

Quality through Competence –
Services made to order



Services
in **EMS**

An initiative of the PCB
and Electronic Systems
Division within ZVEI



Services in EMS

• EMS – Who we are

EMS suppliers listed in this brochure are full service providers and members of the ZVEI professional association Electronic Components and Systems Division (ECS).

They offer comprehensive services to their customers for electronic assemblies, devices and systems. Their offers reach from development over manufacturing up to after sales service.

Electronics Manufacturing Services (EMS) is one of the growth sectors of the electronics industry.

• Quality and Competence – With the EMS Commitment Charter

These leading EMS companies have many years of experience in diverse applications and industries.

To guarantee service performance at the highest quality level the companies have submitted themselves to a Commitment Charter.

• Services made to order – a good thing

In order to give the greatest possible transparency to the entire service spectrum, the EMS value chain is divided into seven sequential added value sectors.

The following pages give a detailed overview of all the service modules within these added value sectors that are offered to individual customers.



Glossary

CEM – Contract Electronic Manufacturer

Service provider that offers to produce the customer's product

EMS – Electronic Manufacturing Services

Electronics Manufacturing Services (EMS) covers the complete make-to-order production of electronic components, devices and systems. Their offers reach from development over manufacturing up to after sales service

ODM – Original Design Manufacturer

Contract manufacturer, like EMS, that brings in its own designs and a greater focus on engineering / development competence

OEM – Original Equipment Manufacturer

Assembler and marketer of its own products or a manufacturer that purchases the products or components of another manufacturer for sale after integrating them into its own products as an added value (customized)

SCM – Supply Chain Management

Management and optimization of the company wide logistic value chains

TCO – Total Cost of Ownership

Comprehensive costs control along the entire supply chain of a product, including customer relevant materials and processes

THT - Through-Hole-Technology

Insertion of wired component parts

SMT – Surface Mount Technology

Insertion of surface mounted components

COB - Chip-on-Board

Direct assembly of raw chips on printed circuit boards, flip chip mounting of raw unpackaged chips directly on the circuit carrier

ICT - In-Circuit-Testing

Electronic testing method for testing the presence and correct function of components

AOI – Automatic Optical Inspection

Visual control of printed circuit boards and assemblies

EOL - End-Of-Life

All activities concerning the planning, management and the replacement of components that have been phased out or are scheduled to be phased out

Legal notice

Services in EMS

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• After Sales Services



Comprehensive services after product delivery

• Modules

- Complaint management
- Telephone customer service
- Documented repairs
- Repair for externally manufactured products
- Repair data base/evaluation for the customer
- Spares provisioning
- Replacement, redesign
- End-of-Life services (EOL)

Your EMS supplier commits to

- warranty processing for manufactured or in service products
- error analysis, identification and repair through the use of documented quality processes
- the testing of the repaired products before delivery to the customer
- the documentation and feedback of the knowledge gained for improvement of the initial production



The commitment refers to the description of the added value sectors represented here.

: Added value sectors



: Development

Development of hardware and software for electronic and mechatronic assemblies, devices and systems



: Design

Customized design of printed circuit boards from the component level up to devices and systems



: Test concept

Development of inspection concepts using quality and reliability measurement procedures



: Material management

Purchasing and supplying the production with the necessary parts and materials



: Production

Manual and automated fitting, testing and assembly of components, devices and systems using state of the art manufacturing equipment and technologies



: Logistics and distribution

Organization, controlling and fulfilment of the entire material and goods supply chain, including on time delivery of the ordered quantity



: After Sales Service

Comprehensive services after product delivery

⋮ Logistics and distribution



Organization, controlling and fulfilment of the entire material and goods supply chain, including on time delivery of the ordered quantity

⋮ Modules

- Supply of customer specific logistics concepts
- International logistics
- Deliver to end users
- Labelling and packaging according to customer's request
- Fulfilment
- Supply Chain Management
- Traceability
- Customized packaging design

Your EMS supplier commits to

- the on time supply of products in the agreed upon quantity
- analysis and suggestion of meaningful logistic concepts
- the documentation of the services performed



The commitment refers to the description of the added value sectors represented here.

Development

Development of hardware and software for electronic and mechatronic assemblies, devices and systems



Development

Modules

- Production of product requirement specifications including conceptualization and evaluation
- Product and component development
- Hardware as well as software development
- Definition of the assembly and interconnection technology
- Element evaluation and definition
- Test concept
- Prototypes
- Packaging design
- Product verification and certification
- Interface management to customer development

Your EMS supplier commits to

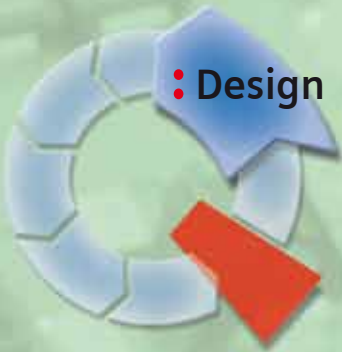
- teamwork with the conception, design and development through the use of efficient development tools
- confidentiality and customer specific co-operation
- a detailed tender of the specific service
- the observance of milestones and target dates
- the supply of qualified processes, equipment and personnel



The commitment refers to the description of the added value sectors represented here.

⋮ Design

Customized design of printed circuit boards from the component level up to devices and systems



⋮ Modules

- Layout of the electrical circuit
- Definition of the assembly and interconnection technology
- Component selection including alternative designs for cost, manufacturing, testing
- Prototypes
- Reviews
- Reliability tests

Your EMS supplier commits to

- teamwork throughout the design phase
- confidentiality and customer specific co-operation
- support during the realization of the application
- the observance of standards and design rules



The commitment refers to the description of the added value sectors represented here.

⋮ Production



Manual and automated fitting, testing and assembly of components, devices and systems using state of the art manufacturing equipment and technologies

⋮ Modules

- Conception and implementation of production processes
- Construction and structure of test systems including software
- Sample and prototype manufacturing
- Assembly of electronic components
- Device and system construction
- Performing customer specific tests
- In-house surface treatment and conditioning

Your EMS supplier commits to

- confidentiality and customer specific co-operation
- the supply of qualified processes, equipment and personnel
- guarantee of the agreed upon appropriate quality and reliability
- the documentation and guarantee of the reproducibility of the manufacturing processes
- quality and environmental management



The commitment refers to the description of the added value sectors represented here.

• Test concept

• Test concept

Development of inspection concepts through the use of quality and reliability measurement procedures

• Modules

- Circuit analysis
- Determination of the depth of testing
- Development of test concepts
- Performing customer specific tests

by using the following test procedures:

- Optical test procedures
 - Manual visual inspection
 - Automatic optical inspection (AOI)
 - Automatic X-ray inspection (AXI)
- Electrical test procedures
 - In Circuit Test (ICT)
 - Function test (FT)
 - Flying Probe Test (FP)
 - Boundary Scan Test (BS)
 - System Test (ST)
- Dynamic endurance testing
 - Vibration
 - Temperatures changes
 - Climatic

Your EMS supplier commits to

- the development of an inspection concept co-ordinated with the customer
- the implementation of the defined inspection concept in production
- guarantee of the agreed upon appropriate quality and reliability
- the adherence to and documentation of the agreed upon test depth

The commitment refers to the description of the added value sectors represented here.

⋮ Material management

Purchasing and supplying the production with the necessary parts and materials



⋮ Material management

⋮ Modules

- Consultation during the selection of electronic and mechanical components
- Strategic and operational procurement
- Supply Chain Management
- customized procurement procedures
- Allocation management
- International supplier selection
- Supplier development
- Inventory management
- Material logistics
- End-of-Life management of components

Your EMS supplier commits to

- the guarantee of market and environmentally sound supply of the production with raw material, auxiliary material and fuels, assemblies and semi-manufactured goods
- the supply of qualified processes, equipment and personnel
- procurement from reliable delivery sources
- timely information on component discontinuation notices

The commitment refers to the description of the added value sectors represented here.

⋮ ZVEI members

The following ZVEI members

- offer the customers customized services
- guarantee the competences required by the services offered
- commit themselves to quality and environmental management
- specify with the customer the desired results and performance characteristics
- consider the easy identification of the structure of the added value sectors in the services offered
- commit themselves to implement at least two of the listed service modules in each added value sector
- fulfil the individual sectors assigned in the Commitment Charter



ZVEI:

PCB and Electronic Systems

As of: October 2010. A current list of the ZVEI companies participating in this initiative is available in the internet under www.zvei.org/services-in-ems