

## WELCOME TO THIS MOMENTOUS NEW YEAR

Yes it's 2006 and we expect much apprehension as we move towards July 1st. After ten years or more of lead-free seminars, workshops, question sessions and of course 'the lead-free experience', we have now reached the final furlong, but it's hardly what could be called a winning post in sight!

SMART Group has endeavoured to help our members through many hurdles and we hope our efforts have helped you face the latest challenges of WEEE & RoHS that confront our industry. Certainly in the future environment issues will continue to remain at the top of the agenda.

The Annual Lead-Free Seminar & Table-Top Exhibition will take place on February 16th. During the day we will be holding our AGM. If you would be interested in joining the SMART Group Technical Committee why not come along and talk to your committee members. SMART is a non-for-profit organisation run by members for the membership. The committee meets four times a year with the main aim of planning the programme of future events, most are engineers pleased to be putting back something into our industry. If you have suggestions for events, seminars or workshops why not send them to Tony Gordon at [info@smartgroup.org](mailto:info@smartgroup.org)

Those who visited the Productronica show in Munich reported good business and a rosier time ahead. I've just read some comments from industry chiefs that are also positive. Talking to one equipment manufacturer, he reported a full order book until the middle of 2006 – a connection with the impending legislation – maybe!

The committee of the SMART Group works tirelessly for its members. Thanks for your continued support, we wish you Good Luck in this momentous year. **Mike Judd**

## SMART COMMITTEE MEMBERS HONOURED BY INDUSTRY



### Graham Naisbitt, Concoat Systems, proudly displays his IEC award to Peter Marshall

Graham Naisbitt received his award for his contributions to IEC Technical Committee 91: Surface mounting technology. He is a pro-active UK delegate to this international committee and is the project leader for the work on the second edition of IEC 60068-2-69:

Solderability testing of electronic components for surface mounting devices by the wetting balance method - lead-free technology. He has also contributed to the drafting of the IEC 61189 series. BSI is delighted that the IEC has given Mr Naisbitt the recognition he deserves. IEC stated that "The 1906 (Centenary) Awards are given to persons who have made an exceptional contribution to the work of IEC. It is a special award since the persons who receive it are selected by their peers. The Chairman stated that members had the opportunity to recognize some very important people in the IEC World and it was his pleasure to make these awards on behalf of the Presidents of IEC and BEC."



### Chris Hunt, NPL, accepts IPC Award on behalf of his team from David Bergman, IPC

At the event IPCWorks 2005, held in Las Vegas, IPC - Association Connecting Electronics Industries, announced those individuals and companies honoured for their contribution to IPC and the electronics interconnect industry. Dr. Chris Hunt, National Physical Laboratory, on behalf of his team that included Alan Brewin and Ling

Zou, proudly collected the award that recognised NPL's contribution to the development of IPC-9691, User Guide for the IPC-TM-650, Method 2.6.25, Conductive Anodic Filament (CAF), Resistance Test (Electrochemical Migration Testing).



### Bob Willis accepts award that recognizes his exceptional lead-free work from David Bishop, MD of Soldertec

Soldertec Global/Tin Technology has announced their Annual Lead-Free Solder Awards and Bob Willis proudly receives the 'Process Development Award', in recognition of his many achievements and enthusiasm in assisting industry in the preparation for the implementation of

lead-free legislation. Bob coordinates the SMART Group activity for the EU project LEADOUT, currently Europe's largest funded research project. Tom Perrett, Soldertec Global Marketing Manager, commented, "Bob's enthusiasm is infectious. He gets things done and has contributed so much to enable our industry to meet the challenge of the impending legislation. His standing by his peers is second to none and we are delighted to announce his well deserved award".

# SMART WAVESOLDERING SEMINAR & HANDS-ON EVENT



Venue: Soldertec,  
Curo Park, St Albans  
Date: 19th January 2006



Bob Willis hosted this day presenting wave soldering tips to meet the challenges of lead-free. He outlined the changes in design, component considerations and also the machine related issues. Control of the process is more important with lead-free partly as we are all learning about changes in the process and the reaction of new materials.

Bob covered the changes that will be seen in joints and some of the cosmetic issues that the industry have already experienced like, fillet lifting, pad lifting and fillet tearing of the joints.

The afternoon was spent soldering boards on a Kirsten 5360 Wavesoldering machine with nitrogen and looking at the soldering results on gold, copper OSP, silver and tin finishes. Different methods of testing boards were considered and demonstrated like SEM, microsectioning, EDX analysis. Sample boards were inspected during the workshop and a full evaluation report is being produced for delegates to give confidence in the results achieved on the day.



Nick Hoo, Soldertec, welcomes Phil Harrison from Kirsten, Process Support Products



The speakers take time out in the press box



Joe Belmonte fields questions



## SMART GROUP'S SPECIAL EVENT RECEIVES POSITIVE RESPONSE FROM INDUSTRY



On November 1st SMART Group

organised a special lead-free seminar featuring eight top class speakers who agreed to give short presentations on their specialist topic and then to participate in nearly 2 hours of debate in two 'Question Time' sessions.

The attendance for this significant event was an unprecedented 218 delegates and 20 exhibitors. The day opened with a legislation update from Steven Andrews, DTI. This was followed by the 'enforcers', National Weights & Measures Laboratory, who put 'their heads above the parapet' with Chris Smith giving an overview of their enforcement approach. Ron Lasky, Senior Technologist from Indium USA reviewed and compared techniques for demonstrating RoHS compliance in an electronics product. A practical example of how a contract manufacturer is implementing RoHS was presented by Nick Mair from JJS Electronics.

Equipment manufacturer Speedline Technologies provided the second USA speaker with Joe Belmonte advising on the latest wave, reflow & screen printing technologies. AFDEC Council member and Farnell's Head of Product Market Strategy, Gary Nevison, represented the component industry with 'RoHS & WEEE - Impact on Distribution'. Martin Morrell from Circatex updated on printed circuit board technology and advised on how to provide a rapid implementation for RoHS compliance. Finally Dr. Chris Hunt from National Physical Laboratory updated the audience on the reliability work that has been carried out over recent years, much of this being DTI funded.

The response during the day and since has been complimentary, urging the SMART Group to repeat & update the event for its 8th Annual Lead-Free event in February.



## MANUFACTURING PROCESS -



# THE TRANSITION TO LEAD-FREE WITH LEADOUT LEAD-FREE INSPECTION, PROCESS CONTROL AND DEFECT ELIMINATION

Silver Springs Hotel, Cork - Thursday, 1st December 2005

Over 60 engineers attended the final lead-free event of 2005 organised by SMART Group Ireland. Held in Cork it proved to be a popular location for the event which focused on how the Group is supporting Irish industry to meet the challenges of lead-free manufacturing. The table top exhibition was well supported with many well known suppliers and distributors, each of which was able to illustrate its own lead-free expertise. Discussion focused on the European funded LEADOUT project, SMART Ireland's RoHS Mentor Programme and the day's workshop.

Many of the results presented were based on practical lead-free trials conducted by members of the Group over recent years.



Eoin Horgan and Rob Mullane.



Paul Fahy and Rob Mullane.



Vincent Synnot and Moss Dore.

They are featured in the recently released "Lead-Free Experience Report". This 100 page colour report covers testing on components, printed boards, stencils, paste, reflow and circuit board reliability. The report contains many examples of joints, sections and x-ray images and is FREE to download from the website. Moss Dore introduced the "RoHS Mentor Programme" to the delegates. The aim of the programme is to provide SMART Group Ireland Members with information and assistance on Lead-Free Soldering and RoHS Compliance.

Companies in Northern Ireland and the Republic of Ireland who are MEMBERS of SMART Group Ireland can avail of this service. The programme offers a selection of training modules and consultancy support solutions researched extensively by the RoHS Programme Facilitator:

Consultancy Solutions Include: Alloy Selection, Solder Paste Considerations, Stencil Printing, Placement Considerations, Reflow Oven Validation, Wave Soldering Systems Validation, Inspection and Workmanship Standards. Further details are available at [www.leadfree.ie](http://www.leadfree.ie)

Bob Willis presented the five hour workshop and answered questions in the final session of the day. The best questions were awarded a SMART Group interactive Lead-Free Training CD-ROM. SMART Ireland also presented a special prize (Apple iPod) to one lucky delegate.

Lead-free assembly does have an impact on the design, manufacture and the potential reliability of printed board assemblies. Although the fundamental processes do not change, process parameters do change and there are process issues that are coming to light and do affect yields. This event provided a practical insight into the inspection criteria, changes to process conditions and how to monitor the process to obtain the highest yields. The session also illustrated the potential problems and how to avoid them at each stage of manufacture, where necessary changes to IPC610 D criteria will be required. Monitoring solderability of boards and components in production with simple tests was illustrated by Bob using techniques that any engineers could undertake.

For information on LEADOUT visit [www.leadoutproject.com](http://www.leadoutproject.com)

Upcoming Event

## SMART Group 8th Annual Lead-Free Seminar plus 'Question Time' & Table-Top Exhibition

Thursday February 16th  
Wycombe Football Club Conference Centre

**'Routes to RoHS Compliance' -**  
Neil Stanton, BSI Product Services

**'ROHS Readiness - Progress Report on Suppliers & Customers' -**  
Richard Eden, RS Components

**'Lead-Free User Experience' -**  
Nigel Burt, Dolby Labs

**'Complying With International Patent Obligations' -**  
Steve Brown, Cookson Electronics

**'IPC-SPVC: Comparison of SAC Solder Compositions' -**  
Steve Dowds, Henkel

**Question Time (All Presenters)**

**'An Update of Lead-Free Wave Soldering' -**

Christian Ott, SEHO Germany.

**'An Update of Lead-Free Selective Soldering' -**

Christian Ott, SEHO Germany.

**'Advantages of Vapour Phase for Lead-Free -**

Joachim Krause, IBL Germany

**'Advantages of Nitrogen for Lead-Free' -**  
Paul Stratton, BOC.

**'RoHS - 5 Months to Implementation' -**  
Abigail Cottrell, DTI.

**'Analytical Test Protocols for Ensuring Compliance with the EU RoHS Directive' -**  
Paul Cusack, Soldertec

**Question Time (All Presenters)**

# NEPCON Electronics Process Technology Seminars 2006

Sponsored by Electronics Manufacture & Test magazine, organised by SMART Group  
Nepcon Electronics 9th - 11th May 2006  
NEC, Birmingham

The Nepcon Process Technology Seminars are organised by the SMART Group, each presentation lasts for 30min, with a 30min break before the next to provide ideal opportunity not to miss the hundreds of exhibits and other features at the UK's largest electronics show.

"Nepcon & Electronics Manufacture & Test magazine continue to provide the biggest and best FREE technology seminars in the industry, year on year. Guaranteed quality presentations, the seminars always cover the most important issues relating to current and future manufacturing challenges, before anyone else. Although lead-free requirements are only

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Manufacture  
and Test**

weeks away there is still a thirst for real experience, real data and simple solutions which are what we always aim to provide. commented Bob Willis, SMART Seminar Coordinator. The Process Technology Seminar bookings can be made on line at [www.nepcon.co.uk](http://www.nepcon.co.uk) to secure your FREE place and to receive a copy of all the papers from the event.

## Tuesday 9th May

- Lead-Free Failure Analysis - The Real Story So Far
- Installing Nitrogen Production Capability - Engineers Step by Step Guide
- LEADOUT Report Lead-Free Inspection Criteria for reflow and wave soldering

- Vapour Phase Soldering & Production Experience in Contract Assembly
- Press Fit Connectors and the Impact of Lead-Free Manufacture

## Wednesday 10th May

- Lead-Free Manufacture and Assembly of Flexible Circuit Assemblies
- Transition to Lead-Free and Reliability of Mixed Alloy Products
- LEADOUT Report - Environmental Impact of Lead-Free Production Processes
- Testing Products for WEEE and RoHS Compliance Experience
- How to Recycle Products and Benefit your Company Recycler

## Thursday 11th May

- LEADOUT Report - Implementation of Lead-Free Manufacture & Lessons Learned
- BGA Reliability - Focus on Brittle Ball Fracture
- Design for Disassembly of Electronic Products to Benefit the Environment
- WEEE & RoHS - The Real Life Experience
- LEADOUT Report Lead-Free On-Line Training Module Launch

## DIARY 2006

### February 16th

'8th Annual Lead-Free Seminar & Table-Top Exhibition'  
(AGM will be held during the day)  
Wycombe FC Conference Centre

### April 6th

RoHS - Practical, Legal and Operational issues,  
Enterprise Ireland, Glasnevin, Dublin

### March 2nd

Countdown to Lead-Free  
ISLI, Alba Centre, Livingston, Scotland

### April 11th

Lead-Free Roadshow, BCUC -  
High Wycombe

### May 23rd

Lead-Free Implementation, JJS Electronics -  
Leicestershire

### May 9-11th

Nepcon Electronic NEC, Birmingham  
(Includes SMART Group Lead-Free Hands-On  
Experience 4 & Process Technology Seminars)

### June 6th

Advanced Interconnection Seminar, DEK -  
Weymouth

### September 26th

Troubleshooting Lead-Free Assembly Process,  
High Wycombe

If any member would like to suggest or host an event please contact Tony Gordon.



## COLIN LEA 15 YEARS OUTSTANDING SERVICE

Colin Lea, who recently stepped down from committee membership after 15 years, is presented at the Christmas committee meeting with a cut glass candle holder from Peter Marshall (Chairman); in recognition of his outstanding contribution to the group and will be remembered as the organiser of six SMART Group Biennial European Conferences. Our best wishes go to Colin and his family.

# Hands-On Lead-Free Experience **4**

Nepcon Electronics - NEC, Birmingham 9 -11th May 2006

Be part of the *SMART Group Lead-Free Hands On Experience 4* organised by popular demand for the fourth year during Nepcon Electronics. It's an ideal way to showcase your materials, production equipment's lead-free capability and your experience in a real hands on environment. Be one of the first to get involved with this years event !!

*Lead-Free Experience 2005* was sold out; this is what engineers had to say:

*"Congratulations on organising such a good event. If you do another one I would like to see even more in depth process presentations"*

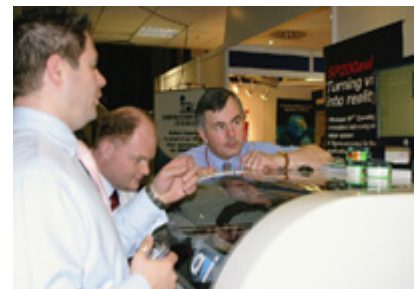
*"Visibility of real processes and gaining confidence into aspects of new alloys"*

*"Having representatives from all areas of PCB manufacture enabled us to gather a lot of information in a short space in time. It also gave us the right questions to go and ask our suppliers."*

*"A most valuable event"*

*"Personally the most valuable aspect of the Experience was actually seeing what processes were involved in making good joints"*

*"I thought the overall seminar content and the way the event was structured was very good and a credit to you and the SMART Group"*



See what happened in 2004/5 at [www.smartgroup.org/ev\\_leadfree3.asp](http://www.smartgroup.org/ev_leadfree3.asp)

