



Electronics Design & Manufacturing: Industry Services

Our industry services aim at better electronics at reduced cost through science based methods

Failure Analysis

Failure Analysis is the most important input to quality and reliability improvement. Understand why failures occur !

Reduce field returns, increase quality and reliability !

Field returns may consume the total margin of a product (or more...) Determine whether you are dealing with infant mortality, overstress of the product or wear out. cEDM will analyze the failure and determine the physical failure mechanism in order to come to possible improvements.

cEDM has experience in solder joint failure analysis, PCB failure analysis (delamination, cracked via's, CAF, etc.), corrosion & SIR, press fit failures, potting & conformal coating problems, etc.

Design improvement

Design qualifications that include testing until failure give an idea on the lifetime of a product. Determining what has failed and in which way is crucial to increase the product lifetime. cEDM offers a service to analyze failures and suggest product & process improvements.

Qualification

Qualification of PCB or PBA suppliers

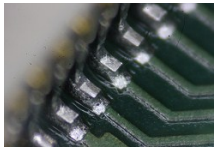
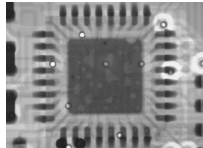

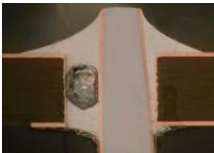
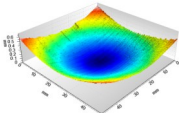
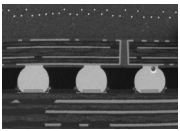
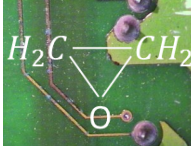
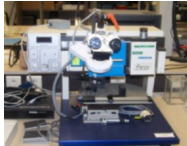
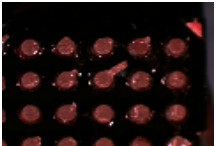
Selection of a manufacturer for a quality PCB or an assembly house for the PBA is critical and should be carefully executed. cEDM offers services to select a vendor, inspect first production samples according to IPC-A-600 and IPC-A-610, audit the processes on-site and setup improvement programs. The thorough knowledge of the PCB and PBA processes is a result of a combined industry experience of more than 70 years and a sound scientific background.

Functional design qualification

cEDM consultants can assist in setting up a PBA qualification program, performing a Failure Mode and Effect Analysis (FMEA), supporting environmental testing and root cause analysis of failures.

Analysis Techniques

To analyze the failures and determine the root cause, the following techniques are applied:

Optical Microscopy 	X-Ray Inspection 	Scanning Acoustic Microscopy 
Cross Sectioning 	PCB & package warpage 	Scanning Electron Microscopy 
Chemical Analysis 	Pull / Shear Tests 	Dye and Pry 

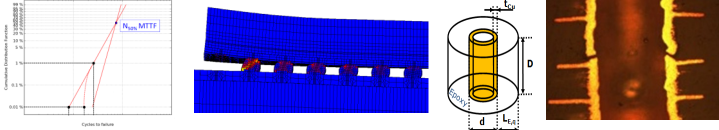
More techniques available upon request or according to needs.



Reliability Prediction

Solder joint reliability simulation

By making use of "Finite Element Modeling" and years of R&D experience, predicting the solder joint reliability under varying conditions of thermal or mechanical stress is possible. By means of simulations, i.e. virtual prototyping, different design options can be evaluated in order to improve the product reliability before the PBA is build.

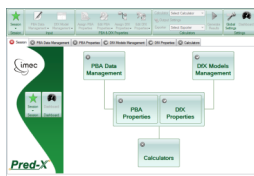


Via Failure and Delamination Calculation Tool

The "Via Failure Calculation Tool" calculates the lifetime - failure probability - of plated through hole via's under soldering and under accelerated thermal cycling conditions. The "Delamination Calculation Tool" calculates the number of lead-free solder cycles to cohesive delamination for a specific laminate.

Yield - and Test Coverage prediction

Based on the bill of materials, a prediction of yield and test coverage is made using Pred-X. This allows designers in a very early stage of the design to evaluate design choices.



Pred-X

The results are summarized in a comprehensive report. More information on Pred-X can be found on the cEDM website: www.cedm.be

Training

Printed Board Assembly: basic & advanced training

The basic training module gives the attendee an overview on the processes required to manufacture and assemble a PCB/PBA with the focus on design choices which influence the manufacturability. The advanced training module contains an in depth exploration of these processes with a focus on reliability and manufacturability. A detailed course description is available upon request.

Design for Manufacturing Analysis

The DfM analysis of a PBA will give you feedback on the manufacturability and reliability of your PBA. The focus is to maximize reliability and yield, while minimizing cost. The added value of the cEDM DfM analysis is enhanced by our extensive technology, design, assembly process and product failure knowledge.

RoHS Service

The RoHS service checks a bill of materials, choice of PCB laminate and production processes for RoHS compatibility. The RoHS helpdesk can answer all questions related to interpretation of the RoHS directive, selection of soldering alloys, traceability, ...

cEDM member discount

cEDM members and partners are entitled to discounts on the cEDM consultancy. For cEDM membership or partnership information go to www.cedm.be.

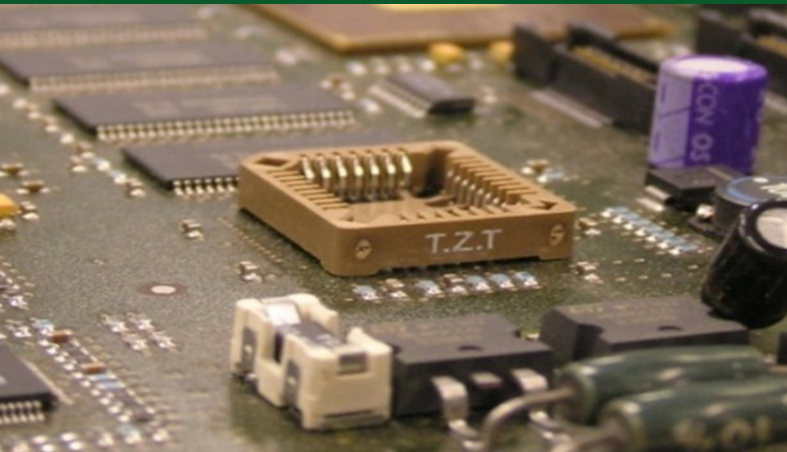
Contact Information

Boris.Leekens@imec.be +32 16 28 34 88

Filip.Ponsaerts@imec.be +32 16 28 34 12

www.cedm.be

JOIN cEDM



Seven reasons to join:

1. Free Design for X guidelines
2. Free DfX supporting tools
3. Free cEDM workshops on PBA and PCB themes
4. Priority access to the DfX Helpdesk
5. Company-specific consultancy services
6. Customer oriented training
7. Discounts on services, training and Pred-X purchase and funding application support