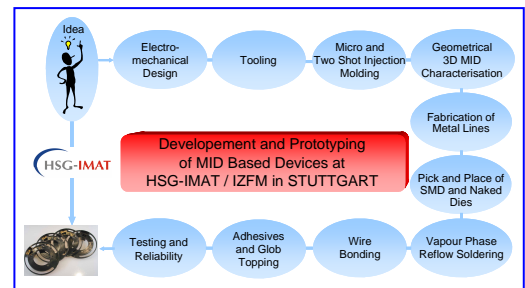


Technical Equipment and Methods

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

- **High Speed Cutting (with CAD/CAM)**
 - Fehlmann Picomax 60 M (Three Axis HSC)
 - Primacon PFM 24 (Three Axis HSC)
- **Ultraprecision Machining**
 - PRECITECH Freeform 700A (Five Axis UPM)
- **Precision Turning Machine**
 - Benzinger GoFuture B2 (Two Axis)
- **Electrochemical Milling with ultrashort voltage pulses (ECF)**
 - ECMTEC Micro
- **µEDM**
 - Sarix SR-VHPM
- **Injection Molding**
 - Arburg Allrounder 320S 500 – 60/60 (Two Shot)
 - Arburg Allrounder 375 V (Vertical)
 - Battenfeld Microsystem 50
- **Transfer Molding**
 - Boschman Unistar Molding System for Duroplast with Film Assisted Molding Technology
- **Laser Processing**
 - LPKF MicroLine 3D-IR Industrial
 - LPKF MicroLine 3D-UV
- **Printing Technology**
 - Aerosol Jet®: Optomec M³D 300
 - Inkjet: Schmid DoD 300 Inkjet System
 - Pad printer: Tampoflex miniSeal80
 - Screen printer: DEK 248
- **Assembly and Packaging Technology**
 - SMD placement: Fritsch Place All PA 908.580
 - 3-Axes Dispensing System: I&J Fisnar 500 LN
 - Vapour Phase Reflow Oven: IBL SLC-500
 - Automatic Ultrasonic Wire-bonding: Hesse & Knipps Bond Jet 710
 - Semi-automatic thermosonic ball/wedge bonder: F&K Delvotec 5610
 - Manual Flipchip Bonder: Finetech Fineplacer 145
 - Semi-automatic Bondtester: Dage Series 4000
- **Selective Electroless Plating of Plastics**
 - Process for LPKF-LDS® technology (LCP, PA, PBT)
 - Process for LCP (Cu/Ni/Au)
- **PVD**
 - Sputtering System: Leybold-Heraeus Z 400
- **Hot Embossing Equipment**
 - Hot Embossing Tool: Schmidt ServoPress 420 LV
- **Physical and Chemical Analysis**
 - SEM: JEOL JSM-6490LV with integrated tensile test equipment
 - SEM: EOL TESCAN 5130
 - EDX: Oxford Instruments INCA–System 200XRay
 - X-Ray Spectrometer: Fischerscope XDVM®-µ
 - X-Ray and computed tomography: XTEK HMXST CT 160 micro focus CT-sys
 - DSC: Netzsch DSC 204 Phoenix
 - Thermomechanical Analysis: Netzsch TMA 202
 - FT-IR Spectrometer: Bruker Vector 22 with ATR Device Golden Gate (diamond)
 - Optical Profiler: FRT Microglider with AFM + CWL
 - Stylus Profilometer: Zeiss Surfcom 5000
 - 3D-Coordinate Measuring Machine: Werth Video-Check-IP 400x400x200
 - Microhardness Testing System: Fischerscope H100
 - Microtome: Microm HM 355S
 - Tensile testing equipment with integrated temperature / humidity chamber: Tira TT 2810
 - Equipment for materialographic preparation and analysis
- **Environmental Testing**
 - Thermal shock chamber CTS TSS-70/130
 - Temperature / Humidity Chamber CTS CV-70/350
 - Shock and Vibration (Shaker) LDS V780 /HPA-K
- **Testing and Measuring Tool**
 - Diverse electronic measuring tools, mechanical measuring tools and optical measuring tools