

Düsseldorf
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Manufacturing, Lifecycle & Obsolescence Management

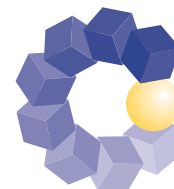
- 1.1** CDMO (Contract Development and Manufacturing Organization)
 - 1.1.1 General Product Development, Development & Design Transfer
 - 1.1.2 Prototyping
 - 1.1.3 Components (MedTech, Manufacturing, etc.)
 - 1.1.4 MedTech (Class I–III)
 - 1.1.5 Software as a Medical Device (SaMD)
 - 1.1.6 In Vitro Diagnostics (IVD)
 - 1.1.7 Drug-Device- & Combination Products
 - 1.1.8 Other Biotechnologies
- 1.2** Manufacturing Types
 - 1.2.1 Pre-Serial Manufacturing
 - 1.2.2 Serial & Mass Production, Variant Production
 - 1.2.3 Additive Manufacturing
 - 1.2.3.1 Additively Manufactured Components
 - 1.2.3.2 Rapid Prototyping
 - 1.2.3.3 Series-Ready Additive Components
 - 1.2.4 Cleanroom Manufacturing
 - 1.2.5 Finished Device Manufacturing
 - 1.2.6 White-Label & Private-Label Manufacturing
 - 1.2.7 Nanomanufacturing
- 1.3** Manufacturing Technologies & Automation
 - 1.3.1 Injection Molding Machines
 - 1.3.2 Extrusion Systems
 - 1.3.3 Assembly & Testing Systems
 - 1.3.4 Robotics & Collaborative Robotics
 - 1.3.5 Vision & Inspection Systems
 - 1.3.6 Cleanroom Technology
 - 1.3.7 Sterilization Services and Packaging
 - 1.3.7.1 Ethylene Oxide (EtO) Sterilization
 - 1.3.7.2 Gamma Sterilization
 - 1.3.7.3 Steam Sterilization
 - 1.3.7.4 Packaging Systems
 - 1.3.7.5 Packaging Materials
 - 1.3.7.6 Packaging Technologies
 - 1.3.7.7 Packaging Machinery
 - 1.3.8 Electronics Manufacturing Services (EMS)
 - 1.3.8.1 Assemblies
 - 1.3.8.2 Devices
- 1.4** Supply Chain Management
 - 1.4.1 Manufacturing Resilience
 - 1.4.2 Supply Chains, Dual Sourcing & Nearshoring
 - 1.4.3 Supplier Management

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Components, Modules & Systems

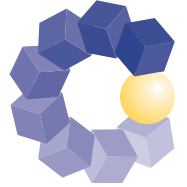
- 2.1** Electronics, Electrical Engineering & Sensor Technology
 - 2.1.1 Development-Oriented
 - 2.1.1.1 Electronics & Sensor Design
 - 2.1.1.2 Electronics & Sensor Development
 - 2.1.1.3 Electronics & Sensor Manufacturing
 - 2.1.1.4 Electronics & Sensor Assembly
 - 2.1.1.5 Electronics & Sensor Testing
 - 2.1.1.6 Electronics & Sensor Calibration

- 2.1.2 Component-Oriented: Electronics
 - 2.1.2.1 Custom Electronic Components
 - 2.1.2.2 Cables & Cable Harness Assembly
 - 2.1.2.3 Printed Circuit Boards (PCBs) & Integrated Circuits
 - 2.1.2.4 Analog Electronics
 - 2.1.2.5 Digital Electronics
 - 2.1.2.6 High-Frequency Technology (RF, Shielding)
 - 2.1.2.7 Microelectronics & Nanoelectronics
 - 2.1.2.8 Full-Service Electronics
 - 2.1.2.9 Power Supply, Energy Storage & Power Distribution (incl. UPS)
 - 2.1.2.10 Embedded Systems
 - 2.1.2.11 Laboratory Electronics
- 2.1.3 Component-Oriented: Sensor Technology
 - 2.1.3.1 Biosensors
 - 2.1.3.2 Pressure, Flow, Temperature, Motion, Position, Particle & Gas Sensors (Manufacturing & Monitoring)
 - 2.1.3.3 Image Sensors
 - 2.1.3.4 Optical Sensors
 - 2.1.3.5 Quantum Sensing
 - 2.1.3.6 Computer Vision
 - 2.1.3.7 Laboratory Sensors
- 2.2** Mechanics & Mechatronics
 - 2.2.1 Precision Metal Parts
 - 2.2.2 Plastic Components
 - 2.2.3 Tools & Molds
 - 2.2.4 Micromechanics & Microsystems Engineering
 - 2.2.5 Nanomechanics
 - 2.2.6 Optomechanics
 - 2.2.7 Adaptronics
 - 2.2.8 Electromechanics
 - 2.2.9 Precision Engineering
 - 2.2.10 Control Engineering
 - 2.2.11 Biomechatronics
- 2.3** Tubing Systems, Catheters & Wire Technology
 - 2.3.1 Catheter Systems
 - 2.3.2 Guidewires
 - 2.3.3 Single-Use Fluid Paths
- 2.4** Microfluidics
 - 2.4.1 Digital (Droplet-Based) Microfluidics
 - 2.4.2 Microfluidic Channels & Chambers
 - 2.4.3 X-on-a-Chip
 - 2.4.4 MEMS / MOEMS
- 2.5** Semiconductors
- 2.6** Superconductors
- 2.7** Magnetics
- 2.8** Valves & Actuators
- 2.9** Connectors
 - 2.9.1 Metal
 - 2.9.2 Plastics
 - 2.9.3 Electronics
 - 2.9.4 Other



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2.10	Optics & Photonics	4.5	Audit Management
2.10.1	Lenses & Optical Components	4.5.1	Audits
2.10.2	Light Sources	4.5.2	Supplier Qualification
2.10.3	MOEMS		
2.10.4	Laser Components	4.6	Notified Bodies
2.10.5	Imaging Modules		
2.10.6	Laser Processing	4.7	Authorized Representative (EU)
2.10.7	Surface Treatment		
2.10.8	End-of-Line Test Systems	4.8	Regulatory Intelligence
2.10.9	Measurement, Testing & Calibration Technology	4.8.1	MDR / IVDR / FDA Consulting
		4.8.2	KIVO
		4.8.3	Quantum Act
2.11	Coatings		
2.11.1	Metal Coatings	4.9	Segmentation by Regulatory Stage
2.11.2	Alloys	4.9.1	Concept Development & Patent Strategy
2.11.3	Plastics	4.9.2	Medical Device Classification
2.11.4	Biological & Biocompatible Coatings	4.9.3	Product Development (Consulting & Regulatory Consulting)
2.11.5	Functional Coatings (e.g. Antimicrobial)	4.9.4	Preclinical Development & Studies
2.11.6	Other Organic Coatings	4.9.5	Clinical Development, Studies, Clinical Evaluation & Clinical Affairs
2.12	Calibration & Metrology Services	4.9.6	Conformity Assessment & Certification
		4.9.7	Post-Market Surveillance (EU Market)
		4.9.8	International & Global Regulatory Strategy
3	Materials, Chemicals & Surface Technologies	4.10	Testing
3.1	Medical-Grade Plastics	4.10.1	Biocompatibility Testing
3.2	Glass & Bioglass	4.10.2	Material & Mechanical Testing
3.3	Elastomers & Silicones	4.10.3	Electrical Safety Testing
3.4	Metals & Alloys	4.10.4	Software Validation
3.5	Ceramics & Composite Materials		
3.6	Adhesives & Joining Technologies	4.11	Usability Engineering (IEC 62366)
3.7	Films & Foils	4.12	Labeling (UDI) & IFU
3.8	Bio-Based & Sustainable Materials	4.13	Product Transportation
3.9	Recycling & Circular Materials		
3.10	Materials for Energy- & Resource-Efficient Manufacturing	5	Software, Digitalization, Cybersecurity & Future Technologies
		5.1	System Integration & Interoperability
4	Compliance, Quality, Regulation & Market Access	5.1.1	Software Development Kits (SDK)
4.1	Quality Management	5.1.2	Interfaces
4.1.1	Quality Assurance	5.1.3	Middleware
4.1.2	Quality Management Systems & Electronic QMS		
4.2	Risk Management	5.2	MES & MOM Systems
		5.3	Internet of Things (IoT)
4.3	Consulting	5.4	ERP Systems (MedTech Manufacturing)
4.3.1	Regulatory Consulting	5.5	Traceability & UDI Software
4.3.2	Legal Consulting	5.6	Analytics & Artificial Intelligence in Manufacturing
4.3.3	Other Consulting	5.6.1	Computer Vision
		5.6.2	Automation
4.4	Regulatory Affairs	5.6.3	Digital Twins
		5.6.4	Predictive Maintenance
		5.6.5	Data Stream Analytics & Sensor Analytics



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5.7	Cybersecurity
5.7.1	for Medical Devices
5.7.2	for Manufacturing Equipment
5.7.3	for Electronic Systems
5.7.4	for Quantum Systems
5.7.5	Enabled by Quantum Technologies
5.8	Supply Chain Optimization & Production Control
5.8.1	Transparency & Risk Management of Global Supply Chains
5.8.2	IPC Standards
5.8.3	Agile & Flexible Supply Chains
5.9	Communication Modules (e.g. Bluetooth, WLAN, 5G)
5.10	Quantum Technology
5.11	Robotics
5.12	Agile Manufacturing
5.13	3D Printers