SMART GROUP
25TH ANNIVERSARY 1984 - 2009

SMARTER

KEEPING YOU INFORMED OF DEVELOPMENTS IN THE ELECTRONICS INDUSTRY

MAY 2011

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Welcome to our **newsletter**

With the early year exhibition season behind us (including Southern Manufacturing, NEW and APEX) we can look forward to a busy schedule of SMART Group events leading up to our major annual two-day event on 5th and 6th October 2011. This will again be held at 'The Oxfordshire Business Centre' in Thame Oxfordshire. We have sent out a 'Call for Papers' and table-top exhibition space is already being booked. The theme for the event is Area Array Reliability. Please contact Tony Gordon for more information.

Our *smart-e-webinars* have been well received and I found the recent uBGA session enlightening. If you haven't participated yet, I urge you to do so. It's easy and you don't have to leave your office. A varied programme is being put together by our webinar team.

With the recent major soldering conference in Scotland, details of which were circulated on *smart-e-link*. SMART Group continues to actively support all our members in these tough economic times with regular events.

Included in this newsletter is a three page special feature on the activities of SMART Group Ireland, our thanks to Philip O'Rourke and his hard working colleagues.

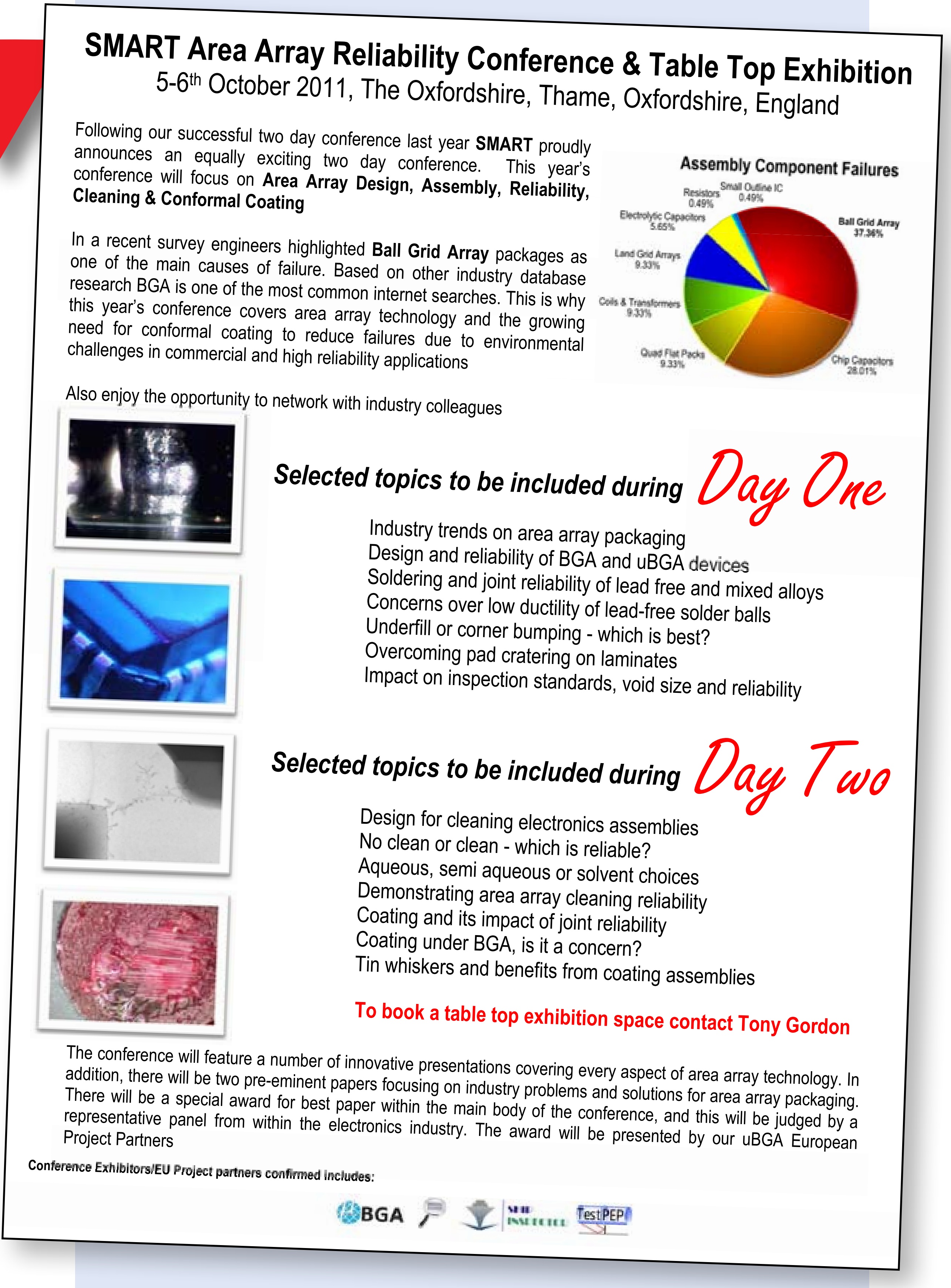
Finally, on behalf of all smarties we wish Dr Colin Lea a happy retirement. Colin joined NPL, National Physical Laboratory in 1971 and has been an active participant in SMART Group activities. He formed NPL's SSTC Soldering Science and Technology Club, authored the industry standard book 'A Scientific Guide to Surface Mount Technology' and was champion of the elimination of CFC's within the industry in the 1990's and gave over 80 talks a year around the world. He authored the standard book 'After CFC? Options for Cleaning Electronic Assemblies'. He was a key player in the development of the SMART Group and organized the popular conference events at the Old Ship Hotel in Brighton.

In 1994, most importantly, Colin was awarded the OBE for his work on CFC elimination. In America he received the prestigious EPA (Environmental Protection Agency) Stratospheric Protection Award and in 1997 the EPA Best of the Best Award on the 10th anniversary of the Montreal Protocol.

I attended Colin's farewell reception held in the modern and impressive reception area at NPL. He gave a moving and heartfelt speech. We wish him and his lovely family GOOD LUCK and a long and happy retirement. The photo shows Colin and his family with work colleagues past and present who attended the farewell where he was given a great send off.

Mike Judd

Major two day annual event...



SMART Area Array Reliability Conference & Table Top Exhibition

5-6th October 2011, The Oxfordshire, Thame, Oxfordshire, England

Following our successful two day conference last year **SMART** proudly announces an equally exciting two day conference. This year's conference will focus on **Area Array Design, Assembly, Reliability, Cleaning & Conformal Coating**

In a recent survey engineers highlighted **Ball Grid Array** packages as one of the main causes of failure. Based on other industry database research BGA is one of the most common internet searches. This is why this year's conference covers area array technology and the growing need for conformal coating to reduce failures due to environmental challenges in commercial and high reliability applications

Also enjoy the opportunity to network with industry colleagues

Selected topics to be included during *Day One*

- Industry trends on area array packaging
- Design and reliability of BGA and uBGA devices
- Soldering and joint reliability of lead free and mixed alloys
- Concerns over low ductility of lead-free solder balls
- Underfill or corner bumping - which is best?
- Overcoming pad cratering on laminates
- Impact on inspection standards, void size and reliability

Selected topics to be included during *Day Two*

- Design for cleaning electronics assemblies
- No clean or clean - which is reliable?
- Aqueous, semi aqueous or solvent choices
- Demonstrating area array cleaning reliability
- Coating and its impact of joint reliability
- Coating under BGA, is it a concern?
- Tin whiskers and benefits from coating assemblies

To book a table top exhibition space contact Tony Gordon

The conference will feature a number of innovative presentations covering every aspect of area array technology. In addition, there will be two pre-eminent papers focusing on industry problems and solutions for area array packaging. There will be a special award for best paper within the main body of the conference, and this will be judged by a representative panel from within the electronics industry. The award will be presented by our uBGA European Project Partners

Conference Exhibitors/EU Project partners confirmed includes:

SMART Group

Represented on REACH Stakeholders Day

The REACH Regulation is a very ambitious set of changes to chemical use and testing affecting all industries, importers and consumers across Europe and it is in the early years of implementation.

Reactions have been mixed, with some sectors experiencing difficulties in implementing the changes, and the administrators of the Regulation finding it difficult to communicate in a simple way the very complex nature of the new requirements.

In a ground-breaking move the Health and Safety Executive (HSE), the enforcement body for the industrial side of REACH in UK, invited selected Trade Associations to a first ever Stakeholder Day on REACH, and this was taken up on behalf of the SMART Group by Nigel Burtt, Marion Quarrington and Mike Fenner. The day was due to be structured as half a day for HSE to cover the Regulation and the enforcement issues it generates, and the other half an opportunity for Trade Associations to share their members' problems and concerns about the Regulation with HSE.

In pre-meeting consultations with the HSE the SMART Group indicated that the main concerns for their members focussed on the burden of reporting required for SVHC in Articles, which resulted in the SMART Group being asked to lead the discussion session on this topic.

With nearly 100 industry representatives present Marion presented the difficulties experienced by SMART Group members, and, from the ensuing contributions from the other delegates, it was apparent that the majority of Article manufacturers in the room had similar issues and concerns. The subsequent discussions clearly indicated to the HSE that this is an area imposing a disproportionate burden on those organisations who practice Due Diligence in these matters.

Under the REACH Regulation, manufacturers are required to supply adequate information to their customers on any hazardous substances included in their products, but due to the failure of their (mostly non-EU) supply chains to provide the relevant data in a timely manner, this obligation cannot be met. The burden is particularly onerous for the electronics sector where the REACH reporting requirements are at odds with those required under the RoHS Directive. It was clear that the HSE had not been aware of the impact of the differences in assessment processes between the two legislations, which effectively means that, once data is obtained on the chemical content of components, it has to be managed and analysed in two different ways to meet the separate assessment requirements.

> *"With nearly 100 industry representatives present Marion presented the difficulties experienced by SMART Group members..."*

The HSE representatives present were appreciative of the feedback and promised to provide better information on the Regulations' requirements. In the particular area of SVHCs in Articles the HSE believes that industry in general is "trying too hard" in an effort to compensate for the poor information flow through their supply chains and so is imposing a greater burden on themselves than the Regulation requires.

It is therefore hoped that this Stakeholder day will result in a lessening of the administrative burden for all SMART Group members.
Our thanks to Marion, Nigel and Mike for their contribution at the meeting.

Being SMART with DFM

SMART GROUP PAST EVENTS

February 24th 2011

Enterprise Ireland is a keen supporter of SMART Group Ireland over many years and John Fee of EI, is a member of the group's committee.

East Point Business Park provided an ideal location for SMART Group's recent "PCB Design for Manufacture Workshop". Philip O'Rourke, Director of SMART Group Ireland and John Fee organised this practical workshop for engineers from all over Ireland.

To remain competitive in manufacture product design has to be right to obtain the highest quality and production yields in manufacturing sites throughout Ireland. In cases where products do need to be manufactured off shore design for manufacture also needs to be right to obtain the most competitive pricing. "Design for Manufacture (DFM)" procedures should be followed if you are making one or one thousand boards.

Changing footprints, solder mask apertures, track widths can be done without compromising product reliability or cost and it will improve yield" stated Bob Willis, the events instructor, during his introduction to the session. Bob spent the day outlining some of the critical issues in modern assembly as well as taking countless questions on specific matters relating to engineers in Ireland.

The following are some of the key topics discussed during the session:

- Standard layout rules for assembly
- Design rules for new packages including:
  - 0201 chip components, Bottom Mounted Components (BMC), Package on Package plus QFN/LGA
- Via in pad technology options
- PCB specifications – IPC 610, IPC 2221 and 2224
- Design review procedures
- Auditing an assembly service provider

IPC process and design documents were a key feature of the session and the international organisation kindly provided copies of the design standards for a special delegate prize. Thanks to Kim Sterling at IPC. The standards were awarded to Ian Mellor of BRIM Brothers for the best questions of the day.

All of the delegates and organisers agreed the workshop was an ideal opportunity to bring troublesome design and process issues for discussion and to obtain practical solutions to process problems. Philip thanked Bob for the day and a special word of thanks was given to John Fee and Enterprise Ireland for hosting the event.

Prize awarded to Ian Mellor and presented by Bob Willis.

BENEFITS OF SMART GROUP IRELAND MEMBERSHIP

As a member of the SMART Group your company will be part of the largest electronics manufacturing technical trade association in Europe. The main benefits of being a SMART Group member are:

SMART Seminars / Workshops

We run a minimum of 4 seminars a year in Ireland and there are numerous other events held in the UK. Members are entitled to attend these at a reduced rate. In Ireland the 2011/12 seminar fee for members is €125 (full fee €250). Presentations from seminars are made available to members after the event in the Members' Area of the SMART Group website.

Scheduled 2011 / 2012 SMART seminars in Ireland

1st June 2011
Quality control & Defect Analysis workshop EI, Dublin

29th September 2011
Green & Portable Energy Seminar Tyndall, Cork

17th November 2011
Silicon to Package incorporating µBGA Intel, Leixlip

23rd February 2012
Advancements in PCB Assy Technology Henkel, Dublin

10th May 2012
Lead-Free Experience Workshop 6 Yrs on EI, Dublin

13th September 2012
ESD & Product reliability Workshop Avocent, Shannon

Other great benefits...

smart-e-link - an email network that acts as a discussion forum allowing members to ask for advice and information from other members. To register go to the SMART Group website: www.smartgroup.org

SMART website www.smartgroup.org - the website contains lots of useful information for members such as downloadable reports and surveys, details of events held, news updates and book reviews.

SMART logo - All SMART members are entitled to use the SMART Group logo on their printed materials.

SMART Networking – Use the unique opportunity to make new contacts and network during the Seminars and Workshops

Custom In-House training / workshops - There are a list of 25 plus courses to avail of, please ask Philip for more details on this.

SMART Hosting of a Seminar / Workshop - This brings a lot of direct attention to your company and is an ideal and very economic form of marketing, please ask Philip for more details on this.

www.ubga.eu www.chipcheck.eu www.shipinspector.eu www.testpep.eu

Philip .J. O'Rourke SMART Group Ireland
1A Fairview Avenue Lower, Fairview, Dublin 3, Ireland
admin@smartgroupireland.com | www.smartgroup.org
Fax: +353 (0)1 8186321 | Tel: +353 (0)86 8061998

www.smartgroup.org

European µBGA Consortium Meeting at Enterprise Ireland

March 3rd & 4th 2011

The majority of semiconductor processor chips are produced in an area array format and solder balls, often referred to as solder spheres, are used as the electrical contacts and mechanical connection from the chip to a printed circuit board. We all know as consumers that products like mobile phones, computers and PDAs are getting smaller. As a consequence the solder balls that make the interconnection possible must also shrink in size. To this end 23 engineers from all over Europe gathered together for a second µBGA collaborative meeting at Enterprise Ireland. "µBGA" is a European collaboration project, co-ordinated and managed by KCC Ltd and is partly funded by the EC under the Research for the Benefit of Specific Groups Project ref: FP7-SME-2002-2-GA-263653

The µBGA's project is aimed at SME companies who are interested in the development of novel production techniques for producing µBGA's of less than 100µm. The µBGA's system is targeted at all electronic product producing SME companies where miniaturization is a major concern. This includes electronics for aerospace, automotive, mobile phones and laptops.

The two day meeting was organized by the Director of SMART Group Ireland, Philip .J. O'Rourke, and John Fee of Enterprise Ireland. EI's Tom Kelly welcomed all of the delegates to Ireland and the offices of EI in East Point. He emphasized the importance of close cooperation on technology matters, and the benefits of the collaboration effort to Ireland and all of Europe. The meeting was spread over two days and discussed the solder alloys, solder sphere manufacturing techniques, inspection and quality control. Detailed discussion centered on the results obtained so far and the future direction of the project. KCC the project coordinator and Philip paid a special word of thanks to John Fee and Enterprise Ireland for hosting the two day event. For further information contact John Fee of EI. Alternatively visit the uBGA website www.uBGA.eu

SMART GROUP EVENTS
DIARY 2011

19th May 2011
New Product Introduction (NPI) An Engineering Check List
Online *smart-e-webinar*

1st June 2011
Quality Control & Defect Analysis Workshop **EI, Dublin**

15th June 2011
RoHS Recast: Implications for Reliability **NPL, Teddington**

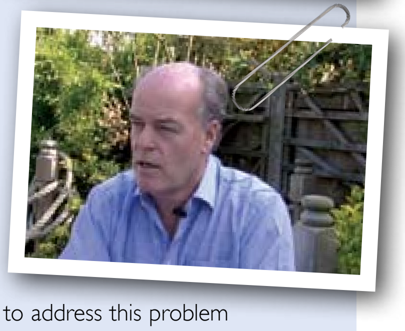
5th July 2011
PCB Specification – What an Engineer Needs to Cover
Online *smart-e-webinar*

29nd September 2011
Green & Portable Energy Workshop **Tyndall National Institute, Cork**

5th - 6th October
Area Array Reliability Conference & Table-Top Exhibition
Two-Day Annual Conference & Exhibition
The Oxfordshire, Thame.

17th November 2011
Silicon to Package incorporating µBGA **Intel, Leixlip**

ChipCheck interview



On March 29th 2011, John Dadson and Ian Nicholson of TWI interviewed SMART Group Technical Committee Vice-Chair Nigel Burtt and Bob Willis on the subject of counterfeit components and their impact on the electronics industry. They spoke about their practical experience of the problem and were able to show actual examples of counterfeited devices.

TWI (http://www.twi.co.uk/) is a consultancy which is the lead partner on an EU Framework Seven funded project known as "ChipCheck" (http://www.chipcheck.eu/home/) which seeks to help SMEs in particular to address this problem with the development of a new inspection prototype. The SMART Group are also a partner for this project and the video interview is intended to be used as part of an interactive CD-ROM that the project will use to help promote it.