

19th international trade fair for innovative electronics production, New Munich Trade Fair Centre, November 15–18, 2011, Phone (+49 89) 9 49-2 03 20/2 03 30, info@productronica.com, www.productronica.com

1. Semiconductor and display manufacturing	01.1 Wafer front-end processing 01.2 Wafer back-end processing 01.3 Specialties for the production of power electronics (IGBT, power MOSFETs, thyristors, etc.) 01.4 Display manufacturing 01.5 Measurement, detection and control systems
2. Photovoltaics manufacturing, batteries and power storage	02.1 Materials for photovoltaics 02.2 Photovoltaic manufacturing equipment 02.3 Equipment for manufacturing photovoltaic modules 02.4 Materials and components for batteries and energy storage 02.5 Manufacturing equipment for battery and energy storage 02.6 Inspection and test systems for batteries and energy storage 02.7 Battery/storage technologies, application sectors
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9. Materials processing, LED production and discrete devices	09.1 Mechanical processing other than PCB 09.2 Thermal treatment 09.3 Welding 09.4 Chemical and electroplate processing 09.5 Fastening, connecting 09.6 Machining equipment, miscellaneous 09.7 Laser material-processing systems 09.8 System periphery for laser-based manufacturing 09.9 Manufacturing of light-emitting diodes (LED) 09.10 Manufacturing of other discrete components
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	13.3	Measurement technology for non-electrical parameters
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14. Product finishing	14.1	Repair and rework
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15. Production logistics and material-flow technology	15.1	Information acquisition
	15.2	Purchasing
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16. Electronic Manufacturing Services (EMS)	16.1	EMS for component/chip carrier manufacturing
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1. Semiconductor and display manufacturing

01.1	Wafer front-end processing	01.1.4.2.16	Plasma polymerization units	01.2.2	Bonding
01.1.1	Wafers and substrates	01.1.4.2.17	Vacuum coating equipment	01.2.2.1	Pre-contacting processes
01.1.1.1	Materials	01.1.4.2.18	Vacuum components	01.2.2.2	Chip carriers
01.1.1.1.1	Thin-film substrates (glass/ceramic)	01.1.4.2.19	Evaporator inserts	01.2.2.2.1	Leadless chip carriers (LLCC)
01.1.1.1.2	Semiconductor semi-finished parts, miscellaneous	01.1.4.2.20	Thin-film production equipment, miscellaneous	01.2.2.2.2	Chip carriers, with leads (LCC)
01.1.1.1.3	Wafers made of semiconductor material	01.1.4.2.21	Epitaxial reactors	01.2.2.2.3	Semi-finished CC goods (metal/plastic)
01.1.1.1.4	Glass wafers	01.1.4.2.22	Sputter deposition equipment	01.2.2.2.4	CC manipulation equipment
01.1.1.1.5	Ceramic substrates	01.1.5	Etching equipment	01.2.2.2.5	Plastic-chip carriers (PCC)
01.1.1.1.6	Accessories made of special materials	01.1.5.1	Ion-etching equipment	01.2.2.2.6	Ceramic-chip carriers (including LTCC configurations)
01.1.1.1.7	Ceramic foils	01.1.5.2	Wet-etching equipment	01.2.2.3	Connection tools
01.1.1.1.8	Process gases	01.1.5.3	Etching plasma generators	01.2.2.3.1	Connection terminals (lead frames)
01.1.1.2	Production equipment	01.1.5.4	Spray etchers	01.2.2.3.2	Connection-soldering modules
01.1.1.2.1	Crystal growing systems	01.1.5.5	Plasma-, sputter-etching equipment	01.2.2.4	Internal connections
01.1.1.2.1.1	Melt growth	01.1.5.6	Etching equipment, miscellaneous	01.2.2.4.1	Bonding wires/tapes
01.1.1.2.1.2	Gas-phase growth	01.1.6	Drying equipment	01.2.2.4.2	Die bonders
01.1.1.2.1.3	Flux growth	01.1.6.1	Continuous dryers	01.2.2.4.3	Flip-chip bonders
01.1.1.2.1.4	Tempering ovens	01.1.6.2	UV dryers, thin-film	01.2.2.4.4	Bonders, miscellaneous
01.1.1.2.2	Wafer saws	01.1.6.3	IR dryers	01.2.2.5	Tools
01.1.1.2.3	Polishing tools	01.1.6.4	Vacuum dryers, thin-film	01.2.2.5.1	Ultrasonic bonders
01.1.1.2.4	Other tools for wafer processing	01.1.6.5	Thin-film dryers, miscellaneous	01.2.2.5.2	Ultrasonic generators
01.1.2	Mask and artwork generation	01.1.7	Equipment for mechanical machining	01.2.2.5.3	Ultrasonic transducers
01.1.2.1	Mask blanks	01.1.7.1	Polishing devices/machines for semiconductor technology	01.2.2.5.4	Ultrasound metrology
01.1.2.2	Resist-coating systems	01.1.7.2	Scribers and automatic scribes	01.2.2.5.5	Contacting equipment, miscellaneous
01.1.2.2.1	Spin-coating equipment (resist)	01.1.7.3	Lapping equipment	01.2.2.5.6	Welding equipment for microconnections
01.1.2.2.2	Mask production equipment, miscellaneous	01.1.7.4	Separating/trimming/scrubbing lasers	01.2.2.5.7	Resistance soldering/welding equipment
01.1.2.3	Beam sources for exposure equipment	01.1.7.5	Wafer pretreatment equipment	01.2.2.5.8	Bonding tools, miscellaneous
01.1.2.3.1	Lasers for exposure equipment	01.1.7.6	Tumblers, wafer	01.2.3	Chip packaging
01.1.2.3.2	UV exposure light sources	01.1.7.7	Protective coating strippers, wafer	01.2.3.1	Housings
01.1.2.3.3	Ion-beam sources	01.1.7.8	Wafer-cleaning systems	01.2.3.1.1	Housing covers
01.1.2.3.4	Radiation sources for exposures, miscellaneous	01.1.7.9	Wafer saws	01.2.3.1.2	Housings/housing parts for components/assemblies, miscellaneous
01.1.2.4	Mask handling	01.1.7.10	Wafer separation equipment	01.2.3.1.3	Ceramic component housings
01.1.2.4.1	Mask manipulation systems	01.1.8	Manufacturing and machining equipment, miscellaneous	01.2.3.1.4	TO housings/sockets
01.1.2.4.2	Mask inspection equipment	01.1.8.1	Plasma equipment, miscellaneous	01.2.3.2	Caps and encapsulations
01.1.2.4.3	Mask repair stations	01.1.8.2	Spray process machines, miscellaneous	01.2.3.2.1	Protective component caps
01.1.3	Lithography, substrate/wafer processing	01.1.8.3	Stripping systems	01.2.3.2.2	Glass, passivation/encapsulation
01.1.3.1	Lithography equipment	01.1.8.4	Substrate-cleaning systems	01.2.3.2.3	Encapsulation equipment, miscellaneous
01.1.3.1.1	Microlithography equipment	01.1.8.5	Wafer washers	01.2.3.2.4	Chip carrier encapsulations
01.1.3.1.2	Contact exposure equipment	01.1.8.6	Semiconductor technology process equipment, miscellaneous	01.2.3.2.5	DIL encapsulations
01.1.3.1.3	Full-field projection systems	01.1.9	Wafer/substrate handling	01.2.3.2.6	Flat-pack encapsulations
01.1.3.1.4	Optical steppers	01.1.9.1	CTC wafer-handling equipment	01.2.3.2.7	Ball-grid array packages
01.1.3.1.5	Laser writing equipment	01.1.9.2	Wafer-cassette equipment	01.2.3.2.8	Potting compounds, encapsulations
01.1.3.2	Lithography materials	01.1.9.3	Wafer storage/shipping containers	01.2.3.2.9	QFP encapsulations
01.1.3.2.1	Resists	01.1.9.4	Wafer mounters	01.2.3.2.10	PGA encapsulations
01.1.3.2.2	AR coatings	01.1.9.5	Wafer/tape laminators/de-laminators	01.2.3.2.11	Special component encapsulations, miscellaneous
01.1.3.2.3	Adhesives for resists, HMDS	01.1.9.6	Wafer transfer systems	01.2.3.2.12	Encapsulation materials, miscellaneous
01.1.3.2.4	Developers	01.1.9.7	Manipulators, wafer/chip	01.2.3.3	Coating
01.1.4	Thin-film generation	01.1.9.8	Module combinations, substrate handling	01.2.3.3.1	Dip-coating equipment for protective component coatings
01.1.4.1	Materials	01.1.9.9	Substrate carriers	01.2.3.3.3	Impregnating machines for components
01.1.4.1.1	Epitaxial materials	01.1.9.10	Wafer/substrate handling systems, miscellaneous	01.2.3.3.3.1	Impregnating machines for metal
01.1.4.1.2	Process materials, thin-film technology, miscellaneous	01.2	Wafer back-end processing	01.2.3.3.3.2	Vacuum pressure impregnating machines
01.1.4.1.3	Vapor deposition materials	01.2.1	Chip handling	01.2.3.3.3.3	Atmospheric pressure impregnating machines
01.1.4.1.4	Strippers	01.2.1.1	Component handlers	01.2.3.3.3.4	Impregnating machines for laboratory and special applications
01.1.4.1.5	Sputter targets	01.2.1.2	Production-line feeder systems	01.2.3.4	Potting equipment
01.1.4.1.6	Lapping, polishing and grinding agents	01.2.1.3	Component-handling machines, specialized	01.2.3.4.1	Continuous automatic extruders
01.1.4.1.7	Process chemicals, semiconductor technology, miscellaneous	01.2.1.4	Die sorters	01.2.3.4.2	Potting mixing/dosing equipment
01.1.4.2	Production equipment	01.2.1.5	Sorting equipment for components	01.2.3.4.3	Potting systems
01.1.4.2.1	Diffusion ovens	01.2.1.6	Lifter modules	01.2.3.4.3.1	Vacuum potting systems
01.1.4.2.2	Diffusion tubes	01.2.1.7	Frog-leg modules	01.2.3.4.3.2	Atmospheric potting systems
01.1.4.2.3	Dosing devices	01.2.1.8	Coordinate tables	01.2.3.4.3.3	R&D and specialized potting systems
01.1.4.2.4	Heat treatment equipment for microstructuring, miscellaneous	01.2.1.9	Piezo actuators	01.2.3.4.3.4	Automatic pressure gelation (APG)
01.1.4.2.5	Heater beds	01.2.1.10	Process carriers	01.2.3.5	Additional potting equipment
01.1.4.2.6	Low-temperature equipment	01.2.1.11	Transport carriers	01.2.3.5.1	Bearings and conveyor equipment for cast resins
01.1.4.2.7	Ion implantation equipment	01.2.1.12	Micromanipulators		
01.1.4.2.8	Cathode sputter equipment	01.2.1.13	Micropositioning		
01.1.4.2.9	CVD equipment	01.2.1.14	Positioning systems, miscellaneous		
01.1.4.2.10	Electron-beam deposition equipment	01.2.1.15	Chip-handling equipment, miscellaneous		
01.1.4.2.11	High-vacuum evaporation equipment				
01.1.4.2.12	Ion-beam coating equipment				
01.1.4.2.13	Oxidation equipment				
01.1.4.2.14	Planar magnetrons for sputtering				
01.1.4.2.15	Plasma coating systems				

01.2.3.5.2	Additional potting equipment, miscellaneous	01.4.1.3.2	CVD equipment for Plasma Display Panels (PDP)	01.4.3	Panel processing
01.2.3.6	Drying and hardening systems	01.4.1.3.3	CVD equipment for Organic Light Emitting Diodes (OLED)	01.4.3.1	Alignment layer deposition
01.2.3.7	Encapsulations and encapsulation equipment, miscellaneous	01.4.1.3.4	CVD equipment for other applications	01.4.3.2	Printers
01.2.3.7.1	Epoxy-processing equipment	01.4.1.4	Sputtering equipment for displays	01.4.3.2.1	Screen printers
01.2.3.7.2	Sealants	01.4.1.4.1	Sputtering equipment for Liquid Crystal Displays (LCD), Thin Film Transistors (TFT)	01.4.3.2.2	Inkjet printers
01.2.3.7.3	Molding presses	01.4.1.4.2	Sputtering equipment for Plasma Display Panels (PDP)	01.4.3.2.3	Flexo printers
01.2.3.7.4	Molding tools	01.4.1.4.3	Sputtering equipment for Organic Light Emitting Diodes (OLED)	01.4.3.2.4	Printers OLED
01.2.3.7.5	Multi-chip module-compatible enclosures	01.4.1.4.4	Sputtering equipment for other display related applications	01.4.3.3	Spacer spray systems
01.2.3.7.6	Encapsulations, miscellaneous	01.4.1.5	Laser-annealing systems	01.4.3.4	Bonding systems for displays
01.2.3.7.7	Encapsulation equipment, miscellaneous	01.4.1.6	Substrate processing for displays, miscellaneous	01.4.3.5	Display separation equipment
01.3	Specialties for the production of power electronics (IGBT, power MOSFETs, thyristors, etc.)	01.4.2	Materials, parts	01.4.3.6	Liquid crystal injection systems
01.3.1	Materials	01.4.2.1	Substrate materials	01.4.3.7	Devices for applying polarizers
01.3.2	Machines and production equipment	01.4.2.2	Spacers for displays	01.4.3.8	Devices for applying/aligning color filters
01.3.3	Housing and components	01.4.2.3	Liquid crystals	01.4.3.9	Panel processing, miscellaneous
01.4	Display manufacturing	01.4.2.4	Phosphors	01.5	Measurement, detection and control systems
01.4.1	Substrate processing for displays	01.4.2.5	Functional organic materials	01.5.1	Monitoring and control units for clean-room technology
01.4.1.1	Glass polishing machines	01.4.2.6	Photomasks	01.5.2	Monitoring systems, process-specific
01.4.1.2	Aligners, exposer systems for displays	01.4.2.7	Target materials	01.5.3	Guidance technology equipment, miscellaneous
01.4.1.3	CVD equipment	01.4.2.8	Color filters	01.5.4	Positioning controllers
01.4.1.3.1	CVD equipment for Liquid Crystal Displays (LCD), Thin Film Transistors (TFT)	01.4.2.9	Image masks	01.5.5	Control equipment, miscellaneous, application-specific

2. Photovoltaic manufacturing, batteries and energy storage

02.1	Materials for photovoltaics	02.2.1.2.2	Diffusion furnaces	02.2.2.6.1	Deposition equipment for silicon-based thin-film modules
02.1.1	Inorganic semiconductors	02.2.1.2.3	Etching equipment (wet etch, laser)	02.2.2.6.2	Deposition equipment for Cl(G)S-based modules
02.1.2	Organic semiconductors	02.2.1.2.4	Deposition equipment (PECVD, Sputtering)	02.2.2.6.3	Deposition equipment for CdTe-based modules
02.1.3	Crucibles and materials for ingot production	02.2.1.2.5	Printers for front and backside contacts	02.2.2.7	Surface processing equipment/ Priming/Conditioning/ Resin coating
02.1.4	Materials for wafer saws, polishing and grinding materials	02.2.1.2.6	Print screens for metallization	02.2.2.8	Laser processing equipment (sawing, drilling, edge isolation, marking, ...)
02.1.5	Process gases	02.2.1.2.7	Drying furnaces/ Fast-firing furnaces	02.2.2.9	Mechanical structuring equipment
02.1.6	Process chemicals	02.2.1.2.8	Cell characteristics evaluation tools/sorters	02.2.2.10	Encapsulation systems/ Laminators
02.1.7	Sputter targets	02.2.1.2.9	Equipment for cell production, miscellaneous	02.2.2.11	Soldering equipment
02.1.8	Materials for evaporation and CVD	02.2.1.3	Module production	02.2.2.12	Module test/Quality inspection
02.1.9	Materials for deposition, miscellaneous	02.2.1.3.1	Glass cleaning	02.2.2.13	Packaging stations
02.1.10	Solder pastes	02.2.1.3.2	Tabbers/Stringers/ Soldering ovens	02.2.2.14	Automation and handling equipment
02.1.11	Carriers	02.2.1.3.3	Laminators	02.2.2.15	Vacuum technology
02.1.12	Ribbons	02.2.1.3.4	Framing units	02.2.2.16	Measurement tools/ process control/ environmental monitoring
02.1.13	Frames	02.2.1.3.5	Module test/Quality inspection	02.2.2.17	Equipment for thin-film production, miscellaneous
02.1.14	Adhesives	02.2.1.3.6	Packaging stations	02.2.3	Equipment for new generation solar cells
02.1.15	Foils, laminates for encapsulation/ modular technology	02.2.1.3.7	Equipment for module production, miscellaneous	02.2.3.1	Equipment for organic solar cells
02.1.16	Substrates (glass, polymer films, ...) for thin-film technology	02.2.1.4	Equipment for crystalline photovoltaics, miscellaneous	02.2.3.2	Equipment for dye-sensitized solar cells
02.1.17	Materials for crystalline photovoltaic production, miscellaneous	02.2.1.4.1	Storage equipment	02.2.3.3	Equipment for other novel solar concepts
02.1.18	Materials for thin film production, miscellaneous	02.2.1.4.2	Loaders/Unloaders	02.3	Equipment for manufacturing photovoltaic modules
02.1.19	Materials for production of innovative solar cells, miscellaneous	02.2.1.4.3	Automation, assembly and handling equipment	02.3.1	Waste-gas abatement/ Waste-water treatment
02.2	Photovoltaic manufacturing equipment	02.2.1.4.4	Laser processing equipment (sawing, drilling, edge isolation, marking, ...)	02.3.2	Turnkey solutions
02.2.1	Equipment for wafer-based photovoltaics	02.2.1.4.5	Surface processing equipment/ priming/conditioning/ resin coating	02.3.3	Facility management
02.2.1.1	Ingot and wafer production	02.2.1.4.6	Vacuum technology	02.3.4	Factory design and commissioning
02.2.1.1.1	Crystal growing equipment	02.2.1.4.7	Measurement tools/ process control/ environmental monitoring	02.3.5	Clean room and factory logistics
02.2.1.1.2	Ingot casting equipment	02.2.2	Equipment for thin-film module production	02.4	Materials and components for batteries and energy storage
02.2.1.1.3	Ingot production processes, miscellaneous	02.2.2.1	Substrate loading/ unloading equipment	02.4.1	Cathode material, cathodes
02.2.1.1.4	Wafer saws	02.2.2.2	Substrate cutting equipment		
02.2.1.1.5	Wafer cleaning	02.2.2.3	Substrate testing		
02.2.1.1.6	Wafer grinding and polishing equipment	02.2.2.4	Storage equipment		
02.2.1.1.7	Wafer inspection	02.2.2.5	Cleaning equipment		
02.2.1.1.8	Wafer production equipment, miscellaneous	02.2.2.6	Deposition equipment (CVD, PVD)		
02.2.1.2	Cell production				
02.2.1.2.1	Wafer texturing				

02.4.2	Anode material, anodes	02.5.2.4	Electrode plate winding equipment	02.6.7	Battery simulators for system test (grid buffers for renewable energy, e-mobility, etc.)
02.4.3	Electrolytes	02.5.2.5	Stacking machines	02.6.8	Inspection/Testing/Evaluation Equipment, other
02.4.4	Separators	02.5.2.6	Electrolyte filling equipment	02.7	Battery/storage technologies, application sectors
02.4.5	Binders	02.5.2.7	Current collector welding machines	02.7.1	Primary batteries (non-rechargeable)
02.4.6	Current collectors	02.5.2.8	Cell packaging machines	02.7.2	Secondary batteries (accumulators)
02.4.7	Electrode foils	02.5.2.9	Initial charge equipment	02.7.2.1	Lithium-ion batteries
02.4.8	Activated carbon	02.5.3	Automation equipment	02.7.2.2	Lithium-polymer batteries
02.4.9	Hydrogen-absorbing alloys	02.5.4	Assembly and handling equipment	02.7.2.3	Nickel-metal hydride batteries
02.4.10	Housing	02.5.5	Battery module manufacturing equipment	02.7.2.4	Nickel-cadmium batteries
02.4.11	Materials and components for battery modules	02.5.6	Manufacturing equipment for batteries and energy storage, other	02.7.2.5	Lead-acid batteries
02.4.12	Materials/Components, other	02.6	Inspection and test systems for batteries and energy storage	02.7.2.6	Sodium-sulfur/Lithium-sulfur batteries
02.5	Manufacturing equipment for battery and energy storage	02.6.1	Filling measuring equipment	02.7.3	Fuel cells
02.5.1	Electrode and separator manufacturing equipment	02.6.2	Charge/discharge test equipment	02.7.4	Supercaps/Ultracaps
02.5.1.1	Grinding mills	02.6.3	Insulation testers	02.7.5	Usage
02.5.1.2	Blender/agitation equipment	02.6.4	Life cycle testers	02.7.5.1	Mobile use, high power (Automotive, e-mobility)
02.5.1.3	Coating equipment	02.6.5	Impedance measuring equipment	02.7.5.2	Mobile use, low power/consumer (smart phone, laptop, etc)
02.5.1.4	Drying equipment	02.6.6	Internal resistance test equipment	02.7.5.3	Stationary use (Photovoltaics, renewable energy, buffer systems)
02.5.1.5	Rolling press machines				
02.5.1.6	Calenders				
02.5.1.7	Slitters				
02.5.2	Cell manufacturing equipment				
02.5.2.1	Cutters				
02.5.2.2	Stamping equipment				
02.5.2.3	Electrode assembly equipment				

3. micronano-production

03.1	Materials/substances	03.2.3.12	Polymeric embossing	03.2.8	Microdrive technology
03.1.1	Substrate materials for microtechnology	03.2.3.13	Embossing of ceramic materials	03.2.8.1	Piezo-electric actuators
03.1.2	Nanomaterials	03.2.3.14	Embossing, miscellaneous	03.2.8.2	Micro motors
03.1.3	Supraconductors	03.2.3.15	Spark erosion, micromechanical	03.2.8.3	Micro gears
03.1.4	Materials for micro/nano technology, miscellaneous	03.2.4	Tool and mold making	03.2.8.4	Micro positioning
03.2	Production equipment	03.2.4.1	Micro tools	03.3	Biometrical subsystems for microtechnology
03.2.1	Mask and artwork generation	03.2.4.2	Prototype/sample manufacturing	03.4	Test, measurement and adaptation equipment for microtechnology
03.2.1.1	CA mask generation	03.2.4.3	Rapid prototyping	03.5	Sample-handling systems for microtechnology
03.2.1.1.1	Graphics workstations (including computer-aided equipment)	03.2.4.4	Rapid tooling	03.6	Assembly and packaging technology for microsystems
03.2.1.1.2	Image modification equipment	03.2.5	Micromachining and ultra-precision manufacturing	03.7	Microtechnology applications
03.2.1.1.3	Design equipment, microlithography	03.2.5.1	Micro tools	03.7.1	Micro manufacturing, precision technology
03.2.1.1.4	Mask aligners	03.2.5.2	Micro milling machines	03.7.2	RFID label manufacturing
03.2.1.2	Resist-coating systems	03.2.5.3	Drills for micromechanics	03.7.3	Lab-on-Chip
03.2.1.2.1	Spin-coating equipment (resist)	03.2.5.4	Saws, micromechanical	03.7.4	Domotics
03.2.1.2.2	Mask production equipment, miscellaneous	03.2.5.5	Grinders, micromechanical	03.7.5	Applications, other
03.2.1.3	Exposure tools	03.2.5.6	Welding equipment for microconnections	03.8	Nanotechnology/Nanomanufacturing
03.2.1.3.1	Pattern generators	03.2.5.7	Saw blades for microtechnology	03.8.1	Nanochemistry, -materials, -substances
03.2.1.3.2	Laser writing equipment	03.2.5.8	Lasers for microtechnology materials	03.8.2	Nano tools, Nano analysis
03.2.1.3.3	Electron-beam writers	03.2.5.9	Ultrasonic machines	03.8.3	Nanomanufacturing
03.2.1.3.4	Re-exposure equipment	03.2.5.10	Micro-optic production machines	03.8.4	Nanoelements/Nanosystems
03.2.1.3.5	Ion-beam recorders	03.2.5.11	Production machines for micro hot stamping	03.8.5	Nanotechnology applications
03.2.1.3.6	Exposure equipment, miscellaneous	03.2.5.12	Production machines for micro injection molding	03.8.5.1	Nanoelectronics
03.2.1.3.7	CA systems for exposure equipment	03.2.5.13	Production machines for micro system technology, miscellaneous	03.8.5.2	Nanooptics
03.2.1.4	Mask handling	03.2.5.14	Micro reaction systems	03.8.5.3	Nanoautomotive
03.2.1.4.1	Mask manipulation systems	03.2.5.15	Microdosing systems	03.8.5.4	Nanobiotechnology
03.2.1.4.2	Mask inspection equipment	03.2.5.16	Production tools for microsystem technology, miscellaneous		
03.2.1.4.3	Mask repair stations	03.2.6	Bonding		
03.2.1.4.4	Masks	03.2.6.1	Substrate bonding		
03.2.2	Lithography, substrate processing	03.2.6.2	Anodic bonding		
03.2.2.1	Microlithography equipment	03.2.6.3	Fusion bonding		
03.2.2.2	Contact-printing equipment	03.2.6.4	Glass reflow bonding		
03.2.2.3	Laser writing equipment	03.2.6.5	Adhesive bonding		
03.2.2.4	E-beam writers	03.2.6.6	Eutectic bonding		
03.2.2.5	Ion-beam writers	03.2.7	Micro-assembly		
03.2.2.6	X-ray steppers	03.2.7.1	Component mount techniques		
03.2.3	Production technology for microsystems	03.2.7.2	Component mounting in microsystems		
03.2.3.1	Photo lithography	03.2.7.3	Micro technology mounting & assembly systems		
03.2.3.2	Double-sided lithography	03.2.7.4	Joining and interconnection techniques		
03.2.3.3	X-ray lithography systems	03.2.7.5	Integration techniques		
03.2.3.4	Deep UV lithography systems	03.2.7.6	Microgrippers		
03.2.3.5	Thin film technology	03.2.7.7	Micro filters		
03.2.3.6	Epitaxy	03.2.7.8	Microrobotics		
03.2.3.7	Etching techniques	03.2.7.9	Nanorobotics		
03.2.3.8	RIE (reactive ion etching)				
03.2.3.9	Laser ablation systems				
03.2.3.10	Doping techniques				
03.2.3.11	Electroforming				

4. PCB and other circuit-carrier manufacturing

- 04.1 Base materials**
 - 04.1.1 Strips**
 - 04.1.1.1 Cu and Cu alloy strips
 - 04.1.1.2 Conducting strips
 - 04.1.2 Foils**
 - 04.1.2.1 Cu/Al/Cu sandwich foil sets
 - 04.1.2.2 Cu foils for base materials
 - 04.1.2.3 Separating foils
 - 04.1.3 Laminates**
 - 04.1.3.1 Paper laminates, copper-coated
 - 04.1.3.2 Composite laminates/prepregs, copper-coated
 - 04.1.3.3 Epoxy-glass laminates/-prepregs, copper-coated
 - 04.1.3.4 Cyanide ester laminates/prepregs
 - 04.1.3.5 Polyamide/glass laminates/prepregs
 - 04.1.3.6 PTFE/glass laminates
 - 04.1.3.7 Metal-core composite laminates
 - 04.1.3.8 Uncoated laminates
 - 04.1.3.9 Flexible base materials
 - 04.1.3.10 Photo-laminated base materials
 - 04.1.3.11 Base materials, special-purpose
 - 04.1.3.12 Laminates, miscellaneous
 - 04.1.4 Substrates**
 - 04.1.4.1 Ceramic substrates
 - 04.1.4.2 Metal substrates (including enameled)
 - 04.1.5 Equipment and tools for base material manufacturing**
 - 04.1.5.1 Laminators for ML materials, automatic
 - 04.1.5.2 Lamination presses
 - 04.1.5.3 Vacuum-lamination presses
 - 04.1.5.4 Lamination presses
 - 04.1.5.5 Rollers for laminators
 - 04.1.5.6 Lamination registration equipment, ML
 - 04.1.5.7 Multilayer production equipment, miscellaneous
 - 04.1.5.8 Lamination aids
 - 04.1.5.9 LTCC equipment (ML/SL)
 - 04.1.5.10 Miscellaneous circuit-carrier production tools
- 04.2 Circuit-printing tools and photomasters**
 - 04.2.1 Photo circuit print**
 - 04.2.1.1 Materials**
 - 04.2.1.1.1 Photochemicals
 - 04.2.1.1.2 Films/photo papers
 - 04.2.1.1.3 Photographic materials, miscellaneous
 - 04.2.1.2 Exposure equipment**
 - 04.2.1.2.1 Photographic tools
 - 04.2.1.2.2 Spotlight equipment
 - 04.2.1.2.3 UV exposure equipment
 - 04.2.1.2.4 UV cold-light exposure systems
 - 04.2.1.2.5 UV post-polymerization equipment
 - 04.2.1.2.6 Laser direct imaging (LDI) systems
 - 04.2.1.2.7 Exposure equipment, miscellaneous
 - 04.2.2 Stencil fabrication**
 - 04.2.2.1 Hard-copy equipment**
 - 04.2.2.1.1 Photo-plotters
 - 04.2.2.1.2 Stencil printers
 - 04.2.2.1.3 Reprographic/copying equipment
 - 04.2.2.1.4 Registration machines for film originals
 - 04.2.2.1.5 PCB scanners
 - 04.2.2.1.6 Fine-line imaging equipment
 - 04.2.2.1.7 Copiers/copying aids, miscellaneous
 - 04.2.2.2 Stencil production**
 - 04.2.2.2.1 Screen stencils
 - 04.2.2.2.2 Screen-print masks
 - 04.2.2.2.3 Screen-printing inspection units
 - 04.2.2.2.4 Stencil production lasers
 - 04.2.2.2.5 Stencil production tools, miscellaneous
 - 04.2.2.2.6 Metal stencils
 - 04.2.2.2.7 Coating equipment, mask
- 04.2.2.2.8 Stencil production, miscellaneous
- 04.3 Tools, machines and accessories for PCB processing**
 - 04.3.1 Drilling machines for PCBs
 - 04.3.2 Drills for PCBs
 - 04.3.3 Laser drills for microvias
 - 04.3.4 Milling machines for PCBs
 - 04.3.5 Milling cutters for PCBs
 - 04.3.6 Drilling/milling spindles for PCB processing
 - 04.3.7 Welding machines for PCBs
 - 04.3.8 Drilling aids for PCBs
 - 04.3.9 Press tools
 - 04.3.10 Cutting tools
 - 04.3.11 Special tools for PCB processing
 - 04.3.12 Via-hole filler materials
 - 04.3.13 Panel separation machines**
 - 04.3.13.1 Mechanical PCB separators
 - 04.3.13.2 Laser PCB separators
 - 04.3.14 Tools, machines and accessories, miscellaneous
 - 04.4 Generating circuit structure**
 - 04.4.1 PCB production by screen printing**
 - 04.4.1.1 Thick film**
 - 04.4.1.1.1 Thick-film pastes
 - 04.4.1.1.2 Dielectric pastes
 - 04.4.1.1.3 Circuit pastes
 - 04.4.1.1.4 No-clean pastes
 - 04.4.1.1.5 Resistance pastes
 - 04.4.1.2 Screen-printing materials**
 - 04.4.1.2.1 Screen frames
 - 04.4.1.2.2 Screen mesh
 - 04.4.1.2.3 Screen-printing aids
 - 04.4.1.2.4 Squeegees
 - 04.4.1.2.5 Screen-printing materials, miscellaneous
 - 04.4.1.3 Screen-printing equipment**
 - 04.4.1.3.1 Thick-film printers
 - 04.4.1.3.2 Manual screen-printing units
 - 04.4.1.3.3 Screen printers
 - 04.4.1.3.4 Hybrid printers
 - 04.4.1.3.5 Screen-printing aids, miscellaneous
 - 04.4.1.4 Etch resist
 - 04.4.2 Photoprinting**
 - 04.4.2.1 Lacquer-coating systems**
 - 04.4.2.1.1 Liquid photo resists
 - 04.4.2.1.2 Coating equipment**
 - 04.4.2.1.2.1 Roller coaters
 - 04.4.2.1.2.2 Curtain-coating systems
 - 04.4.2.1.2.3 Spray-coating systems
 - 04.4.2.1.2.4 InkJet direct imaging
 - 04.4.2.1.2.5 Coating systems, miscellaneous
 - 04.4.2.1.3 Auxiliary equipment for lacquer-coating systems**
 - 04.4.2.1.3.1 Screen-printing loading/unloading equipment
 - 04.4.2.1.3.2 Triple-roller presses, screen-printing
 - 04.4.2.1.3.3 Hybrid-technology paste systems
 - 04.4.2.1.3.4 Circuit-printing registration systems
 - 04.4.2.2 Dry resists**
 - 04.4.2.2.1 Dry film resists
 - 04.4.2.2.2 Roller-coating systems
 - 04.4.2.2.3 Vacuum-coating systems
 - 04.4.2.2.4 Coating equipment, miscellaneous
 - 04.4.2.2.5 Dry-resist laminators
 - 04.4.2.3 Exposure systems**
 - 04.4.2.3.1 UV-exposure systems
 - 04.4.2.3.2 UV-exposure systems, automatic
 - 04.4.2.3.3 Circuit-printing registration systems
 - 04.4.2.3.4 Direct imaging systems
 - 04.4.2.3.5 Laser imaging systems
 - 04.4.2.3.6 Auxiliary equipment for exposure systems
 - 04.4.2.3.7 Exposure systems, miscellaneous
 - 04.4.2.4 Developing equipment**
 - 04.4.2.4.1 Developing machines
 - 04.4.2.4.2 Distillation systems
 - 04.4.2.4.3 Foil-peeling equipment
 - 04.4.2.4.4 Auxiliary equipment for developers
 - 04.4.3 PCB production by mechanical processing**
 - 04.4.3.1 Circuit diagram creation with milling cutter plotters
 - 04.4.3.2 Microstructuring with diamond tools
 - 04.4.4 PCB production by other direct processing**
 - 04.4.4.1 Direct circuit diagram creation with laser plotters
 - 04.4.4.2 Direct circuit diagram creation
- 04.5 Chemical processing of PCBs**
 - 04.5.1 Chemicals for etching**
 - 04.5.1.1 Etching materials
 - 04.5.1.2 Etching resists
 - 04.5.1.3 Etching-technology aids
 - 04.5.1.4 Chemical processing materials (non-chipping), miscellaneous
 - 04.5.2 Machines for etching**
 - 04.5.2.1 Small-scale etching units for PCBs
 - 04.5.2.2 Etching equipment/machines
 - 04.5.2.3 Continuous etching lines
 - 04.5.2.4 Machines for etching, pickling and other chemical processing, miscellaneous
 - 04.5.3 Through-plating
 - 04.5.4 Via-hole plugging**
 - 04.5.4.1 Via-hole plugging machines
 - 04.5.4.2 Via-hole plugging inks
 - 04.5.5 Final surfaces for PCBs**
 - 04.5.5.1 Hot-air galvanizing equipment
 - 04.5.5.2 Chemical tin deposition
 - 04.5.5.3 Chemical gold/silver deposition
 - 04.5.5.4 Chemical palladium
 - 04.5.5.5 Cu antioxidation coatings
 - 04.5.5.6 Copper passivation
 - 04.5.5.7 Passivation, miscellaneous
 - 04.5.6 De-coating equipment**
 - 04.5.6.1 Screen-stripping equipment
 - 04.5.6.2 Dry-film removers
 - 04.5.6.3 Photo-laminate stripping equipment
 - 04.5.6.4 Solder mask stripping equipment
 - 04.5.6.5 Tin stripping equipment
 - 04.5.6.6 Film-stripping equipment, miscellaneous
 - 04.5.7 PCB cleaning**
 - 04.5.7.1 ML inner-layer cleaning
 - 04.5.7.2 PCB hole cleaning (de-smearing)
 - 04.5.7.3 Rinse-processing equipment
 - 04.5.7.4 Post-cleaning systems for PCBs
 - 04.5.7.5 Plasma cleaning
- 04.6 Heat treatment, drying**
 - 04.6.1 Heat treatment**
 - 04.6.1.1 Continuous heaters
 - 04.6.1.2 Conveyor belt ovens
 - 04.6.1.3 Burn-in ovens
 - 04.6.1.4 Heating equipment, miscellaneous
 - 04.6.1.5 High-temperature ovens
 - 04.6.1.6 IR treatment equipment
 - 04.6.1.7 Microwave ovens
 - 04.6.1.8 Mirror-focus ovens
 - 04.6.1.9 Radiation sources for heat treatment
 - 04.6.1.10 Solar simulators for process work
 - 04.6.1.11 Heat cabinets
 - 04.6.1.12 Heat treatment, miscellaneous
 - 04.6.2 Drying**
 - 04.6.2.1 Squeeze dryers
 - 04.6.2.2 Thick-film dryers
 - 04.6.2.3 Hot-air drying/curing units
 - 04.6.2.4 Air dryers
 - 04.6.2.5 Screen-drying cabinets
 - 04.6.2.6 Bench-top dryers

04.6.2.7	Drying chambers	04.9.3	Metallization	04.10	Printed Circuit Board (PCB) handling
04.6.2.8	Drying valves	04.9.3.1	Chemical electroplating	04.10.1	Automatic loaders/ unloaders for PCBs
04.6.2.9	Dryers, solder-resist masks	04.9.3.2	Hot-embossing processes for PCB manufacture	04.10.2	Stacking devices for PCBs
04.6.2.10	Dryers, miscellaneous	04.9.3.3	Physical vapor deposition (PVD)	04.10.3	PCB-separating equipment
04.7	Solder-resist technology	04.9.4	MID Structuring	04.10.4	PCB-handling aids, miscellaneous
04.7.1	Solder-resist masks	04.9.4.1	MID photostructuring	04.11	Special machines for power electronics
04.7.2	Solder-resist lacquers	04.9.4.2	MID laser ablation	04.12	Special machines for the production of high frequency devices
04.7.3	InkJet solder Mask application	04.9.4.3	MID laser imaging		
04.8	Legend printing	04.9.4.4	MID laser activation LDS		
04.8.1	InkJet legend printing	04.9.4.5	MID primer technology		
04.8.2	Screen-printing	04.9.5	MID Assembly		
04.9	Molded Interconnect Device (MID) production	04.9.5.1	MID media application		
04.9.1	Materials for MID production	04.9.5.2	3D mounting		
04.9.1.1	Plastic granulates for MID production	04.9.5.3	MID connection technology		
04.9.1.2	Plastic foils for MID production	04.9.6	Forming of artificial material Tools and machines		
04.9.1.3	Hot-embossing foils for MID production	04.9.6.1	Injection-molding metering equipment		
04.9.2	Injection molding	04.9.6.1.1	Injection-molding machines		
04.9.2.1	Single-component injection molding	04.9.6.1.2	Plastic-welding equipment		
04.9.2.2	Two-component injection molding	04.9.6.1.3	Molded interconnect devices		
04.9.2.3	In-mold labeling	04.9.6.1.4	Structuring design equipment, 3D		
04.9.2.4	Injection molds	04.9.6.1.5	Injection-molding machines for permanent magnets embedded in plastics		

5. Component mount technology

05.1	Component preparation	05.2.3	Component mounting systems, specialized	05.4.3.1	Robots
05.1.1	Tin-plating equipment for component connections	05.2.3.1	BGA mounting equipment	05.4.3.1.1	Articulated robots
05.1.2	Bending equipment for component connections	05.2.3.2	Flip-chip assembly systems	05.4.3.1.2	Industrial robots, miscellaneous
05.1.3	Trimmers for component preparation	05.2.3.3	Waffle pack dispensers	05.4.3.1.3	Frog-leg robots
05.1.4	DIL component aligners	05.2.3.4	Component mounting systems, specialized, miscellaneous	05.4.3.1.4	Coordinate-type robots
05.1.5	Component separation equipment	05.3	Production	05.4.3.1.5	Gantry-type robots
05.1.6	Component preparation aids, miscellaneous	05.3.1	Mounting lines	05.4.3.1.6	Robotics accessories
05.1.7	Bondability testers	05.3.2	Mounting cells	05.4.3.1.7	Swiveling-arm robots
05.2	Component mount techniques, component mounting	05.3.3	Production lines for assembly, component placement, connections, etc.	05.4.3.1.8	TAB feeders
05.2.1	Manual component insertion	05.3.4	Robot cells for linking	05.4.3.2	Handling systems for material supply, storage and logistics
05.2.1.1	Equipment for manual component insertion	05.4	Robot handling technology	05.4.3.2.1	Assembly-handling equipment
05.2.1.2	Position pattern display equipment	05.4.1	Material supply systems	05.4.3.2.2	Automatic loaders/ unloaders for assemblies
05.2.1.3	Clinching tools for insertions	05.4.1.1	Vibration conveyors	05.4.3.2.3	Part manipulation equipment, miscellaneous
05.2.2	Automatic component mounting	05.4.1.2	Clamping/fixing systems	05.4.3.2.4	Guidance parts/systems
05.2.2.1	Surface mount equipment	05.4.1.3	Loading/unloading equipment for machines/workstations	05.4.3.2.5	Systematizing equipment
05.2.2.2	Mounting systems, through hole components	05.4.1.4	Parts transfer systems	05.4.3.2.6	Handling equipment, miscellaneous
05.2.2.3	Semi-automatic mounting equipment	05.4.1.5	Bulk material feeder modules (component)	05.4.3.2.7	Inert-gas storage
05.2.2.4	Pick-and-place machines for special components	05.4.1.6	Rotary timing systems	05.4.4	Control technology
05.2.2.5	Automatic mounting equipment for spatial chip carriers	05.4.1.7	Storage systems (handling)	05.4.4.1	Measurement, detection and control systems
05.2.2.6	Pin insertion machines	05.4.1.8	Linking/transfer equipment, miscellaneous	05.4.4.2	Detection units/systems
05.2.2.7	Accessories for mounting equipment	05.4.1.9	Part manipulation equipment, miscellaneous	05.4.4.3	Monitoring systems, process-specific
05.2.2.8	Mounting machines, miscellaneous	05.4.2	Automation	05.4.4.4	Plant security units/systems
		05.4.2.1	Assembly-handling equipment	05.4.4.5	Measurement, detection and control systems, miscellaneous
		05.4.2.2	Automatic loaders/ unloaders for assemblies	05.4.4.6	Positioning controllers
		05.4.2.3	Automation bus systems	05.4.4.7	Guidance technology equipment, miscellaneous
		05.4.2.4	Process automation equipment, miscellaneous	05.4.4.8	Control equipment, miscellaneous, application-specific
		05.4.3	Robots and handling systems for material supply, storage and logistics		

6. Soldering technology

06.1	Solders and soldering aids	06.2.5	Solder-paste application stencils	06.4.4	Inert-gas manual-soldering workstations
06.1.1	Solders, leaded	06.3	Coating equipment	06.4.5	Soldering units, miscellaneous
06.1.2	Solders, unleaded	06.3.1	Flux application equipment	06.5	Soldering facilities
06.1.3	Soldering pastes, leaded	06.3.2	Tin-plating equipment	06.5.1	Reflow soldering machines
06.1.4	Soldering pastes, unleaded	06.3.3	Micro-flame equipment	06.5.2	Vapor-phase soldering machines
06.1.5	Flux for soldering	06.3.4	Coating equipment, miscellaneous	06.5.3	Laser soldering systems
06.1.6	Soldered connection parts	06.4	Soldering units	06.5.4	Light soldering systems
06.1.7	Inert gas, cleaning gases	06.4.1	Soldering irons and workstations	06.5.5	Wave soldering machines
06.1.8	Soldering aids, miscellaneous	06.4.2	Hot-air soldering units	06.5.6	Flux-free soldering equipment
06.2	Paste application systems	06.4.3	Impulse soldering units	06.5.7	Selective soldering systems
06.2.1	Dispensers for soldering pastes			06.5.8	Robotic soldering equipment
06.2.2	Screen-printing systems			06.5.9	Vacuum soldering ovens
06.2.3	Applicators, miscellaneous				
06.2.4	Solder-paste printing stencils				

06.5.10	Induction soldering equipment	06.6.8	Soldering tips	06.7.1.10	Insulated adhesive tapes
06.5.11	Resistance soldering systems	06.6.9	Soldering accessories, miscellaneous	06.7.1.11	Adhesives, miscellaneous
06.5.12	Dip soldering equipment			06.7.2	Equipment for processing and applying adhesives
06.5.13	Heat-staking machines	06.7	Gluing, dispensing	06.7.2.1	Adhesive dispensers
06.5.14	Soldering systems, miscellaneous	06.7.1	Adhesives and auxiliary materials	06.7.2.2	Automatic dispensers
06.6	Soldering accessories	06.7.1.1	SMD adhesives	06.7.2.3	Ultra-small quantity dispensers
06.6.1	Soldering frames, masks	06.7.1.2	Acrylic/epoxy adhesives	06.7.2.4	Multi-component dosage equipment
06.6.2	Soldering-frame cleaning systems	06.7.1.3	Hot-melt adhesives	06.7.2.5	Adhesive tape dispensers
06.6.3	Inert-gas technology	06.7.1.4	Adhesives, anisotropic	06.7.2.6	Adhesive curing lines
06.6.4	Preheating modules for soldering lines	06.7.1.5	Adhesives, electrically conductive	06.7.2.7	Hot-sealing presses, adhesives
06.6.5	Soldering-tip cleaning units	06.7.1.6	Adhesives, heat-conducting	06.7.2.8	Stencils for applying SMD adhesives
06.6.6	Reflow equipment	06.7.1.7	Adhesive parts, preformed	06.7.2.9	Heat-seal bonders
06.6.7	Soldering-vapor extractors	06.7.1.8	Heat-conducting pastes	06.7.2.10	Adhesive-processing equipment, miscellaneous
		06.7.1.9	Adhesive tapes		

7. Organic and printed electronics, polytronics

07.1	Materials and components	07.2.5	Solution Coating (spin coating, dip coating, etc.)	07.3.6	Quality/Process control
07.1.1	Substrates	07.2.6	Encapsulation and gluing	07.3.7	Inspection and test systems, others
07.1.2	Conductors	07.2.7	Roll-to-roll process	07.4	Applications and devices
07.1.3	Semiconductors	07.2.8	Assembly and packaging technology, system integration	07.4.1	Integrated Circuits (IC)
07.1.4	Dielectrics	07.2.8.1	Electrical contacting (Flip chip, bonding, etc.)	07.4.2	Transistors and diodes
07.1.5	Encapsulation materials and resins	07.2.8.2	Lamination equipment	07.4.3	Passive components
07.1.6	Components for hybrid systems (Polytronics)	07.2.8.3	System integration	07.4.4	Antennas
07.1.7	Materials and components, others	07.2.8.4	Hybrid systems (Polytronics)	07.4.5	Memory devices
07.2	Manufacturing equipment	07.2.8.5	Assembly and packaging technology, system integration, other	07.4.6	Batteries
07.2.1	Print technology	07.2.9	Manufacturing equipment, other	07.4.7	RFID labels
07.2.1.1	Gravure print equipment	07.3	Inspection and test systems	07.4.8	Sensors
07.2.1.2	Offset print equipment	07.3.1	Electrical characterization	07.4.9	Displays and lighting
07.2.1.3	Screen printing equipment	07.3.2	Physical/Optical characterization	07.4.10	Organic photovoltaics (OPV)
07.2.1.4	Flexographic printing equipment	07.3.3	Chemical characterization	07.4.11	Speakers
07.2.1.5	InkJet printers	07.3.4	Simulation/Circuit optimization	07.4.12	Smart objects/smart textiles
07.2.1.6	Nano imprint equipment	07.3.5	Lifetime testing	07.4.13	Full polymer electronics, other applications
07.2.2	Vacuum processes			07.4.14	Partial polymer electronics (polytronics), other applications
07.2.3	Photolithography				
07.2.4	Laser deposition equipment				

8. Hybrid-component manufacturing

08.1	Tooling and mold making	08.3.14	Reels	08.6.4	Marking systems and equipment
08.1.1	Die making, tool making	08.3.15	Hot runners	08.6.5	Polishing machines and systems
08.1.2	Pattern making and prototype	08.3.16	Plastic feeder systems	08.6.6	Cleaning machines and systems
08.1.3	Rapid prototyping	08.3.17	Cooling equipment and systems	08.6.7	Grinding machines and systems
08.1.4	Rapid tooling			08.6.8	Service-providers—surface technology
08.1.5	Tooling and mold making, miscellaneous	08.3.18	Assembly equipment and systems	08.6.9	Equipment, spare parts and accessories for surface treatment and refinement, miscellaneous
08.2	Tools, tool equipment	08.3.19	Robots	08.7	Injection molding for plastics
08.2.1	Erosion machines and systems	08.3.20	Cleaning equipment	08.7.1	Processing machines and systems
08.2.2	Follow-on assembly tools	08.3.21	Lubricating equipment and systems	08.7.2	Extruders
08.2.3	Standards for stamping and shaping tools	08.3.22	Equipment, spare parts and accessories for assembly and handling technology and periphery, miscellaneous	08.7.3	Cooling equipment
08.2.4	Press tools	08.4	Stamping	08.7.4	Injection molding machines and systems
08.2.5	Cutting tools	08.4.1	Presses	08.7.5	Service-providers— injection molding
08.2.6	Injection molding tools	08.4.2	Stamping presses	08.7.6	Equipment, spare parts and accessories for injection molding for plastics, miscellaneous
08.2.7	Stamping tools	08.4.3	Stamping machines and systems	08.8	Metal/plastic composite technologies
08.2.8	Deep-drawing tools	08.4.4	Service-provider-stamping	08.8.1	Assemblies (mounted in plastic)
08.2.9	Separating tools	08.4.5	Equipment, spare parts and accessories for stamping, miscellaneous	08.8.2	Inserts (plastic injection around inserted part)
08.2.10	Tool-handling and tool-fastening systems	08.5	Shaping	08.8.3	Outserts (part surrounds injected plastic)
08.2.11	Bending tools	08.5.1	Bending machines and systems	08.8.4	Integrated manufacturing techniques
08.2.12	Tool-clamping devices	08.5.2	Lathes	08.8.5	Metal/plastic composite technologies, miscellaneous
08.2.13	Tools, miscellaneous	08.5.3	Roll bending machines	08.9	Process and quality control/Automation
08.3	Assembly and handling technology, periphery	08.5.4	Special-purpose machines		
08.3.1	Substances and strip stocks	08.5.5	Service-provider-shaping		
08.3.2	Reeling/unreeeling machines	08.5.6	Equipment, spare parts and accessories for shaping, miscellaneous		
08.3.3	Destacking systems	08.6	Surface-finishing equipment, refinement		
08.3.4	Strip position control systems	08.6.1	Etching machines and systems		
08.3.5	Strip-storage systems	08.6.2	Coating machines and systems		
08.3.6	Strip-straightening machine	08.6.3	Electroplating machines and systems		
08.3.7	Strip-lubricating systems				
08.3.8	Strip welding machines				
08.3.9	Container filling systems				
08.3.10	Oiling systems				
08.3.11	Removal systems				
08.3.12	Feeders, feed technology				
08.3.13	Conveyor systems				

08.9.1	Automation solutions for metal/ plastic composites	08.9.6	Measuring, testing and inspection equipment	08.9.13	Regulation and control equipment
08.9.2	Production data-acquisition (PDA) systems	08.9.7	Compression force control systems	08.9.14	Tool-safety equipment
08.9.3	Coordinate measuring technology and devices	08.9.8	Process measuring technology	08.9.15	Tool monitoring
08.9.4	Light barriers	08.9.9	Process control and automation	08.9.16	Equipment, spare parts and accessories for process and quality control, miscellaneous
08.9.5	Machine data-acquisition (MDA) systems	08.9.10	Process monitoring		
		08.9.11	Traceability equipment		
		08.9.12	Sensors		

9. Materials processing, LED production and discrete devices

09.1	Mechanical processing other than PCB	09.4.1.1.5	Chemical processing materials (non-chipping), miscellaneous	09.7.1	Laser welding systems
09.1.1	Drilling and milling	09.4.1.2	Machines for etching, pickling and other chemical processing	09.7.2	Laser soldering installations
09.1.1.1	Fit-hole drilling equipment	09.4.1.2.1	Small-scale etching units	09.7.3	Laser cutting systems
09.1.1.2	Single-spindle drilling machines	09.4.1.2.2	Etching equipment/machines	09.7.4	Laser drilling systems
09.1.1.3	Multi-spindle drilling machines	09.4.1.2.3	Continuous etching lines	09.7.5	Laser marking and lettering systems
09.1.1.4	Special drilling machines	09.4.1.2.4	Degreasing, chemical/thermal	09.7.6	Laser trimming systems
09.1.1.5	Milling machines	09.4.1.2.5	Ultrasonic degreasing	09.7.7	Laser surface processing systems
09.1.1.6	Drilling/milling systems (suitable for interconnection)	09.4.1.2.6	Deburring, chemical	09.7.8	Laser micro processing systems
09.1.1.7	3D milling machines	09.4.1.2.7	De-oxidation equipment	09.7.9	Laser material processing systems, miscellaneous
09.1.1.8	Plasma drilling equipment	09.4.1.2.8	Black-oxide equipment	09.8	System periphery for laser-based manufacturing
09.1.1.9	CNC processing equipment	09.4.1.2.9	Photochemical processing of thin precision parts	09.8.1	Drive and control engineering
09.1.1.10	XY tables	09.4.1.2.10	Machines for etching, pickling and other chemical processing, miscellaneous	09.8.2	Handling equipment
09.1.1.11	Drilling machines, miscellaneous	09.4.1.3	Peripheral equipment	09.8.3	Laser robots
09.1.2	Cutting, separating	09.4.1.3.1	Electric heaters, immersible	09.8.4	Monitoring and recognition systems
09.1.2.1	Shears	09.4.1.3.2	Pretreatment systems, chemical	09.8.5	Control systems
09.1.2.2	Circular saws	09.4.1.3.3	Dosage/metering equipment	09.8.6	Fiber systems
09.1.2.3	Scroll saws	09.4.2	Galvanic processing	09.8.7	Articulated arms
09.1.2.4	Bandsaws	09.4.2.1	Plate material	09.8.8	Hardened optics
09.1.2.5	Crosscut saws	09.4.2.1.1	Copper anodes	09.8.9	Metal laser optics
09.1.2.6	Saws, miscellaneous	09.4.2.1.2	Tin anodes	09.8.10	Laser working heads and adapters
09.1.2.7	Laser cutting machines	09.4.2.1.3	Tin-lead anodes	09.8.11	Laser resonator optics
09.1.2.8	Scoring machines	09.4.2.1.4	Silver anodes	09.8.12	Beam guidance telescopes
09.1.2.9	Parting-off grinders	09.4.2.1.5	Anodes, miscellaneous	09.8.13	Cutting laser optics
09.1.3	Border machining	09.4.2.2	Materials, miscellaneous	09.8.14	Welding optics
09.1.3.1	Deburring equipment, mechanical	09.4.2.2.1	Electroplating masking tapes	09.8.15	Control electronics
09.1.3.2	Chamfering machines	09.4.2.2.2	Electroplating aids	09.8.16	Laser vapor extraction systems
09.1.3.3	Edge-finishing equipment	09.4.2.2.3	Integrated PCB-electroplating systems	09.8.17	Laser gases
09.1.3.4	Edge-finishing machines, miscellaneous	09.4.2.2.4	Anode hangers, anode baskets	09.8.18	System peripherals, miscellaneous
09.1.4	Surface treatment	09.4.2.3	Electrolytes	09.9	Manufacturing of light emitting diodes (LED)
09.1.4.1	Brushing machines	09.4.2.3.1	Gilding baths	09.9.1	Materials, components
09.1.4.2	Sandblasting equipment	09.4.2.3.2	Nickel baths	09.9.1.1	Substrates
09.1.4.3	Grinders	09.4.2.3.3	Process chemicals, electroplating	09.9.1.2	(Sapphire, SiC, bulk Si, bulk GaN, composites)
09.1.4.4	Wet-grinding equipment	09.4.2.3.4	Electroplating chemicals, miscellaneous	09.9.1.3	Material for buffer layers
09.1.4.5	Polishing equipment and materials	09.4.2.4	Electroplating machines	09.9.1.4	Material for emitter layers, compound semiconductors
09.1.4.6	Equipment for surface treatment, miscellaneous	09.4.2.4.1	Electroplating facilities, vertical	09.9.1.5	Phosphors
09.1.5	Tools and accessories	09.4.2.4.2	Electroplating facilities, horizontal	09.9.1.6	Optical components
09.1.5.1	Drills	09.4.2.4.3	Partial/selective electroplating	09.9.1.7	Reflectors
09.1.5.2	Milling cutters	09.4.2.4.4	Precious-metal electroplating	09.9.1.8	Components for LED Package
09.1.5.3	Drilling aids	09.4.2.4.5	Vibro-plating systems	09.9.1.9	Masks
09.1.5.4	Brushes for surface treatment	09.4.2.4.6	Plating racks/frames	09.9.2.1	Resins, material for sealing
09.1.5.5	Grinding discs	09.4.2.4.7	Drums, electroplating	09.9.2	Manufacturing equipment
09.1.5.6	Surface treatment materials, miscellaneous	09.4.2.4.8	Electrical equipment for electroplating	09.9.2.1	Sapphire wafer equipment (crystal growth, sawing, grinding)
09.2	Thermal treatment	09.4.2.4.9	Galvanic rectifiers	09.9.2.2	Silicon carbide wafer equipment (crystal growth, sawing, grinding)
09.2.1	Drying	09.4.2.4.10	Pulse rectifiers	09.9.2.3	Wafer equipment for other LED-related semiconductors
09.2.2	Curing	09.4.2.4.11	Heat exchangers, electroplating	09.9.2.4	Equipment for epitaxy
09.2.3	Annealing	09.4.2.4.12	Subsystems for electroplating	09.9.2.4.1	Liquid phase epitaxy (LPE)
09.2.4	Microwave heating	09.4.2.4.13	Small electroplating units	09.9.2.4.2	Molecular beam epitaxy (MBE)
09.2.5	Medium- and high-frequency heating	09.4.2.4.14	Electroplating equipment, miscellaneous	09.9.2.4.3	Organic/Organo-metallic vapor phase deposition (OMVPE, MOCVD)
09.3	Welding	09.5	Fastening, connecting	09.9.2.5	Lithography
09.3.1	Spot-welding units	09.5.1	Connectors, mechanical	09.9.2.6	Etching
09.3.2	Inert-gas welders	09.5.2	Screwdrivers and screw-driving machines	09.9.2.7	Metallization
09.3.3	Ultrasonic welders for metal	09.5.3	Automatic riveters/ screw equipment	09.9.2.8	Dicing
09.3.4	Ultrasonic welders for plastics	09.5.4	Press-fit insertion equipment	09.9.2.9	Binning, wave prober
09.3.5	Resistance welding equipment	09.5.5	Fasteners, miscellaneous	09.9.2.10	Pick-and-place
09.3.6	HF welding	09.6	Machining equipment, miscellaneous	09.9.2.11	Die attach
09.3.7	Thermocompression welding	09.6.1	Programming workstations for processing machinery	09.9.2.12	Bonding
09.3.8	Welding systems, miscellaneous	09.6.2	Blank cutters	09.9.2.13	Phosphor coating
09.3.9	Shielding gasses for welding	09.6.3	Machine tools, specialized	09.9.2.14	Lens molding
09.4	Chemical and electroplate processing	09.7	Laser material-processing systems		
09.4.1	Chemical processing				
09.4.1.1	Chemicals for etching and pickling				
09.4.1.1.1	Etching materials				
09.4.1.1.2	Pickling solutions				
09.4.1.1.3	Etching resists				
09.4.1.1.4	Etching-technology aids				

09.9.2.15	Packaging, sealing, housing	09.10.2	Equipment for manufacturing of discrete components	09.10.2.9	Manufacturing equipment for resistors
09.9.3	Test systems	09.10.2.1	Small parts precision manufacturing equipment	09.10.2.10	Manufacturing equipment for transistors/diodes
09.9.3.1	Life time test systems	09.10.2.2	Vacuum technology equipment	09.10.2.11	Processing equipment for discrete component manufacture, others
09.9.3.2	Photometric test systems	09.10.2.3	Laser-processing equipment for discrete components		
09.9.3.3	LED test systems, others	09.10.2.4	Surface-finishing equipment		
09.10	Manufacturing of other discrete components	09.10.2.5	Continuous furnaces		
09.10.1	Materials for discrete components	09.10.2.6	Drying/curing equipment, miscellaneous		
09.10.1.1	Plasticware, process/laboratory	09.10.2.7	Finishing equipment for discrete components		
09.10.1.2	Glass-fiber production equipment (fiber optics)	09.10.2.8	Manufacturing equipment for capacitors		
09.10.1.3	Materials for discrete components, others				

10. Technologies in cable processing

10.1	Cable and wire processing	10.3	Cable-processing equipment	10.7.7	Cables with connectors
10.1.1	Sheath-stripping equipment	10.3.1	Crimping tools	10.7.8	Cable terminals
10.1.2	Insulation-stripping equipment	10.3.2	Bench-top crimping presses	10.7.9	Wire end ferrules
10.1.3	Wire-trimming equipment	10.3.3	Crimping units/machines, miscellaneous	10.7.10	Card connectors
10.1.4	Wire croppers for low-profile undersides	10.3.4	Post crimp soldering equipment	10.7.11	Crimp connectors and accessories
10.1.5	Wire-bending units	10.3.5	IDC tools	10.7.12	Terminals
10.1.6	Wire-coding units	10.3.6	Coax stripping tools	10.7.13	Enameled-wire connectors
10.1.7	Cable-winding equipment	10.3.7	Optical-fiber stripping tools	10.7.14	Plugs and sockets
10.1.8	Cable-assembly systems	10.4	Others	10.7.15	Plug sockets, all types
10.1.9	Cable and wire processing aids, miscellaneous	10.4.1	Contacting units, miscellaneous	10.7.16	Plug connectors for office and data technology
10.1.10	Cable-assembly equipment	10.4.2	Permanent connectors, miscellaneous	10.7.17	Plug connectors for household appliances
10.1.11	Winding tools (wire strands)	10.4.3	Control systems for cable-assembly systems	10.7.18	Plug connectors for industrial electronics
10.1.12	Thermal treatment	10.5	Cable-protection devices	10.7.19	Plug connectors for automotive electronics
10.1.12.1	Stress relieve annealing	10.5.1	Corrugated sheath processing machines	10.7.20	Plug connectors for laboratory/test equipment
10.1.12.2	Surface finishing/coating	10.5.2	Heat shrinkable sleeves	10.7.21	Plug connectors for aerospace
10.1.12.3	Other	10.5.3	Protective devices for cable harnesses, miscellaneous	10.7.22	Plug connectors for telecommunications
10.2	Tools for wiring	10.6	Processing equipment for cable-protection devices	10.7.23	Plug connectors for entertainment electronics
10.2.1	Wire-crimping units	10.6.1	Corrugated sheaths	10.7.24	Connection technology aids, miscellaneous
10.2.2	Cable-harness production equipment	10.6.2	Corrugated sheaths, slotted	10.7.25	Plug connector parts, miscellaneous
10.2.3	Ultrasonic welders for cable harnesses	10.7	Technology for detachable connections	10.7.26	Plug connectors, miscellaneous complete
10.2.4	Resistance welders for wire harnesses	10.7.1	Connector strips		
10.2.5	Cable strippers	10.7.2	Multi-point connectors		
10.2.6	Cable splicing equipment	10.7.3	Optical-fiber connection systems		
10.2.7	Wiring machines	10.7.4	Single-conductor connectors		
10.2.8	Wiring aids	10.7.5	Ribbon cable connectors		
10.2.9	Wrapping guns	10.7.6	Mains plugs		
10.2.10	Coax strippers				
10.2.11	Cable ties and guides				
10.2.12	Wiring tools, miscellaneous				

11. Coilware manufacturing

11.1	Materials for coilware	11.2.6	Cross winders	11.2.20	Presses
11.1.1	Coil cores	11.2.7	Layer winders	11.2.21	Welding machines for metal sheet packages
11.1.2	Cut and toroidal coil cores	11.2.8	Linear winders, automatic	11.2.22	Packaging machines for metal sheet packages
11.1.3	Enameled wire, copper-, silver-	11.2.9	Modular winding systems		
11.1.4	Transformer production aids, miscellaneous	11.2.10	Toroidal coil winders	11.2.23	Coil winders, miscellaneous
11.1.5	Coil-winding technology materials, miscellaneous	11.2.11	Rotary table winders, automatic	11.2.24	Coil-manufacturing aids, miscellaneous
11.2	Tools for coilware	11.2.12	Helical coil winders	11.2.25	Coil-winding technology tools, miscellaneous
11.2.1	Armature winders	11.2.13	Welding/soldering equipment for coiled-product connections		
11.2.2	Stator coil winders	11.2.14	Transfer winding robots		
11.2.3	Fine-wire coil winders, automatic	11.2.15	Coil-winder transfer gear		
11.2.4	Coiled-product assembly lines	11.2.16	Bench-type coil winders		
11.2.5	Manual coil winders	11.2.17	Coil winder controllers		
		11.2.18	Bobbin winders		
		11.2.19	Bending tools		

12. Manufacturing and Process Software

12.1	Basic systems and development tools	12.2.2	Measurement technology (embedded into machines)	12.3.1	Production control center, production data acquisition (PDA), operating and machine data logging
12.1.1	Embedded systems	12.2.3	NC/CNC-path software	12.3.2	Manufacturing Execution Systems (MES)
12.1.2	Development tools	12.2.4	Actuators and sensors	12.3.3	Advanced Planning & Scheduling (APS)
12.1.3	Simulation systems	12.2.5	Bus systems	12.3.4	Process optimization and simulation
12.1.4	Programming systems	12.2.6	Machine vision software	12.3.5	Material flow control
12.1.5	Networks and communication	12.2.7	Human machine interface		
12.1.6	Expert systems (AI-technologies)	12.2.8	Information security/IP protection		
12.2	Machine software	12.2.9	Online documentation		
12.2.1	Machine control software	12.3	Manufacturing software		

12.3.6	Automated Process Control (APC)	12.5.3	Quality and project management	12.6.4.2	Visualizing software
12.3.7	Maintenance and service	12.5.4	Documentation services	12.6.4.3	Process software, miscellaneous
12.4	Business software	12.5.5	Software maintenance	12.6.5	Measurement and test software
12.4.1	Engineering (CAD, CAM, CAE, EDM, PDM, VR, DMU, etc.)	12.6	Application specific software	12.6.5.1	Simulators
12.4.2	Variant configuration	12.6.1	Process control software for semiconductor and display production	12.6.5.2	Measurement technology software
12.4.3	Supplies/stock/ordering	12.6.2	Process control software for photovoltaics production	12.6.5.3	ATE software/postprocessors
12.4.4	Supply Chain Management (SCM)	12.6.3	Process control software for PCB production	12.6.5.4	Fault-detection software
12.4.5	ERP, PPS, order processing	12.6.3.1	Gerber data processing programs	12.6.5.5	Fault-detection software with user prompting
12.4.6	Business process management	12.6.3.2	Drill data processing programs	12.6.6	Control software for material processing
12.4.7	Project management	12.6.3.3	Grind data processing programs	12.6.7	Software for Material-flow control
12.4.8	Business Intelligence	12.6.3.4	PCB data generation systems	12.6.7.1	Warehouse management and control systems
12.4.9	Quality management	12.6.3.5	Check data processing programs	12.6.7.2	Commissioning systems
12.4.10	Technical product documentation	12.6.3.6	Software for printing tools, miscellaneous	12.6.7.3	Production logistics systems
12.4.11	Product Lifecycle Management	12.6.4	Process control software for pick-and-place technology	12.6.7.4	Software solutions for floor conveyors and hoisting devices
12.4.12	E-Business/E-Commerce/E-Market	12.6.4.1	Automation software	12.6.7.5	Visualization systems for material flow and warehouse logistics
12.4.13	Service management				
12.5	Software services				
12.5.1	System development/-integration				
12.5.2	Order specific software development				

13. Test and measurement, quality assurance

13.1	Visual inspection, image processing	13.1.4.13	Microscopes, miscellaneous	13.2.2.8	Corrosion-testing equipment
13.1.1	Inspection systems	13.1.4.14	Microscopy aids	13.2.2.9	Surface test units, miscellaneous
13.1.1.1	Solder paste inspection systems	13.1.4.15	Electron microscopy aids	13.2.3	Shape analysis
13.1.1.2	Flux inspection systems	13.1.5	Optical equipment and systems	13.2.3.1	Accuracy-of-fit testers
13.1.1.3	Bump inspection systems	13.1.5.1	Magnifying lenses	13.2.3.2	Shape inspection equipment
13.1.1.4	Population inspection equipment	13.1.5.2	Scanner equipment	13.2.3.3	Profilometers
13.1.1.5	Optical inspection systems	13.1.5.3	Mark readers	13.3	Measurement technology for non-electrical parameters
13.1.1.6	Visual surface inspection systems	13.1.5.4	Projectors	13.3.1	Measurement/testing of geometric magnitudes
13.1.1.7	2D/3D inspection systems, miscellaneous	13.1.5.5	Enlargers	13.3.1.1	Distance measurement devices
13.1.1.8	X-ray inspection systems	13.1.5.6	Fiber optics	13.3.1.2	Angle meters
13.1.1.9	Robot visual systems	13.1.5.7	Automated optical-inspection systems (AOI)	13.3.1.3	Film thickness meters
13.1.1.10	IC lead geometry testers	13.1.5.8	3D laser measurement systems	13.3.1.4	Drill-hole test units
13.1.1.11	Wafer bond inspection systems	13.1.5.9	Technical endoscopes	13.3.2	Mechanical units
13.1.1.12	Optical inspection systems, miscellaneous	13.1.5.10	Cross-sectioning systems	13.3.2.1	Force meters
13.1.1.13	ML inner-layer inspection systems	13.1.5.11	Cross-section inspection systems	13.3.2.2	Pressure measurement equipment
13.1.1.14	Photomask inspection systems	13.1.5.12	X-ray fluorescence analyzers	13.3.2.3	Vacuum measurement units
13.1.1.15	Finish inspection systems for bare boards	13.1.5.13	Optical-inspection equipment, miscellaneous	13.3.2.4	Scale equipment
13.1.2	Image processing	13.1.5.14	Optical-measurement equipment, miscellaneous	13.3.2.5	Torque-measuring equipment
13.1.2.1	Image-processing camera systems	13.1.5.15	Visual-inspection aids, miscellaneous	13.3.2.6	Viscosity meters
13.1.2.2	Semiconductor cameras (CCD)	13.1.6	Lighting	13.3.2.7	Bond-strength testers (CAW/COB/COF)
13.1.2.3	Cameras for observation purposes, miscellaneous	13.1.6.1	Microscope lighting	13.3.2.8	Shear-strength testers
13.1.2.4	Registration image systems	13.1.6.2	Lighting systems for image/pattern recognition	13.3.3	Time and time-dependent parameters
13.1.2.5	Self-alignment image systems	13.1.6.3	Video lighting systems	13.3.3.1	Time counters
13.1.2.6	IR image systems	13.1.6.4	Stroboscopes	13.3.3.2	Work measurement
13.1.2.7	X-ray image systems	13.1.6.5	Equipment for image/pattern recognition and processing, miscellaneous	13.3.3.3	Speed measurement
13.1.2.8	Image-processing accessories	13.2	Materials testing	13.3.3.4	RPM measurement
13.1.2.9	Image analysis systems, miscellaneous	13.2.1	Material analysis	13.3.3.5	Flow meters
13.1.2.10	Image-processing systems, miscellaneous	13.2.1.1	Pressure/tension testers	13.3.3.6	Acceleration meters
13.1.2.11	Print image control systems	13.2.1.2	Hardness testers	13.3.4	Thermal units
13.1.3	Recognition systems	13.2.1.3	Thermal analysis units	13.3.4.1	Temperature meters
13.1.3.1	Pattern recognition systems	13.2.1.4	Electrical properties, miscellaneous test equipment for	13.3.4.2	Temperature profile measurement
13.1.3.2	Position recognition systems	13.2.1.5	Gas analyzers	13.3.4.3	Microthermographs, non-contact
13.1.3.3	Color recognition systems	13.2.1.6	Contamination-monitoring equipment	13.3.5	Environmental parameters
13.1.4	Microscopy	13.2.1.7	Diffusion-length mapping equipment	13.3.5.1	Indoor-climate control meters
13.1.4.1	Stereo microscopes	13.2.1.8	Wafer characterization equipment	13.3.5.2	Climate control meters
13.1.4.2	Control/measurement microscopes	13.2.1.9	Analyzers, miscellaneous	13.3.5.3	Climate control sensors
13.1.4.3	Confocal microscope systems	13.2.2	Surface analysis	13.3.5.4	Acoustic-noise meters
13.1.4.4	Video microscopes	13.2.2.1	Structure width measurement units	13.3.5.5	Shock vibration meters
13.1.4.5	Projection microscopes	13.2.2.2	Surface cleanliness testers	13.3.6	Chemical and biological parameters
13.1.4.6	Scanning microscopes	13.2.2.3	Flatness testers	13.3.6.1	Strip analyzers for electroplating
13.1.4.7	Electron microscopes	13.2.2.4	Mechanical profilometers	13.3.6.2	pH/redox determination
13.1.4.8	Emission microscopes	13.2.2.5	Optical profilometers	13.3.6.3	O ₂ -monitoring systems
13.1.4.9	Ultrasonic microscopes	13.2.2.6	Peak-to-valley measuring devices	13.3.6.4	Gas concentration meters
13.1.4.10	Impact-force grids/sample microscopes	13.2.2.7	Surface topography measurement systems	13.3.6.5	Ultra-pure water monitors
13.1.4.11	Scanning probe microscopes			13.3.6.6	Deionized-water monitoring units
13.1.4.12	White-light interferometers			13.3.6.7	Particle measurement units for fluids
				13.3.6.8	Plasma etching monitors

13.3.6.9	Differential scanning calorimeters	13.4.7.1	Power amplifiers	13.5.2.2	Through-contact testers
13.3.7	Optical parameters	13.4.7.2	Antennas	13.5.2.3	Substrate testers
13.3.7.1	Optical signal generators	13.4.7.3	Measuring receivers	13.5.2.4	Wiring test units
13.3.7.2	Optical attenuators	13.4.7.4	Field-strength measurement devices	13.5.2.5	Wiring harness test units
13.3.7.3	Optical power meters	13.4.7.5	Magnetic-field measuring equipment	13.5.2.6	Signature testers
13.3.7.4	Optical spectrum analyzers	13.4.7.6	EMC test stand equipment	13.5.2.7	In-circuit testers
13.3.7.5	Optical time domain reflectometers	13.4.7.7	ESD testers	13.5.2.8	Functional testers
13.3.7.6	Optical network analyzers	13.4.7.8	Testing electrical/magnetic properties, other devices for	13.5.2.9	Combination testers (in-circuit & function)
13.3.7.7	Optical polarization analyzers	13.4.8	Mobile radio measurement equipment	13.5.2.10	Test systems without adapters
13.3.7.8	Optical amplifiers	13.4.8.1	Test systems for analog mobile radios	13.5.2.11	Power supply testers
13.3.7.9	Optical multimeters	13.4.8.2	Test systems for digital mobile radios	13.5.2.12	Keyboard testers
13.3.7.10	Fiber-optic parameter measurement equipment	13.4.8.3	Signal generators for digital mobile radio transmission	13.5.2.13	Boundary scan testers
13.3.7.11	Dispersion measurement, optical-fiber	13.4.8.4	Analizers for digital mobile radio transmission	13.5.2.14	Burn-in board testers
13.3.7.12	Luminosity meters	13.4.8.5	Geographical radio-coverage analysis systems	13.5.2.15	Wafer test systems
13.3.7.13	Fiber-optic measuring equipment, miscellaneous	13.4.8.6	Type-approval test systems	13.5.2.16	IC testers for curved connections
13.3.7.14	Spectroscopy equipment	13.4.9	Digital-measurement equipment	13.5.2.17	TFT array testers
13.3.7.15	Probe preparation for spectroscopy	13.4.9.1	Logic generators, word generators	13.5.3	Test systems for photovoltaics
13.3.8	Calibration systems for non-electric systems	13.4.9.2	Logic testers	13.5.3.1	Solar simulators, Flasher
13.3.9	Accessories for non-electric measuring systems	13.4.9.3	Logic analyzers	13.5.3.2	PV module simulators, I-V curve adjustment for inverters
13.4	Measurement technology for electrical parameters	13.4.9.4	Digital-measurement equipment, miscellaneous	13.5.3.3	Inverters
13.4.1	General-purpose measurement equipment	13.4.10	Communication test equipment	13.5.3.4	Test systems for photovoltaics, miscellaneous
13.4.1.1	Voltmeters	13.4.10.1	ISDN analyzers	13.5.4	Automated test systems for special purposes
13.4.1.2	Current meters	13.4.10.2	Sonet/SDH test equipment	13.5.4.1	Optical test
13.4.1.3	Power meters	13.4.10.3	ATM analyzers	13.5.4.1.1	Optical circuit-board test systems
13.4.1.4	Multimeters, voltmeters	13.4.10.4	LAN analyzers	13.5.4.1.2	X-ray test systems
13.4.1.5	Resistance meters	13.4.10.5	WAN analyzers	13.5.4.1.3	Automatic solder-paste print inspection equipment
13.4.1.6	Capacitance meters	13.4.10.6	SS#7 signaling testers	13.5.4.1.4	Automatic solder-site inspection equipment
13.4.1.7	Inductivity meters	13.4.10.7	PCM/PDH test equipment	13.5.4.1.5	Optical display test
13.4.1.8	Impedance meters	13.4.10.8	CATV measurement equipment	13.5.4.1.6	Fiber-optic connector geometry testing systems
13.4.1.9	Function generators	13.4.10.9	TV and radio measurement equipment	13.5.4.1.7	Optical test equipment, miscellaneous
13.4.1.10	Signal generators	13.4.11	Bus test systems	13.5.4.2	Electrical test
13.4.1.11	Pulse generators	13.4.11.1	CAN-bus test systems	13.5.4.2.1	High-ohm testers for R and I
13.4.1.12	Oscilloscopes, analog	13.4.11.2	USB-bus test systems	13.5.4.2.2	Automatic high-voltage test equipment
13.4.1.13	Oscilloscopes, digital	13.4.11.3	PCI-bus test systems	13.5.4.2.3	Automatic power-semiconductor test equipment
13.4.1.14	Transients recorders	13.4.11.4	Field-bus test systems	13.5.4.2.4	Electro-optical function testers
13.4.1.15	Timer/counter equipment	13.4.12	Peripheral equipment	13.5.4.2.5	In-line test stations
13.4.1.16	Electronic ballasts for measurement purposes	13.4.12.1	Laboratory mains equipment	13.5.4.2.6	Electrical test systems, miscellaneous
13.4.1.17	Powerline measurement equipment IEC 1000-3-3	13.4.12.2	Measured-variable converters	13.5.4.3	Process control
13.4.1.18	Relay switching systems	13.4.12.3	Multiplexers for measurement purposes	13.5.4.3.1	Solderability testers
13.4.1.19	Measurement equipment, miscellaneous	13.4.12.4	Measurement data transmission equipment	13.5.4.3.2	Reflow profilers
13.4.1.20	Calibration equipment	13.4.12.5	Date loggers	13.5.4.3.3	Process control, miscellaneous
13.4.2	Accessories for general-purpose measurement equipment	13.4.12.6	Laboratory instrumentation accessories	13.6	Conveyors, handling systems, test adapters
13.4.2.1	Test cables	13.4.12.7	Standards for measurement/testing	13.6.1	Handling
13.4.2.2	Probes	13.4.12.8	Measurement data acquisition systems	13.6.1.1	SMD handlers for test purposes
13.4.2.3	Accessories, miscellaneous	13.4.13	Protective-measure test devices	13.6.1.2	Feeder equipment for component testing
13.4.3	Audio measurement equipment	13.4.13.1	Ground test equipment	13.6.1.3	Component-sorting equipment
13.4.4	RF measurement equipment	13.4.13.2	Insulation testers	13.6.1.4	In-line handling equipment
13.4.4.1	Signal generators	13.4.13.3	Short-circuit localization devices	13.6.1.5	Wafer probers
13.4.4.2	Sweep generators	13.4.13.4	Safety standards test systems (VDE, UL, TÜV, etc.)	13.6.1.6	Fault-location display systems
13.4.4.3	Noise sources	13.4.13.5	Induction high-voltage testers	13.6.1.7	Stamp equipment
13.4.4.4	Power meters	13.5	Test and measurement systems	13.6.1.8	Board handling systems
13.4.4.5	Frequency counters	13.5.1	Measurement systems for component testing	13.6.1.9	Handling systems, miscellaneous
13.4.4.6	Spectrum analyzers	13.5.1.1	Test systems for passive components	13.6.2	Test aids
13.4.4.7	Measuring receivers	13.5.1.2	Test systems for coilware	13.6.2.1	Test pins
13.4.4.8	Network analyzers, scalar/vector	13.5.1.3	Relay testers	13.6.2.2	Sample-handling accessories
13.4.4.9	Noise figure meters	13.5.1.4	Semiconductor test systems	13.6.2.3	Test sockets for components
13.4.4.10	Reflectometers	13.5.1.5	IC testers, digital	13.6.2.4	Probe cards
13.4.4.11	RF test equipment, miscellaneous	13.5.1.6	IC testers, analog	13.6.2.5	Test probe head positioners
13.4.5	Microwave measurement equipment	13.5.1.7	Mixed-signal test systems	13.6.3	Adapters
13.4.6	Accessories for RF and μW measurement equipment	13.5.1.8	CPU testers	13.6.3.1	Hydraulic adapters for unpopulated circuit carriers
13.4.6.1	RF measurement cables	13.5.1.9	Memory IC testers	13.6.3.2	Vacuum needle adapters
13.4.6.2	Measurement bridges	13.5.1.10	Semiconductor burn-in test systems	13.6.3.3	Pressure foot adapters
13.4.6.3	Reflection bridges	13.5.2	Test systems for assemblies and hybrids	13.6.3.4	Pneumatic adapters
13.4.6.4	Calibration kits	13.5.2.1	Bare-board testers	13.6.3.5	Moving-probe test adapters
13.4.6.5	High-frequency test tips			13.6.3.6	Needle cards
13.4.6.6	Attenuators, power splitters			13.7	Laboratory/test station equipment
13.4.6.7	Couplers			13.7.1	Environmental and other simulation
13.4.6.8	Mixers			13.7.1.1	Mains interference simulators
13.4.6.9	Relay multiplexers			13.7.1.2	Solar-simulation equipment for testing
13.4.6.10	Accessories for RF and μ W measurement equipment, miscellaneous				
13.4.7	EMI measuring equipment				

13.7.1.3	Vibration test equipment	13.7.2.3	Test bays and walk-in, open-plan facilities	13.7.3.2	Laboratory measurement aids, non-electrical
13.7.1.4	Test area equipment, miscellaneous specialized	13.7.2.4	Environmental simulation aids, miscellaneous	13.7.3.3	Laboratory measurement accessories, miscellaneous
13.7.2	Environmental simulation	13.7.3	Bench-top test and measurement equipment		
13.7.2.1	Temperature and climatic testing cabinets	13.7.3.1	Laboratory measurement aids, electrical		
13.7.2.2	Stress-screening and Shock-test chambers				

14. Product finishing

14.1	Repair and rework	14.4.2	Burn-in ovens	14.5.6.4	Front panels, customized
14.1.1	Consumables	14.4.3	Laser trimmers	14.5.6.5	Housing seals
14.1.1.1	Sprays for electronics	14.5	Housings	14.5.6.6	Knobs
14.1.1.2	Zipper closure encapsulation	14.5.1	System racks	14.5.6.7	Rubber and plastic parts for housings
14.1.1.3	Shrink-wrap products	14.5.1.1	19" racks and cabinets	14.5.6.8	Distance assembly fittings
14.1.1.4	Protective tubes/sleeves	14.5.1.2	HF-shielded housings	14.5.6.9	Housing cover accessories
14.1.1.5	Insulating sleeving	14.5.1.3	Control cabinets	14.5.6.10	Conduits
14.1.1.6	Rework aids	14.5.1.4	Modular systems, metric	14.5.6.11	Filters, air
14.1.2	Repair systems	14.5.1.5	Sheet metal structures	14.5.6.12	Accessories for housings, miscellaneous
14.1.2.1	Solder removal/resoldering equipment	14.5.1.6	System racks for telecommunications	14.5.6.13	Slide bearings
14.1.2.2	Solder paste systems	14.5.2	Wall-mountable and desktop housings	14.5.6.14	Power distribution components
14.1.2.3	SMT repair workstations	14.5.2.1	19" inserts and housings	14.5.6.15	Handles, housing
14.1.2.4	Semi-automated repair workstations	14.5.2.2	19" frames	14.5.6.16	Heat shields
14.1.2.5	Laser repair workstations	14.5.2.3	19" accessories	14.6	Electronic protective devices (EMC/ESD)
14.1.2.6	PCB-repair welding units	14.5.2.4	Console housings	14.6.1	EMC-conducted
14.1.2.7	Hot-air fans	14.5.2.5	Computer housings	14.6.1.1	EMC-type plug-in connectors
14.1.2.8	Repair workstations, miscellaneous	14.5.2.6	Stand-alone housings	14.6.1.2	EMC leads
14.1.3	Hand tools	14.5.2.7	Table-top housings	14.6.1.3	EMC filters
14.1.3.1	Insertion hand tools	14.5.2.8	Wall-mountable housings	14.6.1.4	SM EMC suppression filters
14.1.3.2	Compressed-air hand tools	14.5.2.9	Wall-mountable and desktop housings, miscellaneous	14.6.2	EMC-radiated
14.1.3.3	Electric hand tools	14.5.3	Small-scale housings	14.6.2.1	Shielding (EMC)
14.1.3.4	Hand tools	14.5.3.1	Sheet metal housings	14.6.2.2	Housings with EMC protection
14.1.3.5	Special electronics hand tools	14.5.3.2	Plastic housings	14.6.2.3	HF seals
14.1.4	Tools, miscellaneous	14.5.3.3	Hand-held housings	14.6.2.4	Metal seals for housings
14.1.4.1	Glass-fiber cutting units	14.5.3.4	Milling housings	14.6.2.5	Polymer seals for housings
14.1.4.2	Pneumatic cutters	14.5.3.5	Mini housings, miscellaneous	14.6.2.6	Conductive tapes/cloth
14.1.4.3	Optical-fiber splicing equipment	14.5.4	Special housings	14.6.3	EMP protection devices
14.1.4.4	Special machines	14.5.4.1	Foam shipping inserts	14.6.3.1	EMP protection elements/modules
14.2	Programming equipment, memory components	14.5.4.2	Specialized component enclosures	14.6.3.2	NEMP protective equipment
14.3	Protective coating and potting	14.5.4.3	Portable cases	14.6.4	ESD protection devices
14.3.1	Protective coating systems	14.5.4.4	Unit housings, miscellaneous	14.6.4.1	ESD mats
14.3.2	Protective coating laminators	14.5.4.5	Special housings, miscellaneous	14.6.4.2	ESD floors
14.3.3	Protective coating agents	14.5.5	Feed-throughs	14.6.4.3	ESD protection devices, miscellaneous
14.3.3.1	Protective lacquers	14.5.5.1	Feed-throughs, mechanical transmission	14.6.5	Protection components, miscellaneous
14.3.3.2	Encapsulating materials	14.5.5.2	Insulated grommets, glass	14.6.5.1	Suppressor chokes
14.3.3.3	Protective coatings, miscellaneous	14.5.5.3	Insulated grommets, ceramic	14.6.5.2	Shielded chokes/converters
14.4	Hybrids	14.5.6	Accessories for housings	14.6.5.3	Low-voltage protection equipment
14.4.1	Systems for processing thick-film pastes	14.5.6.1	Card slots	14.6.5.4	EMC ferrite cores
		14.5.6.2	Covers		
		14.5.6.3	Front panels for assemblies/devices	14.6.5.4	

15. Production logistics and material-flow technology

15.1	Information acquisition	15.4.2.3	Production planning and control (PPC)	15.5.2	Marking and identification
15.1.1	Demand forecast tools	15.4.2.4	Modeling and simulation of logistics systems	15.5.2.1	Printing
15.1.2	Real-time communication platforms	15.4.2.5	Developing logistics strategies and concepts	15.5.2.1.1	Printing/marketing equipment, miscellaneous
15.1.3	Resources for evaluating information quality	15.4.2.6	Training	15.5.2.1.2	Screen-print lettering tools
15.2	Purchasing	15.4.2.7	Education for logistics	15.5.2.1.3	Bar-code printer systems
15.2.1	e-Commerce	15.4.2.8	Process optimization	15.5.2.1.4	Inkjet marking equipment
15.2.2	Supply-chain management	15.4.2.9	Quality analysis	15.5.2.1.5	Engraving equipment
15.2.3	EDI	15.4.3	Documentation and information for logistics	15.5.2.1.6	Component surface pre-marking equipment
15.3	Merchandise management systems	15.4.3.1	Books on logistics	15.5.2.1.7	Tampon printers
15.4	Logistics management	15.4.3.2	Trade journals/magazines for the logistics sector	15.5.2.1.8	Laser marking systems for components
15.4.1	Consulting and planning for logistics management	15.4.3.3	Publications, miscellaneous	15.5.2.1.9	Lettering equipment, miscellaneous
15.4.1.1	Research in the logistics sector	15.5	Material-flow control	15.5.2.2	Badges, labels
15.4.1.2	Professional and trade associations	15.5.1	Shop information systems	15.5.2.2.1	EPROM labels
15.4.1.3	Information services and training	15.5.1.1	ODA equipment	15.5.2.2.2	Roll labels
15.4.1.4	Logistics consulting	15.5.1.2	Industrial terminals	15.5.2.2.3	Self-adhesive labels/signs
15.4.2	Engineering, development and planning for logistics	15.5.1.3	Information-networking systems for CIM	15.5.2.2.4	Bar-code labels
15.4.2.1	Planning of material flow	15.5.1.4	Communications equipment, miscellaneous	15.5.2.2.5	Colored aluminum signs
15.4.2.2	Planning of information flow	15.5.1.5	Organizational aids, miscellaneous	15.5.2.2.6	Metal signs
				15.5.2.2.7	Lettering (on labels)
				15.5.2.3	RFID Systems
				15.5.2.3.1	Transponders, active
				15.5.2.3.2	Transponders, passive

15.5.2.3.3	Smart label systems	15.6.4.3	Circular conveyor systems	15.8	Packaging technology
15.5.2.3.4	Readers, reader stations	15.6.4.4	Transport equipment, miscellaneous	15.8.1	Materials
15.5.2.3.5	System integration			15.8.1.1	Packaging materials
15.5.2.4	Other marking systems	15.6.4.5	Loading and conveyor aids, miscellaneous	15.8.1.2	Blister belting strips
15.5.2.4.1	Contactless marking systems	15.7	Storage technology and commissioning systems	15.8.1.3	Blister belt cover strips
15.5.2.4.2	Pre-mark flaming systems			15.8.1.4	Belt spools for component belting
15.5.2.4.3	Coding systems	15.7.1	Pallets, bins and containers	15.8.1.5	Vacuum shrink-wrapping equipment
15.5.2.4.4	Laser markers	15.7.1.1	Cassettes and cassetting equipment	15.8.1.6	Sheathing/protection aids, miscellaneous
15.5.2.4.5	Identification data carriers	15.7.1.2	Pallets and palletizing systems	15.8.1.7	Recyclable packaging
15.5.2.4.6	Marking inks/dyes	15.7.1.3	SMD coil-stacking systems	15.8.1.8	Cardboard boxes
15.5.2.4.7	Printer systems for PCBs	15.7.1.4	Component feed equipment	15.8.2	Packaging technology
15.5.2.4.8	Labeling equipment and tools, miscellaneous	15.7.1.5	Commissioning equipment	15.8.2.1	Packaging machines for component packaging
15.5.2.4.9	Inkers	15.7.1.6	Warehouse equipment/units, miscellaneous	15.8.2.1.1	Belting equipment
15.5.2.4.10	Marking equipment and tools, miscellaneous	15.7.1.7	Rotary cassettes for components	15.8.2.1.2	Packaging machines for component packaging
15.5.3	Identification		Transport containers	15.8.2.2	Packaging machines for equipment packaging
15.5.3.1	Laser scanners	15.7.1.8	Containers and storage for PCBs	15.8.2.3	Machines for compiling load units
15.5.3.2	Contactless identification parts	15.7.2	PCB containers	15.8.2.3.1	Film-sealing systems
15.5.3.3	Marking/identification software	15.7.2.1	PCB cases	15.8.2.3.2	Heat-shrink wrap equipment
15.5.3.4	Bar-code readers	15.7.2.2	PCB cassettes	15.8.2.3.3	Stretch-wrap packaging systems
15.5.3.5	Identification systems, miscellaneous	15.7.2.3	Stencil storage equipment		Strapping systems
15.6	Transportation and conveyor technology	15.7.2.4	Film storage equipment	15.8.2.3.4	Robots for packaging technology
15.6.1	Vertical conveyors and lifting equipment	15.7.2.5	Containers, miscellaneous	15.8.3	Robots for packaging technology
15.6.2	Automatic controlled transport vehicles	15.7.2.6	Shelving and storage systems	15.8.4	Packaging machines, miscellaneous
15.6.2.1	Automatic controlled transport vehicles and trolleys	15.7.3	Fixed-rack shelving	15.8.5	Accessories for storage technology
15.6.2.2	Pallet trucks	15.7.3.1	Flow shelves	15.8.6	Scales
15.6.2.3	Driverless transport systems	15.7.3.2	Pallet and high-bay racking systems	15.9	Complete solutions and turnkey systems for logistics
15.6.2.4	Shelf control equipment	15.7.3.3	Carrousel storage	15.9.1	Planning services for logistics systems
15.6.2.5	Automatic controlled transport vehicles, miscellaneous	15.7.3.4	Paternoster storage systems	15.9.2	Consulting for logistics systems
15.6.3	Continuous conveyors	15.7.3.5	Moveable shelves	15.9.3	Delivery of turnkey systems
15.6.3.1	Band and belt conveyors	15.7.3.6	Cantilever-type shelves		
15.6.3.2	Chain conveyors	15.7.3.7	Small-parts storage		
15.6.3.3	Roller conveyors	15.7.4	Order-picking, sorting and distribution technology		
15.6.3.4	Continuous conveyors, miscellaneous	15.7.4.1	Order-picking shelves		
15.6.4	Suspension tracks	15.7.4.2	Order-picking carts and equipment		
15.6.4.1	Manual suspension tracks	15.7.4.3	Automatic order-picking systems		
15.6.4.2	Electric suspension tracks				

16. Electronic Manufacturing Services (EMS)

16.1	EMS for component/chip carrier manufacturing	16.2	EMS for component assembly and device manufacturing	16.2.17	Labeling
16.1.1	Layout services			16.2.18	Laser marking
16.1.2	Artwork production services	16.2.1	Layout services	16.2.19	Production services for component construction and equipment manufacturing, miscellaneous
16.1.3	Screen production services	16.2.2	Artwork production services		Lacquering subcontractors
16.1.4	ML lamination/drilling services	16.2.3	Solder mask services	16.2.20	16.3
16.1.5	Contacting services	16.2.4	Screen production services		Development-related services
16.1.6	Coating services	16.2.5	Hybrid implementation	16.3.1	Prototype manufacturing PCBs
16.1.7	Laser engraving	16.2.6	Component insertion	16.3.2	Prototype manufacturing housings
16.1.8	Wire erosion	16.2.7	Bonding bare dies on PCBs	16.3.3	Prototype manufacturing equipment
16.1.9	Electrolyte reprocessing	16.2.8	Flip chip insertion	16.3.4	Prototype manufacturing, miscellaneous
16.1.10	Laser welding	16.2.9	Component insertion under cleanroom conditions		
16.1.11	Laser cutting and singulation of IC carriers	16.2.10	Metal machining		
16.1.12	Laser repair of components/sub-assemblies	16.2.11	Manufacturing precision drilling and milling parts		
16.1.13	Plating services	16.2.12	Housings		
16.1.14	Reflow services	16.2.13	Assembly and device manufacturing		
16.1.15	Surface treatment	16.2.14	EMD shielding		
16.1.16	Production services for component/chip carrier manufacturing, miscellaneous	16.2.15	Coating services		
		16.2.16	Cabling		

17. Production subsystems

17.1	Assembly and handling technology	17.1.9	Components for robot systems	17.2.1.8	Linear drives
17.1.1	Assembly systems, assembly centers	17.1.10	Robotic assembly lines	17.2.1.9	Magnetic actuators
17.1.2	Assembly components and supplies	17.1.11	Assembly and handling technology, other	17.2.1.10	Actuators, miscellaneous
17.1.3	Assembly equipment	17.2	Drive technology	17.2.2	Gears
17.1.4	Linking and transport equipment	17.2.1	Motors	17.2.2.1	Gearred motors
17.1.5	Positioning systems	17.2.1.1	AC motors	17.2.2.2	Linear gears
17.1.6	Automatic assemblers	17.2.1.2	Brushless motors	17.2.2.3	Gears, miscellaneous
17.1.7	Industrial Robots	17.2.1.3	DC motors	17.2.3	Actuators, miscellaneous
17.1.8	Service robots	17.2.1.4	Torque motors	17.2.3.1	Translational direct drives
		17.2.1.5	Micromotors	17.2.3.2	Resolvers
		17.2.1.6	Stepper motors	17.2.3.3	Pneumatic actuators
		17.2.1.7	All-current motors	17.2.3.4	Positioning drives, miscellaneous

17.2.4	Accessories for actuators	17.2.4.9	Electromotor device parts, miscellaneous	17.3.1.4	Quality management systems
17.2.4.1	Driver PCBs			17.3.2	Assemblies for control applications
17.2.4.2	Electromotor controllers/regulators	17.3	Systems for production data acquisition (PDA)		Regulator assemblies
17.2.4.3	Roller bearings	17.3.1	Production	17.3.3	Microcomputer subsystems
17.2.4.4	Rail guides	17.3.1.1	PPC systems	17.3.4	MPC assemblies
17.2.4.5	Ball-bushing guides	17.3.1.2	Production-line simulation systems	17.3.5	Controllers, programmable
17.2.4.6	Linear guides			17.3.6	Controllers, static signal
17.2.4.7	Linear systems	17.3.1.3	Production-documentation generation aids	17.3.7	
17.2.4.8	Threaded spindle drives				

18. Production materials/equipment, environmental technology and clean-room technology

18.1	Preliminary products and semi-finished goods, metallic	18.2.1.13	Molded ceramic parts/semi-finished goods, miscellaneous	18.4.3.2	Lighting equipment
18.1.1	Sheet metal, plates	18.2.1.14	Plastic parts, miscellaneous	18.4.3.3	Floor coverings, specialized
18.1.1.1	Strips, metal	18.2.1.15	Semi-finished goods in electrical engineering, miscellaneous	18.4.3.4	Climate control equipment
18.1.1.2	Laminations and metal foils			18.4.3.5	Modular workstation systems
18.1.1.3	Colored aluminum sheets	18.2.1.16	Insulated molded parts/semi-finished goods, miscellaneous	18.4.3.6	Monitoring-room equipment
18.1.2	Wires			18.4.4	ESD protection
18.1.2.1	Wires, bare			18.4.4.1	ESD working environment
18.1.2.2	Wires for component connections	18.2.2	Materials, miscellaneous	18.4.4.2	ESD personnel grounding
18.1.2.3	Copper wires, insulated	18.2.2.1	Masks (including UV-curable)	18.4.4.3	ESD floor systems
18.1.2.4	Silver wires, insulated	18.2.2.2	Sealants	18.4.4.4	ESD clean-room products
18.1.2.5	Wires, specialized cross-section	18.2.2.3	Seals	18.4.4.5	ESD protection
18.1.3	Springs	18.2.2.4	Foils, insulating	18.4.4.6	EGB workstation equipment
18.1.4	Plastics	18.3	Process materials	18.4.4.7	ESD packaging
18.1.4.1	Granulates	18.3.1	Lacquers	18.4.4.8	Antistatic products, miscellaneous
18.1.4.2	Conductive granulates	18.3.1.1	Photographic laminates (resists)	18.4.5	Work safety equipment
18.1.5	Cables	18.3.1.2	Protective lacquers	18.4.6	Plant fittings, miscellaneous
18.1.5.1	Ribbon cables	18.3.1.3	Solder mask lacquers	18.4.6.1	Power supplies higher than 3 kW
18.1.5.2	RF cables	18.3.1.4	Insulating paints/lacquers	18.4.6.2	Pressure-control systems
18.1.5.3	Coaxial cables	18.3.1.5	Conductive lacquers	18.4.6.3	Workshop equipment, miscellaneous
18.1.5.4	Round cables	18.3.2	Metals	18.4.6.4	Protection materials, miscellaneous
18.1.5.5	Stranded wires for mains/low frequency	18.3.2.1	Precious metals	18.5	Decontamination, cleaning, disposal (environmental management)
18.1.5.6	Cables, miscellaneous	18.3.2.2	Metals/alloys, pure/ultra-pure	18.5.1	Decontamination
18.1.6	Semi-finished goods	18.3.2.3	Metallic powders	18.5.2	Cleaners
18.1.6.1	Etched parts	18.3.2.4	Memory alloys	18.5.2.1	Cleaning brushes
18.1.6.2	Bimetallic parts	18.3.2.5	Structural mock-ups, metal	18.5.2.2	Solvents/cleaners
18.1.6.3	Lathed parts	18.3.2.6	Metals, miscellaneous	18.5.2.3	Defluxers
18.1.6.4	Ferrite parts	18.3.3	Chemicals	18.5.2.4	Stencil cleaners
18.1.6.5	Ferroelectric ceramicware	18.3.3.1	Electronics chemicals	18.5.2.5	Ultrasonic cleaning equipment
18.1.6.6	Memory components	18.3.3.2	Process chemicals, miscellaneous	18.5.2.6	Cleaning agents, miscellaneous
18.1.6.7	Galvanic molded parts	18.3.3.3	Solvents	18.5.3	Strippers
18.1.6.8	Graphite parts, pure/ultra-pure	18.3.3.4	Chemicals, miscellaneous	18.5.3.1	Photo-laminate strippers
18.1.6.9	Cooling parts	18.3.4	Insulating materials	18.5.3.2	Solder mask strippers
18.1.6.10	Laser-cut molded parts	18.3.4.1	Insulating resins	18.5.3.3	Tin strippers
18.1.6.11	Microstructure preliminary products	18.3.4.2	Laminating resins	18.5.3.4	Strippers, miscellaneous
18.1.6.12	Metal tubes	18.3.4.3	Impregnation insulating materials	18.5.4	Systems
18.1.6.13	Punch-pressed flexible parts	18.3.4.4	Insulating materials, miscellaneous	18.5.4.1	Final-cleaning equipment (before population)
18.1.6.14	Drawn parts/semi-finished goods	18.3.5	Plastics	18.5.4.2	Degreasing systems
18.1.6.15	Contact parts/semi-finished goods	18.3.5.1	Elastomers	18.5.4.3	Sterilization equipment, UV
18.1.6.16	Molded parts, miscellaneous	18.3.5.2	Polyester materials	18.5.4.4	Desalination equipment
18.1.6.17	Mechanical components, miscellaneous	18.3.5.3	Polyamides	18.5.4.5	Semi-aqueous cleaning systems
18.1.6.18	Semi-finished goods in electrical engineering, miscellaneous	18.3.5.4	Polymer materials, miscellaneous	18.5.4.6	Lead-frame cleaning systems
18.1.6.19	Semi-finished parts, metallic/mineral, miscellaneous	18.3.5.5	Antistatic PE foam	18.5.4.7	Film/surface cleaning units
18.2	Preliminary products and semi-finished goods, non-metallic	18.3.5.6	Plastics, miscellaneous	18.5.4.8	Low-profile component cleaning systems
18.2.1	Pre-products	18.3.6	Gases	18.5.4.9	Plasma-cleaning systems
18.2.1.1	Grommets, compound material	18.3.6.1	CFC substitutes	18.5.4.10	Screen-washing equipment
18.2.1.2	Duroplastic molded parts/semi-finished goods	18.3.6.2	Gases for semiconductor technology	18.5.4.11	Underwipe cleaning
18.2.1.3	Plastic preforms (elastomers)	18.3.6.3	Industrial gases	18.5.4.12	Rinsing equipment, specialized
18.2.1.4	Semi-finished goods, miscellaneous, organic	18.3.6.4	Gases, miscellaneous	18.5.4.13	Substrate-cleaning equipment
18.2.1.5	Resin-bonded molded parts/semi-finished goods	18.3.7	Dielectrics	18.5.4.14	Reflow cleaning equipment
18.2.1.6	Piezo-ceramicware	18.3.8	Process materials, miscellaneous	18.5.4.15	Workshop-cleaning units/machines
18.2.1.7	Molded glass parts/semi-finished goods	18.3.8.1	Glass powders	18.5.4.16	In-line washing stations
18.2.1.8	Resin-bonded fabric	18.3.8.2	Ceramic powders	18.5.4.17	Ionizers
18.2.1.9	Plastic semi-finished goods	18.3.8.3	Crystal materials	18.5.4.18	Cleaning equipment, miscellaneous
18.2.1.10	Industrial laminates (sheets, rods, tubes)	18.3.8.4	Compound materials	18.5.4.19	miscellaneous specialized
18.2.1.11	Thermoplastic molded parts/semi-finished goods	18.4	Plant equipment	18.5.4.20	Washing/rinsing equipment, miscellaneous specialized
18.2.1.12	Silicones and silicone parts	18.4.1	Clothing	18.5.4.21	Ultrasonic cleaning systems
		18.4.1.1	Antistatic clothing	18.5.5	Peripheral systems
		18.4.1.2	Clean-room garments	18.5.5.1	Post-treatment equipment, miscellaneous
		18.4.1.3	Clean-room footwear	18.5.5.2	Precleaning equipment, miscellaneous
		18.4.2	Furniture	18.5.6	Waste gas abatement
		18.4.2.1	Office/lab furniture	18.5.6.1	Waste gas abatement/exhaust extraction equipment
		18.4.2.2	Vibration-proof tables	18.5.6.2	Chip/dust extraction equipment
		18.4.2.3	Lab desks		
		18.4.2.4	Stand-up aids		
		18.4.3	Equipment		
		18.4.3.1	Workstations, specialized		

18.5.6.3	Waste disposal equipment, miscellaneous	18.6.4.1	Ion exchangers	18.7.2.2	Particle-monitoring equipment
18.5.6.4	Environmental protection equipment, miscellaneous	18.6.4.2	Heat exchangers	18.7.2.3	Ionization systems
18.5.7	Scraping	18.6.4.3	Cooling machines	18.7.2.4	Air ionization equipment, ozone-free
18.5.7.1	Scrap-electronics disassembly equipment	18.6.4.4	Exchangers, miscellaneous	18.7.2.5	Deionizers
18.5.7.2	Obsolete electronic parts reprocessing equipment	18.6.5	Armatures	18.7.2.6	Particle-free valves
18.6	Recirculation systems, supply, recycling	18.6.5.1	Valves, connectors	18.7.2.7	Flow visualization (clean rooms)
18.6.1	Preparation equipment	18.6.5.2	Vacuum valves	18.7.2.8	Valves for clean-room technology
18.6.1.1	Waste preparation equipment	18.6.5.3	Fittings/unions for fluids	18.7.3	Clean-room equipment
18.6.1.2	Ultra-pure water preparation equipment	18.6.5.4	Pumps and pumping systems	18.7.3.1	Wet-process workbenches
18.6.1.3	Preparation equipment, miscellaneous	18.6.5.5	Vacuum pumps	18.7.3.2	Clean-room mats
18.6.1.4	Reprocessing equipment, miscellaneous	18.6.5.6	Leakage test systems	18.7.3.3	Clean-room ovens
18.6.2	Consumables for preparation equipment	18.6.5.7	Armatures, miscellaneous	18.7.3.4	Clean-room dryers
18.6.2.1	Filter materials	18.6.6	Cleaning	18.7.3.5	Clean-room vacuum cleaners
18.6.2.2	Ultra-pure water filtration systems	18.6.6.1	Process-water purification equipment (recirculation)	18.7.3.6	Clean-room shelving/transport aids
18.6.2.3	Filtration equipment, miscellaneous	18.6.6.2	Waste-water treatment equipment	18.7.3.7	Clean-room cabinets, nitrogen-rinsed
18.6.2.4	Resist filter systems in recirculation	18.6.6.3	Etching-solvent reclamation equipment	18.7.3.8	Clean-room robotics equipment
18.6.2.5	Exhaust gas absorbers	18.6.6.4	Cleaning equipment, miscellaneous	18.7.3.9	Clean-room notice boards
18.6.2.6	Waste-water treatment chemicals	18.6.7	Recycling	18.7.3.10	Clean-room tunnels
18.6.2.7	Consumables, miscellaneous	18.6.7.1	Metal recycling	18.7.3.11	Clean-room consumables
18.6.3	Supply systems	18.6.7.2	Heat recovery systems	18.7.3.12	Clean-room packaging
18.6.3.1	Chemical supply/feed systems	18.6.7.3	Reclamation equipment, miscellaneous	18.7.3.13	Electrostatic control equipment
18.6.3.2	Ultra-pure gas supply systems	18.7	Clean-room technology	18.7.3.14	Clean-room accessories, miscellaneous
18.6.3.3	Ultra-pure water supply systems	18.7.1	Clean rooms	18.7.3.15	Clean-room fluid-handling aids
18.6.3.4	Rinse-water circulation systems	18.7.1.1	Clean rooms, built-in	18.7.3.16	Clean-room fittings, miscellaneous
18.6.3.5	Gas management systems	18.7.1.2	Manual-work areas, sealed	18.7.4	Clean-room equipment for personnel
18.6.4	Exchangers	18.7.1.3	Clean-room boxes, incl. walk-in	18.7.4.1	Air shower cabins, personnel
		18.7.1.4	Clean hoods	18.7.4.2	Clean-room clothing
		18.7.1.5	Flow boxes	18.7.4.3	Clean-room air locks
		18.7.1.6	Laminar flow equipment	18.7.4.4	Automatic shoe sole cleaners
		18.7.1.7	Dust-free workstations	18.7.4.5	Electrostatic control aids
		18.7.1.8	Vacuum boxes	18.7.4.6	Clean-room equipment, miscellaneous
		18.7.2	Clean-room maintenance and control		
		18.7.2.1	Clean-room filter elements		

19. Services

19.1	Information provision	19.2.3.3	Testing/adjusting of component connections	19.4.3	Process optimization
19.1.1	Technical books	19.2.4	Services for cable processing	19.4.3.1	Training
19.1.2	Technical journals and periodicals	19.2.4.1	Cabling	19.4.3.2	Education
19.1.3	Publications, miscellaneous	19.2.5	Test and measurement services	19.4.3.3	Process optimization
19.1.4	Databases, incl. online accessible	19.2.5.1	Test and test design services	19.4.3.4	Quality analysis
19.1.5	Product-information systems	19.2.5.2	Measurement and calibration services	19.4.4	Sales
19.1.6	Information, miscellaneous	19.2.5.3	Acceptance and approval services	19.4.4.1	Assembly sales
19.2	Production services	19.3	Used machines, systems, plants	19.4.4.2	Equipment sales
19.2.1	Production services for semiconductors	19.3.1	Plants	19.4.4.3	Used-electronics sales
19.2.1.1	Chip bonding	19.3.2	Machines	19.4.4.4	Electronic-equipment leasing
19.2.1.2	Chip packaging	19.3.3	Systems	19.4.4.5	Sales of production services
19.2.1.3	Contacting services	19.3.4	Used machines, systems and plants, miscellaneous	19.4.4.6	Sales, other
19.2.2	Services for material machining	19.4	Brainware and sales	19.5	Other services
19.2.2.1	Wire erosion	19.4.1	Consulting	19.5.1	Procurement services
19.2.2.2	Laser welding/cutting	19.4.1.1	Research institutes	19.5.2	Financial services
19.2.2.3	Plating subcontractors	19.4.1.2	Professional and trade associations	19.5.3	Parylene coatings
19.2.2.4	Surface treatment	19.4.1.3	Information services and training	19.5.4	Maintenance services
19.2.2.5	Metal machining	19.4.1.4	Consultants, miscellaneous	19.5.5	Repair services
19.2.2.6	Manufacturing precision lathed and milled parts	19.4.2	Engineering services	19.5.6	Disposal services
19.2.3	Production services for components	19.4.2.1	Production line optimization	19.5.7	Assembly parts packaging (product lines)
19.2.3.1	Belting services	19.4.2.2	Set-up concepts	19.5.8	Packaging of material and liquids
19.2.3.2	Inductive component/coiled-products manufacturing services			19.5.9	Component database generation
				19.5.10	Other services, miscellaneous