



# cEDM: CENTER FOR ELECTRONICS DESIGN & MANUFACTURING

*In the SPM Magazine of November 2014, we already reported about the cooperation between SPM and the Center for Electronics Design & Manufacturing of imec, the world-leading nano-electronics research centre in Leuven, Belgium. imec has several research groups working on reliability of electronics on IC level, component packages and electronic assemblies.*

By Bart Cox, cEDM, imec.be

cEDM focusses its activities to support the industry in the development of high quality, reliable and cost-effective electronic modules (PBA) by means of knowledge creation and sharing, scientifically sound methodologies and collaboration throughout the entire supply chain.

The multidisciplinary team of cEDM has grown in the last 2 years in order to cope with the raising demand for industry support and growing activities in Flemish and European projects. The team's industrial experience in design, industrialisation, production and quality, combined with electronics research expertise help our customers to better design and produce electronic modules at reduced cost.

cEDM is active in several Belgian and European Projects with the focus on reliability of electronic products:

- Inprovol: Intelligent Products with Predictable Lifetime
- Compact: Physics of Failure based System Design for Reliability and Qualification.
- Rev-Up: Revision and up-date of electronics reliability testing.

As a result of these projects, cEDM developed DfX guidelines for every step in the electronic design and manufacturing process flow: PCB, components, material, layout, design, manufacturing processes, ...

Several tools and calculators have been developed that support the electronics designer in his effort to design a good and reliable product. The following tools and calculators can be found on the cEDM website:

- Delamination of PCB material
- Material Composition gives an educated estimate of the materials and their amount present in a PBA.
- Thermal Via Design.
- Through Hole Solder Fill during wave or selective soldering.
- PCB Via Failure under thermal cycling conditions.
- Vibration of PBA in housing.

During an SPM workshop in June 2016, two important tools will be presented. The tools will be applied to real practical cases that SPM members bring forward.

- Failure risk assessment **FMEA** (Failure Mode and Effect Analysis): It provides a comprehensive overview of potential Printed Board Assembly quality and reliability issues together with the major risk factors. Where and how to address these issues in the product development cycle is indicated. This tool can be used as a pro-active FMEA tool in PBA development.
- **Pred-X**: This tool predicts the quality and test coverage of Printed Board Assemblies (PBA) solely based on Bill-of-Material (BOM) and basic assembly information. Pred-X assists Design-for-Assembly, Design-for-Test and assembly preparation by quantifying the impact of component, assembly and test options. Next to that, the tool predicts the time (ref cost) it takes to assemble and test the PBA on state-of-the-art assembly lines.

On a bilateral basis, cEDM offers the companies consultancy, knowledge transfer, support for implementation and training about PBA design, testing, failure analysis, reliability, ...

The group of friends of cEDM keeps on growing: 20 partners, 50 members and close to 100 associated members are represented in the cEDM community, and receive privileged information and early insight in project results.

## TEMADAG: BELGISKE EKSPERTER KOMMER TIL DANMARK

Få indblik i cEDM's arbejde samt værktøjerne FMEA (Failure Mode and Effect Analysis) og Pred-X. Værktøjerne giver overblik over kvalitet og mulige pålidelighedsproblemer ved montage af printplader.

Mød eksperterne til temadag den 31. maj 2016 i Hørsholm. Invitation og mere information kommer snart.