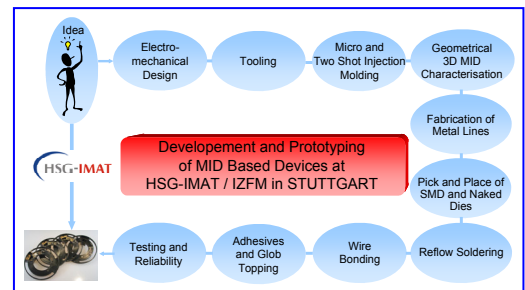


# Technical Equipment and Methods

HSG-IMAT is equipped with a comprehensive pool of technical equipment, processes and measuring methods, especially for research, development and qualifying of MID. HSG-IMAT supports customers from the idea of a new product over prototyping and optimization steps to the qualified product. Services in assembly and packaging technology, injection moulding, tooling, measurements and environmental testing are also provided by HSG-IMAT.



## Technical equipment

### ■ Mechanical Processing

- High Speed Cutting (with CAD/CAM): Fehlmann Picomax 60 M and Primacon 24 Compact Cell
- Ultraprecision Machining: PRECITECH Freeform 700A (Five Axis UPM)
- Precision Turning Machine: Benzinger GoFuture B2 (Two Axis)
- µEDM: Sarix SR-VHPM

### ■ Injection Molding and Transfer Molding

- Arburg Allrounder 370 A 600 – 70/70 (Two Shot) with micro injection molding module
- Arburg Allrounder 375 V (Vertical)
- Battenfeld Microsystem 50
- Boschman Unistar Molding System with film assisted molding technology

### ■ Printing Technology

- Aerosol Jet®: Optomec M®D 300
- Inkjet: Schmid DoD 300 Inkjet System
- Pad printer: Tampoflex miniSeal80
- Screen printer: DEK 248

### ■ Assembly and Packaging Technology

- Automated SMD assembly system: heeb inotec Inoplacer HP advance
- Automated 3D assembly cluster: 4 inline machines with wafer handling, dispensing units, optical inspection etc.: Häcker automation
- Vapour phase reflow oven: IBL SLC-500
- Convection reflow soldering system: SMT XXS N<sub>2</sub>
- High speed deep access fine wire wedge bonder: Hesse & Knipps Bondjet BJ820 PIQC
- Semi-automatic thermosonic ball/wedge bonder: F&K Delvotec 5610
- Manual flipchip bonder: Finetech Fineplacer 145
- Semi-automatic bondtester: Dage Series 4000
- Micro resistance compacting, spot and parallel welding unit: Miyachi Unitek
- Atmospheric plasma pretreatment: Plasmatreat
- CO<sub>2</sub> snow jet cleaning: acp JetStation JS-121

### ■ Hot Embossing Equipment

- Hot embossing tool: Schmidt ServoPress 420 LV

### ■ Laser Processing

- 2x LPKF MicroLine 3D 160i (Spot size: 60µm and 85µm)
- LPKF MicroLine 3D-UV

### ■ Selective Electroless Plating of Plastics

- Process for LPKF-LDS® technology (LCP, PA, PBT)
- Process for LCP (Cu/Ni/Au)

### ■ PVD

- Creavac CREAMET 750-CL2

### ■ Physical and Chemical Analysis

- SEM: JEOL JSM-6490LV with integrated tensile test equipment and EOL TESCAN 5130 with EDX
- X-Ray spectrometer: Fischerscope XDVM®-µ
- X-Ray and computed tomography: XTEK HMXST CT 160 micro focus CT-sys
- Thermographic camera: InfraTec VarioCAM® hr
- FT-IR spectrometer: Bruker Vector 22 with ATR Device Golden Gate (diamond)
- White light interferometry: Bruker Wyko NT 9100 (1,25x up to 100x)
- Optical profiler: FRT Microglider with AFM + CWL
- Stylus profilometer: Zeiss Surfcom 5000
- 3D coordinate measuring machine: Werth Video-Check-IP 400x400x200
- DSC: Netzsch DSC 204 Phoenix
- Thermomechanical analysis: Netzsch TMA 202
- Tensile testing equipment with integrated temperature / humidity chamber: Tira TT 2810
- Equipment for materialographic preparation and analysis

### ■ Environmental Testing

- 2x Thermal shock chamber: CTS
- 2x Temperature / Humidity chamber: CTS
- Shock and vibration (Shaker): LDS V780 /HPA-K

### ■ Testing and Measuring Tool

- Diverse electronic measuring tools, mechanical measuring tools and optical measuring tools