

Welcome to our newsletter

Firstly, many thanks to all delegates, our 15 exhibitors and all helpers, who made the first of our 25th Anniversary events a great success. The speakers are to be congratulated for their excellent presentations that entertained our audience so well. It was wonderful to see some 'old' faces and especially a surprise guest – John Burke (Founder of SMART) who was visiting from the USA.

As well as coverage of our October event we have a report on our most recent seminar held at NPL. It was good to see that delegates had travelled some distance to this 'High Reliability Circuit Board' seminar.

The recent Productronica Exhibition, Europe's foremost electronics show is always a good yardstick for what's happening in our industry. Most reports seem to suggest there is some optimism into 2010.

We congratulate those members who received SMART Fellow Awards, including a slightly different 'Bellow' award for our Chairman!

Mike Judd



Chairman Keith Bryant receives prestigious award!

Are you on *smart-e-link*?

Networking is a key activity within the SMART Group, whether it's by participating on our email forum (or attending our regular diary of events).

Engineers can keep in touch by using *smart-e-link*, a rapid means of communication providing a uniquely direct route to others to discuss news, share problems and more importantly solutions.

To get on *smart-e-link* visit our website www.smartgroup.org

There are frequent endorsements of the link. Thanks to Ioan Tempea, ing at Digico Global Network in Quebec, Canada.

"I have been on the IPC TechNet forum for 10 years and have only discovered *smart-e-link* about 2 years ago. I trust the SMART forum as much as I trust TechNet and post all of my questions on both every time. To my surprise I always got answers on the SMART link, even when TechNet was silent.

"People are very professional and willing to help and everything looks more like a big family than a gathering of people, with sometimes contradictory interests due to their job affiliations. Long live SMART!"

Further Ioan comments: "It's just that the US events are so scarce compared to what I see going on in the UK. I have seen seminars advertised by Tony (Gordon) on practically every assembly issue about twice each from the beginning of the year".

SMART Group 25th Anniversary SMART Fellowship Awards



Those present to receive their awards were L to R: Keith Bryant - Chairman; Peter Swanson - Honorary Life Vice President (presenting Awards); Martin Tarr - SMART Group Scotland; Naim Kapadia - JJS Electronics; Chris Hunt - NPL; Rex Waygood-Hansatech EMS; Ian Braddock - MBDA UK.

At the SMART 25th Anniversary Conference, Peter Swanson, Honorary Life Vice President presented ten SMART Fellowships with the following address:

"SMART Fellowships are awarded to individuals to thank them for their continued contribution and support. Importantly, the list includes SMART members who are regular attendees or extraordinary contributors to the association's seminars, forums and events. They do not have to be a committee member to be a valued SMART participant. Being a regular attendee, asking questions or using the benefits of membership are just as important. These activities inspire the spread of technology throughout the member's company, The SMART Group and the industry itself.

"We started SMART Fellowships in 1998. As in past years, I asked for nominations from all SMART Committee members, and also from the membership at large. After the nominations were received, the Fellowships were voted upon by the Steering Committee and Directors of SMART Group. You cannot receive this award twice. This year there are ten Fellows:

- Peter Allgood - Allgood Technology Ltd**
- Iain Braddock - MBDA UK Ltd**
- Steve Eglinton - PEM, South Africa**
- Ingmar Grewar - PEM, South Africa**
- Chris Hunt - NPL National Physical Laboratory**
- Naim Kapadia - JJS Electronics Ltd**
- David Llewellyn - DEK**
- Martin Tarr - SMART Group Scotland**
- Rex Waygood - Hansatech EMS Ltd**

"Peter, Iain and Rex are all fantastic contributors to and attendees of our events and forums. Chris and Naim are long term and dutiful members of our Technical Committee. Steve and Ingmar have been heavily involved in the establishing of SMART Group SA. David is retiring from DEK having served 35 years in the industry and a SMART supporter since the beginning. Martin, before he retired recently, threw enormous energy into activities with SMART Group Scotland. We congratulate them all.

SMART Fellowships cannot be awarded to the Steering Committee members, as they do the selection. Nevertheless, they are highly sought after by the Steering Committee guys, and no-one is more vocal about it than our Chairman, Keith Bryant, to whom I am proud to present a special, SMART Bellow award! Actually, with his firm leadership of the Group through the recession, his energy and vision in establishing SMART Group South Africa, and his long-term commitment to SMART, there are few more deserving of our tenth SMART Fellowship this year."



Longstanding Committee member Mike Fenner presents IGMAR Grewar and Steve Eglinton with their SMART Fellow awards as acknowledgement of their hard work in establishing SMART SA. SMART Group South Africa is the leading South African technical trade association representing the electronics manufacturing industry. Steve is Chairman of SMART Group South Africa and IGMAR an active Steering Committee Member. A number of seminar events have been held in various locations throughout the country over the last few years. (These awards were presented at the Productronica show in Munich)



The SMART Group 25th Anniversary Seminar and Exhibition

After a quarter of a century, the original ethos of bringing together a group of engineers with a common interest to share knowledge by meeting and talking was re-affirmed as Chairman Keith Bryant welcomed delegates to SMART Group's 25th Anniversary Seminar.

The seminar offered up-to-the-minute information on process technology, reliability, environmental and business advances, on the theme Reduce Waste – Improve Reliability – Increase Profit. Founder member Mike Fenner was one of the presenters, and John Burke, who has been living and working in the USA for many years, made a surprise appearance.

Vice-Chairman Graham Naisbitt introduced keynote presenters Doug Pauls and Dave Hillman, Principal Materials and Process



Doug Pauls & Dave Hillman

Engineers from Rockwell Collins, USA, who engaged, educated and entertained the audience for three hours with lessons learned from a series of eight case studies illustrating the consequences and costs

of non-conformance – not doing the job right-first-time through ignorance or shortcuts. Rockwell Collins operate in the high-reliability environment of life-critical and flight-critical equipment, and the costs of non-conformance – lost productivity, engineer time and additional labour to investigate, identify and rectify a problem – can easily run to hundreds of thousands of dollars.

In the afternoon, the audience chose between three separate sessions focusing on either: business, reliability or environmental issues, and it was interesting to note that, given a free choice, the delegates divided themselves fairly evenly between each of the three presentations.

The reliability session, chaired by Dr Chris Hunt, had presentations by Davide de Maio, from the National Physical Laboratory, discussing low-cycle fatigue in lead-free solder alloys, Russell Shipton of ERA Technology, on the practical realities of failure analysis of electronic components, and Nathan Barry of Aero Engine Controls on vibration testing of lead-free and tin-lead solder joints.

Technical Committee Vice-Chairman Nigel Burttt gave a thought-provoking introduction to the environmental session, which left the audience in no doubt that the environment, sustainable



Speakers at Reliability Session: Dr Chris Hunt-NPL, Nathan Barry-Rolls Royce/ Goodrich & Russell Shipton-ERA.

development and green concerns in general had become more than matters of minority interest. Governments all over the world were looking to change the mindset and behaviour of businesses and

individuals. His message was that, whether we choose to accept all the arguments or not, we have to begin thinking not just about electronic waste and energy usage related to the products we manufacture, but overall corporate responsibility in general, including sustainability and environmental impact assessment for the whole of our business operations. Mike Fenner, Technical Manager Europe for Indium Corporation, talked about soldering challenges in a halogen-free PCB assembly process. Defining the meaning of "halogen-free" was a challenge in itself, although IPC J-STD-709 would ultimately give authoritative guidance.

Marion Quarrington from Measurement Technology Ltd gave a detailed and informative OEM perspective on the EU REACH regulation, its impact on an electronics manufacturing business,



Speakers at Environmental Session: Nigel Burttt-Enjaybee, Marion Quarrington-MTL & Mike Fenner-Indium.

and how its requirements could be managed with a rational and logical approach. REACH was clearly an area of great concern for delegates, as it generated many questions from the audience. Continuing the theme of environmental legislation,

Nigel Burttt returned to give an update on proposed amendments to the RoHS, WEEE and ELV Directives, which was followed by another presentation by Marion Quarrington on the spread of environmental legislation throughout the world.



Speakers at Business Session: Dave Hillman-IPC, Peter Barnwell-CIL & Mark Hutton-BPA.

The business session demonstrated that SMART is not just about "techie" subjects, and there was keen interest in the presentations from Peter Barnwell of Custom Interconnect Ltd, Mark Hutton of BPA, and

Dave Hillman on behalf of IPC. Peter Barnwell described the role of the independent EMS company in the UK, beginning with a review of how the EMS industry has evolved over the years.

Over recent years there had been a rationalization and transition from contract electronics manufacture to electronics manufacturing service and, lately, the concept of original design manufacture had become more significant.

So what was the future for the small-to-medium EMS company in the UK? Barnwell believed in being both technology and customer orientated, with emphasis on customer-supplier partnerships. With modern equipment, up-to-date methodologies and a highly skilled and motivated workforce, an EMS business could continue to be successful. Price would always be an issue, quality was a given, but delivery speed, flexibility in supply and the technical resources to solve customer problems were definite selling points. Adding IP and diversification into specialist areas were further means of securing a positive future.

Mark Hutton's presentation was entitled Key Interconnection and Packaging Trends of High-End Fixed and Wireless Electronic Systems, and looked at some of the technologies that had been analysed by BPA over the past year. He reviewed flex and flex-rigid printed circuits, high speed electronics, wireless modules, mobile phones, automotive, ultrathin copper and HDI trends in the context of the current world electronics market. Of particular interest were his views on the justification for optical interconnect in low-cost high-volume applications such as smartphones, with examples of solutions offered by Motorola and Matsushita. He ended the presentation with a glimpse of BPA's forecasts for sector-by-sector demand for flex and flex-rigid circuits, expected to reach \$450M in Europe by 2013.

Finally, Dave Hillman reviewed IPC's 2008-2009 International Technology Roadmap for Electronic Interconnections, describing technology roadmapping as a needs-driven planning process to help identify, select, and develop technology alternatives to satisfy

a set of product needs. The IPC roadmap included input from China, Japan and Europe, and described incremental operational-level information in detail for each step of the PCB manufacturing and assembly process. The 2009 roadmap incorporated many new features, including a keyword-searchable database. It was important for any company in the electronics supply chain to have an understanding of trends and technology changes and Hillman believed that three-year roadmaps could give meaningful information, but considered ten-year forecasts to have limited value. He advocated that companies take a balanced view between global industry roadmaps and forecasts from the specialist market analysts.

Outside of the seminar sessions there was plenty of interest and activity around the table-top exhibition area, people made the most of the networking opportunities, old acquaintanceships were renewed and plenty of new ones established.

The feedback received from delegates has been very appreciative and positive.

A fuller report by Pete Starkey, SMART Group Technical Committee, can be found at:

www.smartgroup.org/index.php?option=com_content&task=view&id=73&Itemid=14

Caption Contest (Just for fun!)



Nigel Burttt opens the Environment Session.

Captions to mjudd@mjm-marketing.com



'High Reliability Printed Circuit Boards' Seminar held at NPL on 17th November

An excellent line-up of speakers resulted in a well balanced audience who had travelled from far and wide, including four delegates from County Antrim, three from Lancashire, the remainder from West Yorkshire, Leicestershire, West Midlands, North and Mid Wales, Bedfordshire, South Hampshire and a number more locally to sunny Bushy House in Teddington.

"Good quality and high reliability are not an accident: they are there by design!" – the opening words of Artetch Circuits MD and SMART Group Technical Committee member Martin Morrell as he introduced the SMART Group seminar on high technology, high reliability printed circuit boards. "Understanding your product, the materials used in its production and how it is manufactured are crucial in designing cost effective products with high reliability" he continued, addressing an attentive audience including PCB designers.

The well-balanced seminar programme covered many aspects relevant to printed circuit design and included presentations from Alun Morgan of Isola, on materials for high-end PCBs, Dennis Price of Merlin Circuit Technology on how to specify a PCB in fabricator's language, Terry Bateman of Optiprint on finishes for wire-bonding and soldering, Neil Stanton of BSI on specifications and approvals, and Paul Comer of Graphic on PCBs for military and aerospace applications. In the afternoon session, Martin Wickham from NPL gave an update on reliability testing projects, and Neil Chamberlain from Polar Instruments

described how to calculate, specify and test electrical characteristics of PCBs.

The wealth of information delivered by the presenters formed the basis for an energetic and productive panel discussion, moderated by Dr Chris Hunt, as members of the audience posed challenging questions on materials specifications, the suitability of microvia technologies for high-reliability applications, the effects of material structure on real-life impedance calculation and the influence of design details on interconnection and solder joint reliability.

This was a successful day, including some keen networking.



Speakers: Martin Wickham (NPL), Neil Chamberlain (Polar), Terry Bateman (Optiprint), Alun Morgan (Isola), Dr. Chris Hunt (NPL), Dennis Price (Merlin Circuit Technologies), Martin Morrell (Artetch Circuits), Neil Stanton (BSI), Paul Comer (Graphic),

SMART GROUP EVENTS DIARY 2009/2010

2009

November 17th

High End Technology Printed Circuit Boards, Teddington (see report)

November 26th

New Machinery Directive Workshop, Dublin, Ireland

December 8th

Road to Zero Defects – Screen Printing, Curo Park, St Albans

2010

February 9th

Lead-Free Product Failures Causes and Cures Stagsden, Bedford

May 5th

Practical Lead-Free Experience 4 Years - The Full Story So Far, Dublin, Ireland