

Welcome to a very special newsletter

SMART Group is celebrating its 25th Anniversary and we would like to thank all our loyal members who have supported us over 25 hectic and historic years.

Chairman, Keith Bryant, has announced that to commemorate our Silver Jubilee there will be a year of celebration, commencing with a special event at our popular Oxfordshire venue on October 22nd, with headline speakers Doug Pauls and Dave Hillman from Rockwell Collins, USA, together with a choice from three separate afternoon sessions, all supported by a table-top exhibition. In the evening there will be a celebration get-together...PLEASE JOIN US. See www.smartgroup.org/images/stories/events/25thAnniversarySeminar.pdf

Past Chairman, Paul Salmon, describes our history thus: "SMART has evolved from a small group of 'self-help' professionals in the electronics manufacturing industry to a major source of support and information on an increasing International scale".



Mike Fenner returns to venue of inaugural meeting with Nigel Burt.

It was my pleasure recently to invite one of the founder members of the group, Mike Fenner (Indium Corporation) to the venue where the inaugural meeting was held in 1984, The White Hart Hotel (renamed The Great House) in Sonning, Berkshire. Steering Committee member Nigel Burt and I enjoyed discussing the early days of the group with Mike.

I'm grateful to all contributions to this newsletter, especially from Founder John Burke and early members Mike Fenner, Bob Willis, Dr. Colin Lea etc.

We hope to have more reminiscences from readers in newsletters over the coming year. Let's celebrate!

Mike Judd, PR Director



"I've been coming to SMART events for a mere 15 of their 25 years and for the last eight I've had the added fun of being more involved via the committee ...the constant through all of those years has been the ever changing technology and challenges in our industry and the unfailing ability of the SMART Group and its members to help pre-warn us of what is coming next and share knowledge on how to tackle it best – long may we encourage that element of active participation from our members."

Sue Knight (Chairperson of Technical Committee)

SMART Group Silver Jubilee thoughts

By Colin Lea, National Physical Laboratory

Anniversaries are loved by all. They give us the opportunity to reminisce, to ponder on life in general, and to reach for the old photograph album.

I was not there at the birth, but I was greatly fortunate to be part of the adolescence and growth of the SMART Group into a body of worldwide influence. In 1986, I was invited into membership of the Technical Committee and for nigh on twenty years participated in the work of the Technical and Steering Committees. What fun we had. What friends we made. What an extraordinary amount I learned from the SMART Group about the electronic manufacturing industry.

Twenty-five years ago, the electronics manufacturing industry was driven largely by in-house experience, expertise, and best practice being promulgated within each company by mentoring and apprenticeship. There was no infrastructure of independent research and no forum for open discussion about generic problems within the highly complex manufacturing processes, as had existed for example in the steel industry for a hundred and fifty years. The SMART Group provided, and continues to provide, an exceptionally effective vehicle for such open debate and problem solving. The NPL Soldering Science and Technology Industrial Club, through participation in SMART Group activities, was given the opportunity to bring a scientific capability and a science base to this debate. It has been a good and enduring partnership.

Unusually, if not uniquely amongst members of the SMART Group Technical Committee, I had hardly been near a factory and knew precious little about manufacturing processes.



But my committee colleagues were always willing patiently to explain the ways of the 'real world' to me as we discussed what SMART might undertake to increase its impact and benefit the industry at large.

My most endearing memories of the SMART Group will be associated with the Old Ship Hotel in Brighton and the six biennial SMART Group European Conferences held there during wet and windy Novembers from 1994 to 2004. These were wonderful events where friends, colleagues and competitors found the camaraderie and networking without parallel anywhere. But the fun was as much in the organising as in the events themselves. The small conference organising team invented many schemes and called in lots of favours, to manage the financial risk against its long shopping list of its grandiose ideas.

So, the SMART Group is twenty-five years old. It is well deserving of our congratulations and thanks. It has been an inspirational example of what can be achieved working together, company with company, retaining commercial competitiveness but collaborating for the mutual benefit, to respond to technological challenges. Long may it continue to be so.

"I joined the fledgling SMART Group way back in 1985, then a young(ish) BT designer grappling with these funny leadless parts and finding them at times fascinating and frustrating – I still do! Over the next few years the SMART community provided education and friendship and helped me shift career from design to production – a decision I have never regretted. The email explosion leading to *smart-e-link* has for me been incredibly useful. A simple thing, not polished or flashy but a very powerful tool indeed for information exchange – plus a little humour to help the day go round. Thanks everyone!"

Peter Allgood (Regular *smart-e-link* user)



How it all started

Founder John Burke (JB) and Mike Fenner (MF) present the background to the early days of the SMART Group.

(MF) I think we should give the context in which the Group was started. In the early 1980's our industry was pretty well up to speed with modern technology, introduction of wave soldering was pretty well finished, there was a consensus on how boards were made and assembled, common standards were emerging on finish and component types etc agreed, standard board design was double sided PTH with 4 layer multilayers leading edge. 16-pin DIL on 0.1" pitch was the most complex component most people had to deal with.

Suddenly BAM! Surface Mount Technology. There were some amazing new ideas to grasp and quickly. No leads on components, no holes in the boards, boards shrunk by as much as two thirds, the components were on the same side as the solder. Incredible. This wasn't an incremental change of the type we were used to, but a completely new approach, what is now called destructive technology. We had better learn about this and the new materials, machines and component types – also the inevitable set of acronyms that came with it, SOIC, SOT and so on..... PDQ. So the industry was flapping around a bit, when John Burke had his inspiration.

(JB) The first meeting took place in the White Hart hotel in Sonning on the 5th July 1984. The meeting had the following participants (ones that I can remember):

- Myself (John Burke - arranged meeting)
- Mike Fenner (then with Alpha)
- Dr David Hey (ICI)
- Steve Horsley (Watford Design Services)
- Stephen Penton (Factron Schlumberger)
- Richard Burnett (SMT Ltd)
- Phil Avery (ACM Components)
- Russ Wood (3M)

The meeting was somewhat guarded at first with each participant aware of "what they knew" but as the meeting progressed it was fairly obvious that the collective "what we know" was a lot more than the individual knowledge since even at that early meeting we had people from design, manufacturing, components, equipment and materials vendors, adhesives, solder pastes etc.



John Burke cartoon drawn at a Nepcon Show

The ice was quickly broken and I believe the meeting adjourned that day about 4.30pm having commenced at 10am with a break for an excellent lunch. At the close of the meeting it was tabled that the meeting was worthwhile and that I would arrange another meeting later in the year.

(MF) We had another meeting, possibly two more before going to 3M. The first meeting as John said was just a few people, we then had another at the White Hart where about a dozen people turned up, and I am fairly sure we had one in a place in Wargrave rather than the White Hart as so many people said they were going to turn up, and did. At this meeting, wherever it was, we realized we couldn't just keep turning up at a pub/hotel and effectively taking it over, likely they would want to rent the room, which meant we would need some money, and that meant some type of organisation was required: a dreaded committee. Dreaded because the one thing we really liked was a group of people just turning up and talking as equals about this new technology, a committee system would get in the way of that and anyway who had the time for that?

(JB) Good (and bad!) news travels fast – I got many phone calls over the next few months and another meeting was arranged for November. Notable at that time was the addition of Bob Hankin – then of GEC McMichael who actually came up with the name 'SMART Group' (Surface Mount and Related Technologies) as an acronym for the full version of the name.

(MF) The Group part of the name was important as it emphasized the fact we wanted to stay a group of people talking shop. So now we had a name and Russ Wood kindly offered the facility of 3M at Bracknell and in November that year we all met again this time with more people, including Bob Willis and Peter Marshall. Somewhere here a bunch of us became a committee and we spent many hours thrashing out the way the group would be organised and run, the basis of future meetings.

We were concerned to make sure the Group kept to its 'get a bunch of people together and they will share knowledge by meeting and talking' ethos.

(MF) The Group continued to grow and by now did have an informal committee and were collecting membership fees, we appointed a part time secretary to actually run things and edit our very own magazine, Tom Archer. The basis of the Group was now well established and membership quite substantial and we realized we needed to become more professional. Later Steve Penton suggested we have a proper secretary who could do books, accounting and similar stuff and undertook to find such a person. Enter: Tony Gordon.

(JB) Also notable was the addition I believe at that time of Bob Willis – although Bob may actually have come to the next meeting. At the end of that meeting we discussed how best to promote the existence of the Group – I had contacts at Electronic Production magazine and said that I would speak with my friend David Buckley – David published an article in the January 1985 issue of the magazine describing the SMART Group aims which are the same to this day, and I remember reading the article – feeling smug – and wondering “what comes next?”.

(JB) It wasn't long in coming. I got a call from Andrew Salmon the newly hired Director of Morgan Grampian Exhibitions and we talked about maybe running a show on SMT. Anyone who was around at that time will remember the launch of the SMARTEX exhibition in February 1986 at the Blue hall in the Barbican and the subsequent show the following year in blue and red halls with a subsequent (and only) show in Wiesbaden in Germany. Anyone around at that time will also remember Peter Evans from MG; a true gentleman.

(JB) The show got the SMART Group a free exhibition stand – question was – “What the heck do we put on it?” I hurriedly got some boards put together from the kit that we were going to assemble at the show – the live production line - and hurried

across to Mike Judd's office in Henley where I had a meeting. Seeing the light streaming through Mike's office window – I asked if I could photograph the boards right there in his office using different colour backgrounds – to this day I am thankful to Mike for not considering me the World's strangest engineer but someone with a deadline having to improvise on the fly. We had six of the photos of the board blown up to 4 feet across and stuck them on the stand walls just in time for the show opening; they looked great – another 'just in time' delivery.

(JB) Up to the start of the show in 1986 we had been working with MG and decided that depending on the outcome (we had no clue!) we would go negotiate for some SMART Group funding from Morgan Grampian. At this point I was introduced to the one and only Paul Salmon – there he was larger than life, just joined the Group – working as Sales and Marketing Director for Multicore and with an MBA – he said few words – which I believe were “I'm new to the group, I can negotiate this – I know what I am doing – trust me” and off he went and came back with a deal which in retrospect none of us would have ever dreamed of – THANKS PAUL!

(MF) I do remember introducing Paul to SMART. I also recall he and I discussing at a meeting in a Brighton Hotel and deciding on what to say and how to pitch for money, and how much, and how Paul did exactly as we discussed but surprising himself, me and them by asking for 3x what we had agreed and getting it. This might have been with Reeds later on though rather than MG. I know it was a vital moment in the Group's existence as we were flat broke without the sponsorship cash.

(JB) In 1986 I was contacted by some engineers at the University of Cork and that year I believe SMART Group Ireland was formed and who ran a show in the RDL in Dublin with Sean Lemass's exhibition company. This was the first time I met the incomparable Alan Jones – sadly missed friend, inspiration, and rebel.

(JB) Good days, and what could easily have become an occasional “meet at the show” exclusive club developed by the strength of the participants in those early and subsequent meetings into the internationally recognized trade association that we see today – I say to the SMART Group members and Committees past and present – GREAT JOB – WELL DONE!!

Our thanks to: John Burke, San Jose, California USA & Mike Fenner, Indium Corporation, Milton Keynes. Also input from Paul Salmon and Bob Willis.



LEAD-FREE, RoHS and WEEE...

...a view from Nigel Burt

For my sins I suppose I am most well-known within SMART Group circles for my work in preparing for the implementation of the RoHS and WEEE Directives and the introduction of lead-free soldering processes as a result. However, apart from a few prior posts on *smart-e-link* and attendance at some seminars and workshops as a delegate, I really didn't become actively involved until the consultation discussion forum I helped to organise in May 2003. The idea for these came out of a casual conversation over lunch with a colleague as we struggled to understand the exact intentions of the legislators that had drawn up the Directives. There must be engineers all over the country - if not the world - coming up with similar queries and not knowing who to ask, we reasoned. Equally, there will be some questions that we will have thought of, but others hadn't yet and vice-versa. The government was offering the opportunity to respond to a formal industry consultation and it made sense to do so collectively from our industry, I therefore approached SMART Group to offer a venue to bring like-minded people from the industry together and air these issues. The event worked well and we held another in October 2004 for a subsequent stage of the consultation process.

SMART Group had however been trying to bring lead-free soldering to the attention of the industry for many years beforehand though and for these efforts and achievements they deserve much credit, none of which I can share as a recent addition to their committee. I will remind you of just a few of these significant milestones below.

1998 saw the first major lead-free awareness event run by SMART Group and by the time the Directive was in place there had been at least ten such events, in addition to their many focussed practical workshops and seminars each year, most of which would have, of necessity as the RoHS deadline approached, covered lead-free issues themselves.

First published in 1999 and updated in 2000, SMART Group committee members helped with the preparation and distribution of a government report "An Analysis of the Current Status of Lead-Free Soldering."

In February 2001, they also were part of government funded lead-free fact-finding mission to Japan lead by Bob Willis, and one of the team, Dr. Chris Hunt of the National Physical Laboratory, published a report on this.



Nigel Burt and Dolby hosting SMART Group Meeting

In 2003, Bob Willis organised the first "Hands On Lead-Free Experience" session for SMART Group at Nepcon in the UK. There were three more of these at subsequent Nepcons culminating in a final useful report from all four sessions made available by SMART Group free of charge, specifically with the aim of assisting small-medium volume manufacturers, who wouldn't otherwise have the resources to access such documentation. Two editions of a "Lead Free Defect Guide" were published in 2007 and 2008 and also made freely available.

In October 2004, SMART Group participated in the inaugural meeting of the LEADOUT project and became an active project partner. An EU funded project, its aim over three years was to provide technical support to SMEs spread all over Europe for the problems resulting from the replacement of tin-lead solders in the electronics industry. The project also encompassed lead free process benchmarking, using the PPM Monitoring project launched by Bob Willis and SMART Group in 2002. The following month also saw the 6th biennial conference organised by the SMART Group, which that year was dedicated entirely to RoHS/WEEE and lead-free soldering topics.

However, we have been living with the reality of the RoHS Directive and its lead-free soldering requirements for over three years, since it was enforced in July 2006. The last enlargement of the EU brought the total number of member states to 27 and the combined population to nearly half a billion. In a global economy, such a marketplace cannot help but influence laws and regulations in other countries and for example, we have seen China adopt laws that closely follow the requirements of the EU laws and regulations (RoHS, WEEE and REACH), plus there is the real possibility in the USA of RoHS-like federal legislation in the form of the EDEE Act which was tabled in May 2009.

Just this year, the EU has proposed changes to the RoHS and WEEE Directives and additions to the list of Substances of Very High Concern under REACH. Meanwhile, there is global pressure building to move on from a "lead-free" environment to add "halogen-free" (that is, eliminate all brominated flame retardants) as a requirement too and the lesson we must learn from RoHS is that global regulation on this matter must be watched carefully.

There is also a very definite trend emerging which seeks to bring all such environmental legislation under a banner which encompasses a full life-cycle analysis - from raw material extraction, through the impact of the entire manufacturing process and product energy use in operation, to end user disposal - or what the EU defined as an Integrated Product Policy back in 2003. When even the UK MOD have a "Sustainable Development Action Plan (2007-2012)" and the USA DOD has a "Strategic Environmental Research and Development Program (SERDP)" and the "Environmental Security Technology Certification Program (ESTCP)", it's time to think the unthinkable.

Some of the detail of these new developments will be aired at the SMART Group 25th Anniversary event "Reduce Waste – Improve Reliability – Increase Profit" on Oct 22nd, attendance at which should need little encouragement, given the evidence of SMART Group's past achievements on these matters.

Roll of Honour

Chairmen of SMART Group

John Burke	1984-86
Bob Yates	1986-88
Steve Horsley	1988-90
Bob Willis	1990-94
Norman Hodson	1994-96
Peter Swanson	1996-00
Alan Jones	2000-04
Peter Marshall	2004-06
Paul Salmon	2006-08
Keith Bryant	Present



Chairman Keith Bryant



Tony Gordon
Secretary of
SMART Group
1986-Present

Tom Archer, Secretary	1984-86
Cian O'Mathuna, First Ireland Chairman	1989
Vincent Synnot, Current Ireland Chairman	
Willie Campbell, First Scotland Chairman	1992
Ian Hood, Current Scotland Chairman	
Stephen Eglington, First and Current South Africa Chairman	

Achievements/ Challenges/Activities

In no particular order

- SMART Group Seminar in China
- Elimination of CFCs (Colin Lea's pivotal role)
- SMART Fellow Awards
- SMART Charity Fund Raising Reports
- SMART Group Japan Project
- Lead-FREE Seminars
- Launch DTI Lead-Free Update
- Lead-Free Awareness Campaign
- Participation in EU LEADOUT
- Website
- DTI PPM Monitoring
- Surveys
- Exhibitions: SMARTEX, NEPCON (UK, Ireland, USA), PRODUCTRONICA, INTRON, SCOTELEX, SMT/ES&S/Hybrid,NEW.
- *smart-e-tours*
- Frequent trips to Nepcon West
- Process Technology Seminars
- Customised In-House Seminars & Training
- Fellowship Award Scheme 1998
- SMART Fellow Awards
- Formation of SMART Group Ireland, Scotland, South Africa
- Surveys & Reports
- Counterfeit Components
- Eastern Europe Manufacture
- *smart-e-link*
- European Conferences
- RoHS/WEEE Directive
- Training Videos & CD ROMS
- Technical Reports
- Factory Tours
- Student of the Year Award