.1.4.1.8 Process chemicals, Cleaning Chemicals, Solvents, miscellaneous

1.1.4.2 Production equipment

1.1.4.2.1 Diffusion ovens

1.1.4.2.2 Dosing devices

 1.1.4.2.3 Heat treatment equipment for microstructuring,
miscellaneous

1.1.4.2.4 Cathode sputter equipment, PVD

1.1.4.2.5 CVD equipment, MOCVD; PECVD; LPCVD; ALD; REALD; MVD

1.1.4.2.6 Electron-beam deposition equipment

1.1.4.2.7 High-vacuum evaporation equipment

1.1.4.2.8 Ion-beam coating equipment

1.1.4.2.9 Oxidation equipment

1.1.4.2.10 Plasma coating systems

1.1.4.2.11 Plasma polymerization units

1.1.4.2.12 Vacuum coating equipment

1.1.4.2.13 Vacuum components

1.1.4.2.14 Evaporator inserts

1.1.4.2.15 Reactors for epitaxy

1.1.5 Etching equipment

1.1.5.1 Ion-etching equipment

1.1.5.2 Wet-etching equipment

1.1.5.3 Etching plasma generators

1.1.5.4 Spray etchers

1.1.5.5 Plasma-, sputter-etching equipment

1.1.6 Drying equipment

1.1.6.1 Continuous dryers

1.1.6.2 UV dryers

1.1.6.3 IR dryers

1.1.6.4 Vacuum dryers

1.1.7 Equipment for mechanical machining

1.1.7.1 Polishing devices/machines for semiconductor technology

1.1.7.2 Scribes and automatic scribes

1.1.7.3 Lapping equipment

1.1.7.4 Separating/trimming/scribing lasers

1.1.7.5 Wafer-cleaning systems

1.1.7.6 Wafer saws

1.1.7.7 Wafer dicing equipment

1.1.8 Manufacturing and machining equipment, miscellaneous

1.1.8.1 Plasma equipment, miscellaneous

1.1.8.2 Spray process machines, miscellaneous

1.1.8.3 Photoresist stripping systems

1.1.8.4 Substrate-cleaning systems

1.1.8.5 Wafer washers

1.1.8.6 Semiconductor technology process equipment, miscellaneous

1.1.8.6.1 Gas; liquid delivery panels as subsystems

1.1.8.6.2 Handling; transfer; loading systems; lifting devices

 1.1.8.6.3 Temperature sensing; control; recirculators; chillers;
heat exchangers

1.1.9 Wafer/substrate handling

1.1.9.1 CTC wafer-handling equipment

1.1.9.2 Wafer-cassette equipment

1.1.9.3 Wafer storage/shipping containers

1.1.9.4 Wafer mounters

1.1.9.5 Wafer/tape laminators/de-laminators

1.1.9.6 Wafer transfer systems

1.1.9.7 Wafer/chip manipulators

1.1.9.8 Marking equipment

1.1.9.9 Wafer/substrate handling systems, miscellaneous

1.2 Wafer back-end processing

1.2.1 Chip handling

1.2.1.1 Component handlers

1.2.1.2 Component-handling machines, specialized

1.2.1.3 Die sorters

1.2.1.4 Sorting equipment for components

1.2.1.5 Lifter modules

1.2.1.6 Coordinate tables

1.2.1.7 Piezo actuators

1.2.1.8 Process carriers

1.2.1.9 Transport carriers

1.2.1.10 Micromanipulators

1.2.1.11 Micropositioning

1.2.1.12 Positioning systems, miscellaneous

1.2.1.13 Chip-handling equipment, miscellaneous

1.2.2 Bonding

1.2.2.1 Pre-contacting processes

1.2.2.2 Plasma cleaning and activation equipment

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- 1.2.2.3 Chip carriers**
 - 1.2.2.3.1 Semi-finished CC goods (metal/plastic)
 - 1.2.2.3.2 Plastic-chip carriers (PCC)
 - 1.2.2.3.3 Ceramic-chip carriers (including LTCC configurations)
- 1.2.2.4 Internal connections**
 - 1.2.2.4.1 Bonding wires/tapes
 - 1.2.2.4.2 Die bonders
 - 1.2.2.4.3 Flip-chip bonders
 - 1.2.2.4.4 Bonders, miscellaneous
 - 1.2.2.4.5 Bumping systems
 - 1.2.2.4.6 Dispensing systems
- 1.2.2.5 Tools**
 - 1.2.2.5.1 Ultrasonic bonders
 - 1.2.2.5.2 Ultrasonic generators
 - 1.2.2.5.3 Ultrasonic transducers
 - 1.2.2.5.4 Ultrasound metrology
 - 1.2.2.5.5 Contacting equipment, miscellaneous
 - 1.2.2.5.6 Welding equipment for microconnections
 - 1.2.2.5.7 Resistance soldering/welding equipment
 - 1.2.2.5.8 Bonding tools, miscellaneous
- 1.2.3 Chip packaging**
 - 1.2.3.1 Housings
 - 1.2.3.2 Caps and encapsulations, encapsulation equipment**
 - 1.2.3.2.1 Protective component caps
 - 1.2.3.2.2 Glass, passivation/encapsulation
 - 1.2.3.2.3 Ball-grid array packages
 - 1.2.3.2.4 Potting compounds, encapsulations
 - 1.2.3.2.5 Encapsulation materials, miscellaneous
 - 1.2.3.2.6 Encapsulations and encapsulation equipment, miscellaneous
 - 1.2.3.2.7 Epoxy-processing equipment
 - 1.2.3.2.8 Sealants
 - 1.2.3.2.9 Molding presses
 - 1.2.3.2.10 Molding tools
 - 1.2.3.3 Protective coatings for devices**
 - 1.2.3.3.1 Impregnating equipment for devices**
 - 1.2.3.3.1.1 Impregnating machines for metal
 - 1.2.3.3.1.2 Vacuum pressure impregnating machines
 - 1.2.3.3.1.3 Atmospheric pressure impregnating machines
 - 1.2.3.3.1.4 Impregnating machines for laboratory and special applications
 - 1.2.3.4 Potting equipment**
 - 1.2.3.4.1 Potting mixing/dosing equipment
 - 1.2.3.4.2 Vacuum potting systems
 - 1.2.3.4.3 Atmospheric potting systems
 - 1.2.3.4.4 R&D and specialized potting systems
 - 1.2.3.4.5 Automatic pressure gelation (APG)
 - 1.2.3.4.6 Bearings and conveyor equipment for cast resins
 - 1.2.3.4.7 Additional potting equipment, miscellaneous
 - 1.2.3.5 Drying and hardening systems
- 1.3 Production of power electronics (IGBT, Power MOSFET, Thyristors, etc.)**
 - 1.3.1 Materials
 - 1.3.2 Machines and production equipment
 - 1.3.3 Housing and components
- 1.4 Measurement, detection and control systems for semiconductor production**
 - 1.4.1 Monitoring and control units for clean-room technology
 - 1.4.2 Monitoring systems, process-specific
 - 1.4.3 Positioning controllers
 - 1.4.4 Control equipment, miscellaneous, application-specific
 - 1.4.5 Computer; control; communication; data acquisition systems
- 1.5 Packaging and assembly materials**
- 1.6 Electronic components**
- 1.7 Electronic applications**
 - 2 Production of displays, LEDs and discretes**
 - 2.1 Display manufacturing**
 - 2.1.1 Substrate processing for displays**
 - 2.1.1.1 Aligners, exposer systems for displays
 - 2.1.1.2 CVD equipment for displays
 - 2.1.1.3 Laser-annealing systems
 - 2.1.1.4 Substrate processing for displays, miscellaneous
 - 2.1.2 Materials, parts**
 - 2.1.2.1 Substrate materials
 - 2.1.2.2 Spacers for displays
 - 2.1.2.3 Functional organic materials (OLED)
 - 2.1.2.4 Photomasks
 - 2.1.2.5 Functional films, laminates for displays
 - 2.1.2.6 Resins, adhesives for displays
 - 2.1.2.7 Materials, parts, miscellaneous
 - 2.1.3 Panel processing**
 - 2.1.3.1 Printers**
 - 2.1.3.1.1 Screen printers
 - 2.1.3.1.2 Inkjet printers
 - 2.1.3.1.3 Flexo printers
 - 2.1.3.1.4 Display separation equipment
 - 2.2 Manufacturing of Light Emitting Diodes (LED)**
 - 2.2.1 Materials, components**
 - 2.2.1.1 Substrates (Sapphire, SiC, bulk Si, bulk GaN, composites, InP, SiGe, etc.)
 - 2.2.1.2 Material for buffer layers
 - 2.2.1.3 Material for emitter layers, compound semiconductors
 - 2.2.1.4 Optical components
 - 2.2.1.5 Reflectors
 - 2.2.1.6 Components for LED Package
 - 2.2.1.7 Resins, material for sealing
 - 2.2.2 Manufacturing equipment**
 - 2.2.2.1 Sapphire wafer equipment (crystal growth, sawing, grinding)
 - 2.2.2.2 Silicon carbide wafer equipment (crystal growth, sawing, grinding)
 - 2.2.2.3 Wafer equipment for other LED-related semiconductors
 - 2.2.2.4 Lithography
 - 2.2.2.5 Etching
 - 2.2.2.6 Metallization
 - 2.2.2.7 Dicing
 - 2.2.2.8 Pick-and-place
 - 2.2.2.9 Die attach
 - 2.2.2.10 Bonding
 - 2.2.2.11 Phosphor coating
 - 2.2.2.12 Packaging, sealing, housing
 - 2.2.2.13 Equipment for epitaxy**
 - 2.2.2.13.1 Organic/Organo-metallic vapour phase deposition (OMVPE, MOCVD)
 - 2.2.3 Test systems**
 - 2.2.3.1 Life time test systems
 - 2.2.3.2 Photometric test systems
 - 2.2.3.3 LED test systems, miscellaneous
 - 2.3 Manufacturing of discrete components (resistors, capacitors, transistors, diodes)**
 - 2.3.1 Materials for discrete components
 - 2.3.2 Equipment for manufacturing of discrete components**
 - 2.3.2.1 Small parts precision manufacturing equipment
 - 2.3.2.2 Vacuum technology equipment
 - 2.3.2.3 Laser-processing equipment for discrete components

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2.3.2.4	Surface-finishing equipment	3.2.2.11	Equipment for thin-film production, miscellaneous
2.3.2.5	Continuous furnaces	3.2.3	Equipment for new generation solar cells
2.3.2.6	Drying/curing equipment, miscellaneous	3.2.3.1	Equipment for concentrator photovoltaics (CPV)
2.3.2.7	Finishing equipment for discrete components	3.2.3.2	Equipment for other novel solar concepts
2.3.2.8	Manufacturing equipment for capacitors	3.3	Factory planning and -equipment for photovoltaics
2.3.2.9	Manufacturing equipment for resistors	3.3.1	Waste-gas abatement/Waste-water treatment
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3.1	Materials for Photovoltaics	4.1.2	Nanomaterials
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3.2.1.2	Cell production	4.2.3	Production technology for microsystems
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3.2.1.3.1	Tabbers/Stringers/Soldering ovens/Bonder	4.2.4.1	Micro tools
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3.2.2	Equipment for thin-film module production	4.2.5.8	Ultrasonic machines
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3.2.2.3	Surface processing equipment/Priming/Conditioning/Resin coating	4.2.5.11	Production machines for micro system technology, miscellaneous
3.2.2.4	Laser processing equipment (sawing, drilling, edge isolation, marking)	4.2.5.12	Micro reaction systems
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- 4.2.7 Micro-assembly**
- 4.2.7.1 Component mount techniques
- 4.2.7.2 Component mounting in microsystems
- 4.2.7.3 Micro technology mounting & assembly systems
- 4.2.7.4 Joining and interconnection techniques
- 4.2.7.5 Micro filters
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- 4.2.7.7 Nanorobotics
- 4.2.8 Microdrive technology**
- 4.2.8.1 Piezo-electric actuators
- 4.2.8.2 Micro motors
- 4.2.8.3 Micro gears
- 4.2.8.4 Micro positionings
- 4.3 Test, measurement and adaptation equipment for microtechnology**
- 4.4 Assembly and packaging technology for microintegration**
- 4.4.1 On-Chip Integration, System-on-chip (SoC), Wafer-level packaging
- 4.4.2 On-Board Integration, Chip-on-Board (CoB)
- 4.4.3 Flip-chip assembly
- 4.4.4 System-in-Package (SiP), Multi-chip modules, 3D integration
- 4.5 Microtechnology applications**
- 4.5.1 Micro manufacturing, precision technology
- 4.5.2 Lab-on-Chip, micro-process technology
- 4.6 Nanotechnology**
- 4.6.1 Nanochemistry, -materials, -substances
- 4.6.2 Nano tools, Nano analysis
- 4.6.3 Nanomanufacturing
- 4.6.4 Nanoelements/Nanosystems
- 5 Clean room technology**
- 5.1 Clean rooms**
- 5.1.1 Clean rooms, built-in
- 5.1.2 Clean-room boxes, incl. walk-in
- 5.1.3 Clean hoods
- 5.1.4 Flow boxes
- 5.1.5 Laminar flow equipment
- 5.1.6 Dust-free workstations
- 5.2 Clean-room maintenance and control**
- 5.2.1 Clean-room filter elements
- 5.2.2 Particle-monitoring equipment
- 5.2.3 Ionization systems
- 5.2.4 Flow visualization (clean rooms)
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11.1 Visual inspection, image processing

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- 14.8.1.4 Belt spools for component belting

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- 14.8.1.6 Cardboard boxes

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- 14.8.2.1.1 Belting equipment

- 14.8.2.1.2 Packaging machines for component packaging

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- 14.8.2.2.2 Robots for packaging technology

- 14.8.2.2.3 Packaging machines, miscellaneous

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D Cluster Cables, Coils & Hybrids

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- 15.1.3 Wire-trimming equipment
- 15.1.4 Wire croppers for low-profile undersides
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- 15.1.7 Cable-winding equipment
- 15.1.8 Cable-assembly systems
- 15.1.9 Cable and wire processing aids, miscellaneous
- 15.1.10 Cable-assembly equipment
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15.1.12 Thermal treatment

- 15.1.12.1 Stress relieve annealing
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15.2 Tools for wiring

- 15.2.1 Wire-crimping units
- 15.2.2 Cable-harness production equipment
- 15.2.3 Ultrasonic welders for cable harnesses
- 15.2.4 Resistance welders for wire harnesses
- 15.2.5 Cable strippers
- 15.2.6 Cable splicing equipment
- 15.2.7 Wiring machines
- 15.2.8 Wiring aids
- 15.2.9 Coax strippers
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- 15.4.1 Cable ring binder equipment

- 15.4.2 Contacting units, miscellaneous

- 15.4.3 Control systems for cable-assembly systems

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- 15.5.2 Heat shrinkable sleeves

- 15.5.3 Protective devices for cable harnesses, miscellaneous

15.6 Processing equipment for cable-protection devices

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- 15.6.2 Corrugated sheaths, slotted

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- 15.7.1 Connector strips

- 15.7.2 Single-conductor connectors

- 15.7.3 Ribbon cable connectors

- 15.7.4 Cables with connectors

- 15.7.5 Cable terminals

- 15.7.6 Wire end ferrules

- 15.7.7 Crimp connectors and accessories

- 15.7.8 Terminals

- 15.7.9 Enameled-wire connectors

- 15.7.10 Plugs and sockets

- 15.7.11 Plug sockets, all types

- 15.7.12 Plug connectors for household appliances

- 15.7.13 Plug connectors for industrial electronics

- 15.7.14 Plug connectors for automotive electronics

- 15.7.15 Plug connectors for laboratory/test equipment

- 15.7.16 Plug connectors for aerospace

- 15.7.17 Plug connector parts, miscellaneous

- 15.7.18 Plug connectors, miscellaneous complete

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16.1 Materials for coilware

- 16.1.1 Coil cores

- 16.1.2 Cut and toroidal coil cores

- 16.1.3 Enameled wire, copper-, silver-

- 16.1.4 Superconducting wires

- 16.1.5 Transformer production aids, miscellaneous

- 16.1.6 Coil-winding technology materials, miscellaneous

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16.2 Production equipment for coilware

- 16.2.1 Stator coil winders
- 16.2.2 Fine-wire coil winders, automatic
- 16.2.3 Coiled-product assembly lines
- 16.2.4 Manual coil winders
- 16.2.5 Layer winders
- 16.2.6 Linear winders, automatic
- 16.2.7 Modular winding systems
- 16.2.8 Toroidal coil winders
- 16.2.9 Welding/soldering equipment for coiled-product connections
- 16.2.10 Transfer winding robots
- 16.2.11 Bench-type coil winders
- 16.2.12 Bobbin winders
- 16.2.13 Coil winders, miscellaneous
- 16.2.14 Coil-manufacturing aids, miscellaneous
- 16.2.15 Coil-winding technology tools, miscellaneous

16.3 Applications for coilware

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- 16.3.2 Generators
- 16.3.3 Transformers
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- 16.3.5 Electric magnets
- 16.3.6 Coilware for actuators, miscellaneous
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- 17.1.2 Rapid prototyping
- 17.1.3 Tooling and mouldmaking, miscellaneous

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- 17.2.3 Cutting tools
- 17.2.4 Injection moulding tools
- 17.2.5 Stamping tools
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- 17.2.7 Separating tools
- 17.2.8 Bending tools
- 17.2.9 Tools, miscellaneous

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- 17.3.3 Feeders, feed technology
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- 17.3.7 Assembly equipment and systems
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- 17.6.4 Marking systems and equipment
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- 18.1.1 Autonomous inter-connected micro systems, sensor and actuator networks, wireless sensor networks
- 18.1.2 5G-Technology
- 18.1.3 Machine Learning/Big Data Analytics
- 18.1.4 Cyber Physical Systems (CPS)

- 18.1.5 Energy harvesting
- 18.1.6 Human machine interfaces active/passive (touch panel displays, barcode reader, RFID systems, augmented reality devices, aso.)
- 18.1.7 Information security/IP protection (embedded)
- 18.1.8 Product Security
- 18.1.9 Digital twin
- 18.1.10 **Equipment with integrated sensor and actuator networks, CPS**
 - 18.1.10.1 Condition Monitoring
 - 18.1.10.2 Predictive Maintenance

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- 18.2.2 Development tools
- 18.2.3 Simulation systems
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- 18.3.4 Bus systems
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- 18.4.1 Production control center, production data acquisition (PDA), operating and machine data logging
- 18.4.2 Manufacturing Execution Systems (MES)
- 18.4.3 Advanced Planning & Scheduling (APS)
- 18.4.4 Process optimisation and simulation
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23.3	Used machines, systems, plants	23.5.3	Parylene coatings
23.3.1	Plants	23.5.4	Maintenance services
23.3.2	Machines	23.5.5	Repair services
23.3.3	Used machines, systems and plants, miscellaneous	23.5.6	Disposal services
23.4	Brainware and Sales	23.5.7	Packaging of material and liquids
23.4.1	Consulting	23.5.8	Component database generation
23.4.1.1	Research institutes	23.5.9	other services, miscellaneous
23.4.1.2	Professional and trade associations		
23.4.1.3	Information services and training		