

Flagship Projects to Prepare for DfMM Service Clusters of the Future

Continued from last DfMM News issue (December):

RELIABILITY - the reliability flagship project is structured into 3 clusters

RELMETH - Methodology for accelerated testing and reliability analysis of MEMS

The aim of RELMETH is to prepare the NoE Patent-DfMM for addressing industry requirements on Quantitative Accelerated Life Testing and Reliability Analysis of MEMS. The tool for investigation is the reliability analysis, as developed previously for "classical" devices (ICs, transistors, etc.) and used now for MEMS. The goals of using such analysis for a batch of MEMS are:

- To assess the reliability level of a batch of MEMS;
- To improve the batch reliability by proposing appropriate corrective actions (in design, processes, monitors, etc.);
- To build prediction methods able to foresee the reliability of future batches from the same device, even from the design phase (methods to be used in a Design for Reliability approach).

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VIBSHOCK - Holistic Reliability Engineering for MEMS harsh conditions

Reliability issues for MEMS can only reasonably be tackled in a holistic way, including package engineering, failure mode modelling and test methodology. This is especially true of MEMS in harsh conditions, where sometime packaging is even more prone to failure than the MEMS device itself. The final goal of the VIBSHOCK project is the

PATENT-DfMM/ NEXUS/ MEMUNITY workshop, NEXUS AGM FP7 Workshop, 27-29 Nov 2006, Milan, Italy - Presentations now available

Presentations from the workshop are available from the PATENT-DfMM website free of charge. If you are interested in regular updates from the project, please subscribe to the bi-monthly Email newsletter which is also available free of charge - register on our website!

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setup of a self-sustainable virtual lab service for reliability engineering of MEMS in harsh conditions. A harsh environment can also be used to accelerate failure mechanisms in MEMS that do not require operation in such harsh environments, but need accelerated reliability test methodology. Also this aspect will be addressed in this flagship project, and should lead to new reliability test methodologies. By multiplying ideas for test methodologies and establishing new testing techniques, this project will generate know-how beyond the state of the art.

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Package reliability - Integrated Characterisation of Packaging Hermeticity Combining Test, Modelling, Reliability Characterisation and Packaging Integration of a Humidity Microsensor

This project uses a humidity microsensor as a device to demonstrate DfMM; i.e. the design, fabrication, test, characterisation, simulation and packaging of MEMS. The primary objectives of this project are:

- To design, fabricate and test a humidity microsensor to electrically detect traces of humidity;
- To characterise, measure and simulate reliability and packaging issues for the integration of the microsensor within a package;
- To analyse reliability and packaging concerns of wafer level packaging technologies for MEMS devices;

PATENT-DfMM workshop planned in conjunction with DTIP, 24 Apr 2007, Stresa, Italy

As with past DTIP conferences, PATENT-DfMM will organise a workshop on DfMM again. Please find more information within the Euro-practice pages of this MST News.

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- To investigate the reliability measurement and modelling challenges associated with humidity, hermeticity and wafer level packaging for MEMS;
- To define mechanisms for bringing together partner knowledge obtained from activities and projects undertaken during the first 2 years of the PATENT NoE to demonstrate DfMM via a specific demonstrator of direct industrial benefit.

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The NoE Patent-DfMM aims to establish a collaborative team to provide European industry with support in the field of "design for micro nano manufacture" to ensure that problems affecting the manufacture and reliability of products based on micro nano technologies (MNT) can be addressed before prototype and pre-production.



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