Technical Laboratory

Controls of Electronic Assemblies

↘ Main tasks

- Physical analysis of electronic devices
- Evaluation and qualification of manufacturing assembly processes (IPC A 610)
- Failure analysis
- Technical Cleanliness: product evaluation, manufacturing monitoring
- Precision measurement
- Samples exposure to chemical fluids

1400 analysis/year, a team of 20 employees specialized in different analytical techniques: visual inspection of electronic assemblies, metallographic analysis, chemical & physical analysis, material characterization.

Material Laboratory

Non-Destructive analysis

> X-RAY EQUIPEMENTS

Including 3D computed tomography systems: General Electric “phoenix vl tomelxs”
X-YLON Cheetah device

Material Laboratory

Physical Analysis

> FTIR EQUIPEMENTS
(PERKIN ELMER FRONTIER SPOTLIGHT 400)

Analysis of organic materials

> ELECTRONIC MICROSCOPY LAB
SEM (JEOL-6480LV)
SEM FEK (JEOL-7200F)

Magnification up to 200k
Imaging & chemical analysis

Material Laboratory

Controls of PCB & Component Finishing

> WETTING BALANCE
(MUST SYSTEM III)
Solderability test

> FLUORESCENCE X
(FISHERSCOPE XVDM)

> SERA
Pure Tin plating thickness evaluation

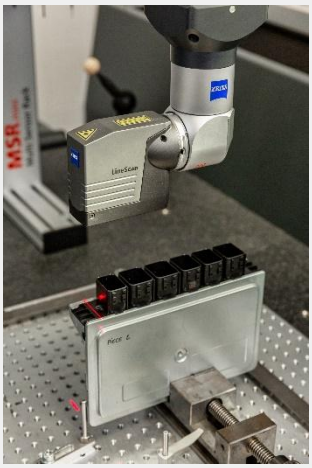
> DROP STAGE ANALYSIS SURFACE (KRÜS)

Material Laboratory

Precision Dimensional Measurements

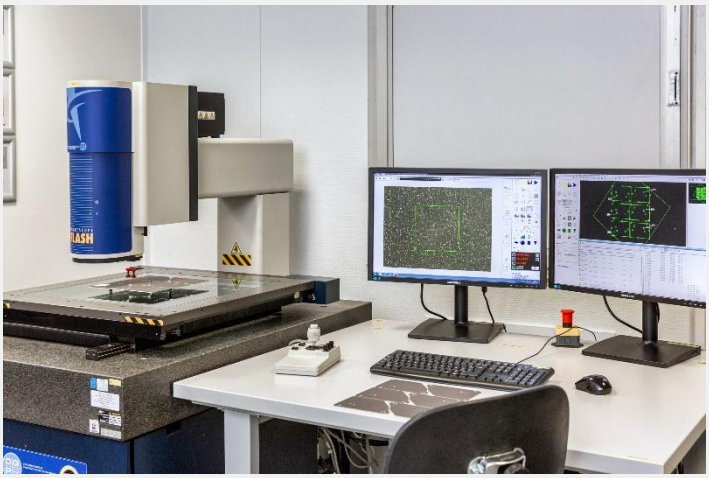
> CMM DEA GLOBAL ADVANTAGE

> CMM ZEISS CONTURA



> LINE SCAN 3D

> ROUGHNESS EVALUATION ALTISURF 520



> 2D MEASUREMENT OGP SMARTSCOPE FLASH 300 (AND 400)

Material Laboratory

Polymers analysis

> DYNAMIC MECHANICAL ANALYSIS

> THERMO MECHANICAL ANALYSIS (METTLER TMA40)

> THERMOGRAVIMETRY (METTLER TG50)
> GAZ CHROMATOGRAPHY AND MASS SPECTROMETER

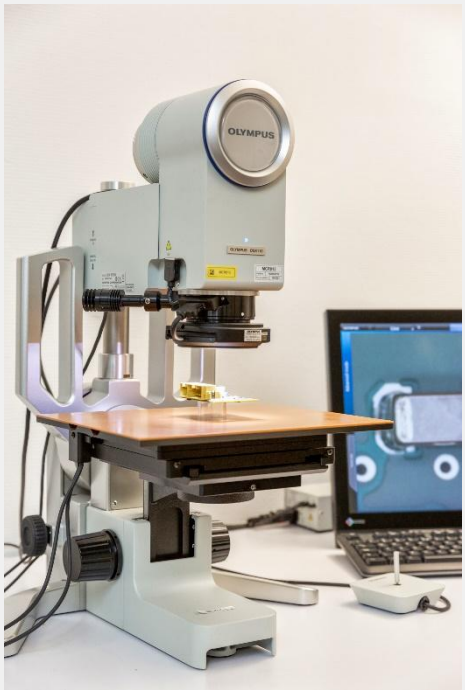
> DIFFERENTIAL SCANNING CALORIMETRY (METTLER DSC30)

Material Laboratory

Controls of Electronics Assembly

> OPTICAL EQUIPMENTS WITH MAGNIFICATION UP TO 100X

Equipment for metallographic analysis



> DIGITAL MICROSCOPE DSX110

Whiskers inspection, precision measurement

Material Laboratory

Metallographic analysis

> SAW DEVICES
- Disc saws
- Wire saws

> IONIC POLISHING SYSTEMS (JEOL)

> MECHANIC GRINDING & POLISHING

Material Laboratory

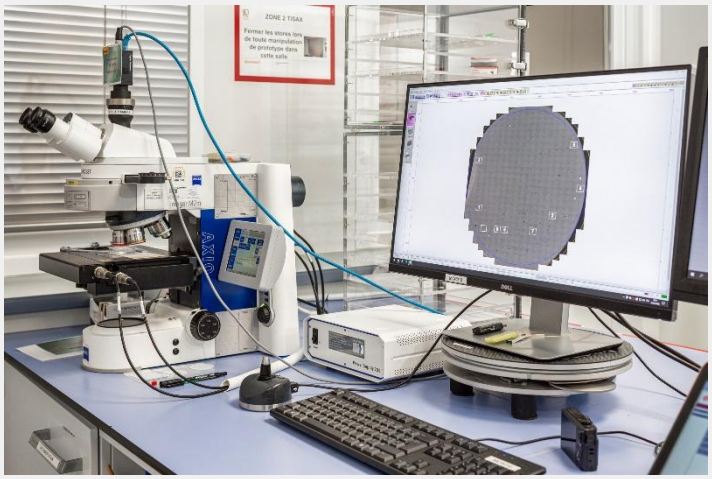
Technical Cleanliness analysis

> DETERMINING COMPONENTS AND PRODUCT CLEANLINESS

> MONITORING THE SEDIMENTATION BEHAVIOR OF PARTICLES

> SURVEILLANCE OF ASSEMBLY PROCESS

> IONIC CONTAMINATION (IONOGRAPH AND IONIC CHROMATOGRAPGY



Material Laboratory

Chemical fluids resistance test

> EXPOSURE TO CHEMICAL FLUIDS UNDER AMBIANT OR HEATED CONDITIONS

> LARGE DIVERSITY OF CHEMICAL FLUIDS AVAILABLE

> FLUID APPLICATION, CLEANING

> INSPECTION OF SAMPLES

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Test methods

Physical analysis	Standards used
Metallographic analysis (cross-sections)	IPC-TN-650
Evaluation of electronic components assemblies	IPC A 610 IPC A 600
Voids evaluation by X-Rays in BGA	IPC A 610
Voiding in solder joints	IEC TR 61191
SEM Analysis: Imaging & chemical analysis	
Ion Beam Polishing	
Organic material identification by FTIR	IPC TM 650 (Infrared analytical method) N°2.3.39
Dimensional measurement by optical device	ISO 14253-1 ISO 14253-2
Evaluation of mechanical/electronic assemblies by Computed Tomography	

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Test methods

Chemical analysis	Standards used
Ionic contamination evaluation	IPC TM 650 2.3.25-D IPC TM 650 2.3.25-1 TST N002 16 05 030
Micro etching metal & alloys	ASTM E 407 – 07
Exposure to chemical fluids	
Selective electro-chemical analysis	(CQR) for Printed Circuit Boards
Rubber de-formulation	
Rubber swelling characterization	

Cleanliness analysis	Standards used
Cleanliness analysis	ISO 16232 Accreditation ISO17025

Wetting tests	Standards used
Evaluation of components solderability	A2C00052907AAA J STD 002
Evaluation of PCB solderability	IPC A 600, J STD 003, CQR10210667
Surface energy evaluation	
Plating thickness evaluation by X-Ray spectrometry method	ISO 3497

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Test methods

Accurate Measurements	Standards used
3D Measurements with Coordinate Measuring Machine (CMM)	ISO 14253-1/2/3, ISO 1101
1D/2D Accurate Measurements	ISO 14253-1/2/3, ISO 1101
Geometry measurement by Computed Tomography (CT)	VDI / VDE 2627, ISO 1101
Surface roughness evaluation	ISO 21920

Polymers characterization	Standards used
Assignment of Glass Transition Temperature & Thermodynamic measurements by Differential Scanning Calorimetry (DSC)	IPC TM 650 2.4.25 ISO 11357-2 ISO-11357-3
Polymer characterization by Dynamic Mechanical Analysis (DMA)	ASTM E1640
Polymer characterization by Thermo Gravimetric Analysis (TGA)	ASTM E 1131 ISO 11358-1 ISO 9924-2 ISO 9924-3
Determination of liquid effects on vulcanized rubbers	ISO 1817

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Test methods

Polymers characterization	Standards used
Test method for compositional analysis using gas chromatography and mass spectrometer	
Bare Printed Board Cleanliness by Ion Chromatography	IPC TM 650 2.3.28.2
Halide content of soldering fluxes and pastes	IPC TM 650 2.3.28.1
Ionic Analysis of Circuit Boards, Ion Chromatography Method	IPC TM 650 2.3.28