



RoodMicrotec Newsletter

Number 4, September 2013 • RoodMicrotec

Clear increase of activities for RoodMicrotec

As we indicated at the time of publication of the figures for the first half year, over the past few months we have seen a clear increase of the number of orders and offers.

In this context we are also hard at work to expand the range of our services. For example, we are investing in qualification in various areas. The optical mechanical qualification department (see elsewhere in this newsletter)

is a good illustration of this. We expect to be able to report further developments shortly.

The fact that bottlenecks are developing in a number of sectors, which has led us to agree

more and more slot reservations with our customers, is proof of the increased activity. However, in some areas there is still capacity available.

RoodMicrotec seminar: Defect recognition – Failure prevention

On 17 October RoodMicrotec will organise a seminar around this theme.

The seminar will focus on methods to prevent failures starting from simulation and development all the way up to the reliability-relevant analysis of components and modules.

Often, defective components are removed from the board and provided to us for defect analysis. Although not yet widely recognized in the industry, for many of the component defects the root cause tends to lie in the environment and application conditions. Whereas EOS (Electrical overstress) is often given as a cause, it turns out that this is only the case in 3% of all the defect analyses. This means that replacement by another component will not solve the problem. To find the root cause an investigation is needed into the defect circumstances, statistical aspects and the stresses in the system.

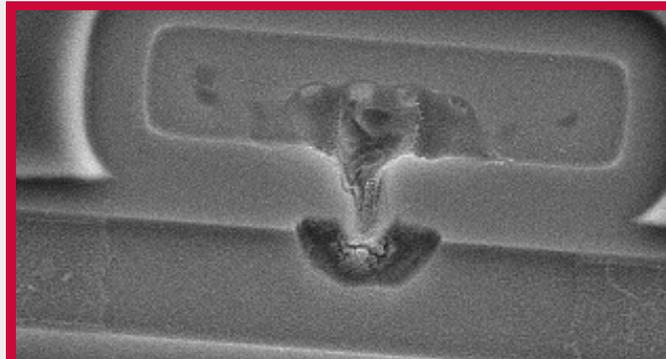
During the seminar various speakers from RoodMicrotec and external specialists will give lectures. An introduction into the defect

localization methods of components and modules will delve into the practical part of failure analysis with a number of examples incl. LED- defects. The difficulties with decapping will also be discussed.

A simulation method entitled 'Physics of

Failure' for printed boards and modules will complete the seminar.

The seminar is especially interesting for engineers and technicians in product engineering, development, failure analysis, reliability and quality.



The deadline for registration is 27 September 2013. For more information, see: www.roodmicrotec.com.



New developments in Optical Mechanical Qualification Department

In this interview, CSO Reinhard Pusch discusses the latest developments in the field of optical mechanical qualification at RoodMicrotec.

'We are seeing a clear increase of demand for our services in various areas. Firstly, demand for qualification and burn in for **vertical emitting laser diodes** is right up. RoodMicrotec currently has equipment in place to perform tests at more than 300 channels in parallel; during the next months this number will increase further.

Over the past few years, we have expanded our capabilities for a wide range of different shock and vibration tests for various applications. For automotive applications, as of August 2013 we are able in Stuttgart to perform vibration and shock tests under temperature (-40°C to 180°C), which is related to the **Vibration under temperature for automotive application IEC 16750 standard**. This is important because the mechanical characteristics of electronic devices changes over temperature, especially the plastic encapsulation, and in cars they are exposed

to a wide temperature range, vibration and shocks. The chamber in which the tests take place not only tests the influence of vibration and shock, but also allows testing across a wide temperature range (-40°C to +180°C). This is essential because failures occur earlier or later at different temperatures. Plastics, for example, are far more fragile at lower temperatures.

We now have simulation of test before hardware available. This means that we are also able to **simulate** the reliability of electronic boards with an extensive software tool (Sherlock). This tool predicts the lifetime of the board based on the physics of failure due to thermal and mechanical stress. That allows simulation of e.g. virtual temperature cycling, vibration and mechanical shock without having any hardware available. The result of the simulation calculates the predicted lifetime of the assembled board.

MTBF (mean time between failure) calculation, another theoretical reliability assessment which is based on standards like Telecordia ST -332 and IEC TR 62380, can be done in a single run with the simulation tool.

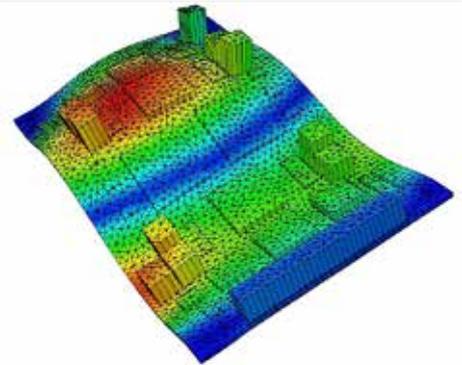
With the first HW prototype we offer a **risk assessment** for assembled boards and complete systems (like LED streetlights) to identify weak points in the design and manufacturing process and propose suitable tests to verify effectively the robustness of the system. For such robustness or qualification test flows we offer the complete range of thermal, climatic, electrical and mechanical tests in different chambers.

The current increasing demand for our services gives us confidence about the future outlook of the mechanical qualification department.'

Agenda 2013

24 - 26 September 2013	LED Lighting Technology	Bregenz / Austria Festspielhaus
2 - 3 October 2013	Electronic Design	Coventry / UK
17 October 2013	RoodMicrotec	Stuttgart
5 - 7 November 2013	Aerospace Supply Fair	Frankfurt

Sherlock 3D Viewer
ODB ++ Tutorial (Shock/Vibration)



Colophon

Investor relations: Philip Nijenhuis,
investor-relations@roodmicrotec.com
Irmgard Bayerle,
irmgard.bayerle@roodmicrotec.com

Sales and marketing: Reinhard Pusch,
reinhard.pusch@roodmicrotec.com

Editor in chief: Marlies Kort,
Kort Investor Relations

Design and Layout: SjeWorks

Images: S. Jellema, SjeWorks; RoodMicrotec



RoodMicrotec N.V., Netherlands
"Rembrandt"
Dokter van Deenweg 58
NL-8025 BC Zwolle
The Netherlands
Telephone +31 (0) 38 4215 216

RoodMicrotec GmbH , Germany
Motorstraße 49
D-70499 Stuttgart
Telephone: +49 (0) 711 86709-0

RoodMicrotec GmbH, Germany
Oettinger Strasse 6
D-86720 Nördlingen
Telephone +49 (0) 9081 804-0

RoodMicrotec Dresden GmbH, Germany
Maria-Reiche-Strasse 1
D-01109 Dresden
Telephone: +49 (0) 351 205 666-0

RoodMicrotec Bath, Great Britain
Carpenter House, Broad Quay
Bath, Somerset BA1 1 UD
Telephone: +44 (0) 796 894 8683