

EABS Newsletter

European Association for Brazing and Soldering

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Stop Press: It is with profound regret that we have to announce the sudden death of our Honorary Secretary, **Mr Peter Walter**, on **17th January 2011** at his home in Swansea. As many of you will know he had been unwell for quite some time, but appeared to be making a slow, yet satisfactory, recovery from a recent operation. He will be sorely missed, and our thoughts must now be with his family in their sadness at this time.

A short note from the Chairman

Since circulation of the Spring 2010 Newsletter we have the following matters to report on:

1. We have received a further set of interesting statistics from Blackfoot Hosting in regards to the 'traffic' on the EABS Website. The details concerning the site activity provided to us by Blackfoot are given below.
2. With the Spring Technical Training Seminar in Hanau scheduled for March 2010 being postponed due to lack of support, we have decided to reschedule it to May 2011. Comments on the event appear on page 4 below
3. As you already know, the joint Johnson Matthey Metal Joining–EABS Seminar dealing with the brazing of Tungsten Carbide and PCD had to be re-scheduled. It is agreed that September 2011 is now the target month, and details of the programme for the event, which will include guest speakers, will be posted to the EABS website during the first Quarter of 2011.
4. In mid -May 2010 it was agreed with Solvay Fluor GmbH that the 9th Annual EABS-Solvay joint Aluminium Brazing Seminar would be offered in October 2010. Details of this very successful event are to be found on pages 3 & 4 of this Newsletter/.
5. It has been decided that our promotion of EABS Services to Industry will be further expanded. In addition to the FAQ section to the website, we now offer a trial Corporate Membership of the Association to interested parties, (See the Home Page of our Website for details).
6. During 2009 and 2010 EABS and TWI have jointly been very closely involved with a number of companies who have used us as Consultants to help them obtain accreditation of their brazing operators by a Qualified Authority. (See National and International Standardisation on pages 2 & 3) This is an area that has much potential for growth, and a short introductory Paper on this topic is to be found on page 5 of this Newsletter,

Website Statistics

The Tables shown at the end of this section show that the traffic through our website in the past year has continued to experience satisfactory growth. It is very helpful for The Secretariat to be able to obtain up-to-the-minute feedback from the statistics that our website host, Blackfoot Hosting, provides. As a routine part of the service that they offer to their client companies we have direct access to a wide range of statistical information that can provide the hour-by-hour traffic of visitors to our website. At month-end at the click of a 'mouse' we can see the number of visitors that have visited our site, together with the countries concerned, the number of pages read, and the number of 'hits' that we have received day-by-day, and totalled for both the month involved and for the year to date together with the time

the visitors remained on the site.. For example, it is pleasing to be able to look back to 2008 to see how traffic through the site has improved during the past three years. Of course, it is not easy to identify with any guarantee of certainty what has driven this improved interest in our site, however a detailed analysis of the month-by-month figures over the years has shown that as we have added more and more items to our 'library' in the Members Area, and made changes to the overall design of the site, the traffic 'stepped up' over a two month period after the changes were made, and then continued to grow at a rate of about 7% year-on-year. It has been suggested by our It Consultant that it would be sensible to carry out a major redesign of the site, and this is a matter that the Secretariat will address in the immediate future.

As already mentioned, the statistics provided by Blackfoot Hosting that relate to the visits to our site allow us to determine the countries from which our 'visitors' come. In 2010 we had 'visitors' from 108 countries, an increase of 25 compared to 2009. The top 12, in order of the number of visits made in 2010 were:

USA, Spain, The UK, Germany, The Russian Federation, China, India
Romania, France, Australia, Sweden and Canada.

These 12 countries provided visitors to the site who between them viewed some 23500 pages of the site during 2010, with the first six accounting for approximately 80% of that total. The remaining 96 countries providing the balance! It is also interesting to note that 80% of the visits have last between 10 and 30 seconds. However the average time that the remaining 20% of visitors remain on the site is 2 minutes, with a total of 376 visitors remaining for a time between 30 minutes and 1 hour, and 103 remained for more than 1 hour

It is clear that the overall pattern of visits to the site points to the fact that EABS has something that is of unique interest, and that we are offering training seminars that are relevant to their interests. It is, of course, significant that we are receiving visits from people who have more than just a passing interest in the brazing process, and that such visitors represent a contact with EABS from a very extensive range of countries from across the world. There seems to little doubt that we do, indeed, occupy an important niche in the field of joining technology

Period	No. of unique visits	No. of visits made by the unique visitors	Number of pages visited by all visitors	Total number of hits
1st April 2009 - 31st March 2010 Total Monthly Average	5541 459	9112 759	18733 1561	40978 3415
1st April 2010 – 31st December 2010 Total Monthly Average	5340 593	7331 814	18699 2078	34313 3812
Forecast for Business year 1st April 2010 to 31st March 2011 Total Monthly Average	6500 542	10800 900	19000 1583	42000 3500

National and International Standardisation

As mentioned in the Spring 2010 Issue, the Chairman, Phil. Roberts, was nominated to the post of Chairman of both WEE/19, (the BSI Technical Committee concerned with Brazing),

and CEN/TC121- SC8. The Committees that oversee such matters within both BSI and CEN have now ratified his appointment to both of these positions. CEN is the body that is concerned with the creation, development, and approval of *provisional* European and ISO Standards, and **Sub-Commission SC8** of **Technical Committee 121** is the one that is concerned with brazing. A number of interesting documents are already under discussion in that committee relating to Operator and Process Approval Standards. Document **prISO 13585**, a document that it is suggested *might* replace both EN13133 and EN 13134 has recently been circulated to all members of SC8 for consideration and comment. A formal Meeting of the Working Group that is dealing with this matter has been called for 10th February 2011 and will meet in Stockholm. The current document goes some way towards its fundamental objective, but several of the delegates agree that it still needs a considerable number of alterations to be made before it can be considered as suitable for issue by either CEN or ISO. It is not possible for Phil to attend the meeting, but BSI is to ask the members of WEE/19, (the BSI Committee concerned with Brazing), if anyone would care to represent the UK at the meeting to uphold UK interests, and to explain to the delegates to the Working Group why the current content of the document needs to be modified.

The principles that the UK needs to promote at the meeting in Sweden are those that EABS has used over the past few years when being closely involved with several major UK companies that serve the HVACR (Heating Ventilating Air-Conditioning Refrigeration) industry. Those companies had a requirement to train their brazing operators to a level where they could be assessed, and accredited by a Qualified Authority as having been properly trained, and be awarded with a Certificate that confirms they are “suitably qualified” according to “suitable operating procedures”. The EABS - TWI cooperation has proven to be of great benefit to this industry and we continue to be jointly involved in a number of related projects.

9th joint EABS-Solvay Fluor GmbH Aluminium Brazing Seminar

As regular readers of the Newsletter will know, since 2001 it has been our practice to join with Solvay Fluor GmbH in presenting a two-day Seminar concerned with the best practice flame- and CAB furnace brazing of aluminium. It will be recalled that the event scheduled for the autumn of 2009 became a casualty of the economic recession and had to be cancelled.

However, in the Spring of 2010 it became increasingly obvious that the full rigours of the recession were, happily, behind us, and that it ought to be possible to run the Seminar in October. Consequently, the dates were decided, the programme agreed, and the details circulated to potential attendees. The request for places was outstanding, and all the available spaces were filled some five weeks before the 12th October, the starting date of the event. A waiting list was created, and when two of the original delegates had to withdraw, their places were filled from the list.



The delegates and lecturers assembled in the applications laboratory on Day 2

The Seminar was, as usual, a truly International event with delegates attending from 12 countries:

Brazil, Denmark, Egypt, France, Germany, Luxembourg, Norway, Poland, Romania, The Netherlands, The United Kingdom, and the USA.

The Seminar followed its well-tried programme. The morning of Day 1 was devoted to Flame Brazing Technology, with Phil Roberts and Derek Davies presenting lectures on various aspects of the theory of the Flame Brazing of aluminium. In the afternoon the delegates were divided into two groups, and while Group 1 was having practical aspects of flame brazing demonstrated to them by Derek, Phil was presenting a lecture on Process Analysis to Group 2, using two case studies to show how the concept was used to develop the 'best practice' solution to two actual, but very different, brazing problems. In mid-afternoon Group 1 returned to the lecture theatre for The Process Analysis session while Group 2 were exposed to the practical aspects of the technology!

All delegates were invited to the Seminar Dinner on the evening of 12th October held at restaurant in the grounds of the Hannover Zoo! No one tried to feed the lecturers to either the lions or the crocodiles, and the evening was great success. Happily, no one was 'the worse for wear' at the end of the evening, but the odd 'bleary eye', accompanied by the consumption of lots of black coffee, was in evidence during breakfast on the 13th!

In the morning of Day 2 senior technical staff of Solvay Fluor GmbH gave two lectures. The first of these dealt with the fine detail of successful CAB brazing of aluminium while the second covered tips related to the 'trouble shooting' of problems that can be encountered when CAB brazing aluminium.

In the afternoon all delegates are given a conducted tour of the laboratory area of Solvay Fluor GmbH to see the practical application of the various matters discussed in the morning together with a visit the R&D facilities to see the work that is being done!

All in the entire seminar was a great success and plans are already under discussion for the presentation of a similar event in the autumn of 2011.

Spring Seminar in 2011

While we were sorry that the 2010 event had to be cancelled, it gave us further time to consider what to do about this particular Seminar in future years. The reasons why we decided upon Hanau as a suitable location for our Spring Seminar was discussed at length in the Autumn 2009 Newsletter, and nothing that has happened since then has made us change our minds regarding the desirability of arranging the Spring seminar there in 2011. However, we decided in consultation with our German colleagues that The Arcadia Hotel in the centre of Hanau would be more appropriate venue.. As readers will recall Hanau lies to the east of Frankfurt-am-Main, and is about a 35-minute trip on the S-Bahn from Frankfurt Airport; it is also conveniently located very close to the autobahn system. Consequently travel to the event should pose delegates, (and the Chairman!), with no major problems. Consequently we have signed a contract with the Arcadia Hotel for a seminar to be held there between **24th and 26th May 2011**.

The programme has now been finalised, and includes a number of specialist guest speakers. It will be posted to our website before the end of January and circulated to potential delegates immediately thereafter. It is to be hoped that the 'green shoots' of the economic recovery that are now being reported in Europe will be showing enough growth to convince the companies from which the potential delegates will come that it would be a good idea for their people to join us at the Tulip Hotel in the centre of Hanau, the city where formerly the Brothers Grimm lived. However there will be no new fairy-stories told at the EABS Seminar.....just useful, new, and accurate, technical information!

Joint JMMJ-EABS tungsten carbide and PCD Brazing Seminar

The seminar planned for June 2010, and due to be presented in Basle, Switzerland, was yet another casualty of the international economic downturn. Further discussions with our colleagues at JMMJ have taken place, and we are both aware that while there is a need for this Seminar, we should wait until the signs that economic climate is improving before setting a date for its presentation. The target date is September 2011, and we remain convinced that the best location for it will still be Basle, Switzerland. The detailed programme for the event will be agreed early in February, and it is planned to post the detailed programme to our website towards the end of March.

The EABS Technical Article

The accreditation of brazing operators

By: Derek Davies & Philip Roberts

1. Introduction

There is an increasing emphasis being placed by end-users on 'quality' when they assess a product that incorporates one or more brazed joints in its design. Very often the end-users of the product requires the supplier to have evidence that their operators have been trained, tested and approved to a specified Industrial Standard. A formal Certificate of Qualification provides the required evidence. It is significant that the companies who are supplying brazed systems to the HVACR industry are currently the most active in seeking the qualification of their brazing operators! At first sight this might seem to be a straightforward requirement that is capable of easy resolution: but in this short article readers will see that this is most definitely not the case!

It appears that the initial tentative steps toward the development of an integrated series of Industrial Brazing Standards were first addressed by German Industry some thirty years ago. This resulted in the development and publishing of several excellent DIN Standards specifically related to a number of clearly defined aspects of industrial brazing technology. With the passage of time, and due to the growing influence of the European Union, the introduction of a new family of EN Standards occurred. The various local Standards Institutes adopted these as their National Standards. For example, in the United Kingdom in 1999 the 'old' brazing filler metal Standard BS1845:1966 was replaced by a new Standard, BS EN 1044. Starting seven years later, and between 2006 and 2009, a major revision of EN1044 was carried out, and the resultant document submitted to ISO for ratification. It was approved and published in 2010; in the United Kingdom the Standard for Brazing Filler materials is now BS EN ISO 17672.

Identification Number	Title of Standard
EN 12797	Brazing – Destructive testing of brazed joints
EN 12799	Brazing - Non-destructive testing of brazed joints
EN 13133*	Brazing – Operator Qualification
EN 13134*	Brazing – Procedure Qualification
EN14276, part 1 and 2	Pressure equipment for refrigeration systems & heat pumps
EN 14324	Brazing- guidance on the application of brazed joints
ISO 857 – 2	Welding and allied processes – vocabulary – Soldering and Brazing processes and related terms
ISO 4063	Welding, brazing, soldering and braze welding of metals – Nomenclature of processes and reference numbers for symbolic representation on drawings
ISO 17672	Brazing – Filler metals
ISO 18279	Brazing – Imperfections in brazed joints
ISO 25901	Welding and related processes - Vocabulary

*Currently being revised and up-dated by CEN-TC121-SC8/WG1

Table 1: A representative selection of the more important International Standards relating to brazing

While the existence of an International Standard is always helpful, there are now a bewildering number of EN and ISO Standards that impinge on day-to-day brazing technology. Unfortunately, and in many cases since 'newcomers' to this approval system, finding themselves faced with this overabundance of specifications, do not know what to do, nor where to turn for help and/or advice! This type of confusion has led to various 'specifications' for brazing process being written by well-intended people, who perhaps subsequently describe, or infer, that the resultant document is a National Industry Brazing Standard or equivalent. Unfortunately, such claims are seriously in error. The *only* Internationally approved Industry Standards for brazing that are operative within the UK are those where the document number is prefixed with one or more of BS, EN, or ISO denoting that it has been accepted by the technical committees concerned with brazing in the Member Countries of CEN or ISO! **Table 1** lists the most relevant document numbers, together with their title, of those that are related to brazing

2. The route to accreditation for brazing operators using manual flame brazing.

While being a relatively tortuous process the route to accreditation is well defined as follows:

1. Development of the *provisional Brazing Procedure Specification, (pBPS)*, perhaps in conjunction with an EABS consultant to ensure both technical accuracy and, perhaps, commercial neutrality.
2. **Formal** written approval of the draft Procedure by a Qualified Authority. (TWI for example). The Qualified Authority must confirm that the **pBPS** and its appropriate tests piece(s) are representative of the **actual brazing processes** for which the operator seeks approval. (It is therefore essential that the brazing process is audited properly to ensure it is technically correct). The brazer then completes the test piece(s) according to the **pBPS**. (*in the presence of an impartial observer*) The brazed test pieces are then examined to ensure compliance with quality standard. Only then can the **pBPS** be recognised as a **BPS (Brazing Process Specification)**
3. The brazer who satisfactorily completes step 2 above is then deemed "suitably qualified" according to the "suitable operating procedure" to which he has been tested. The qualification certificate is **only valid** for the size and range of test pieces stated in the **BPS**. Other brazing operators who need to be qualified **to the same level** can then use this, and now approved, **BPS**, for their qualifying tests. During step 2 the operator training should be undertaken not only to ensure that the approved **BPS** is strictly followed when the joints are brazed, but also to provide a base level of knowledge on the finer points of flame brazing together with an understanding of the fundamental details required to properly audit flame brazing processes. (Such training is available from TWI/EABS).

The route set out above specifically relates to the qualification route for an operator who is flame brazing manually. **However, and according to the current Draft of EN 13585, the route to be followed for all qualifications is identical to the above, and is irrespective of the heating process that is being employed!**

It is therefore clear that the details set out in any **pBPS**, and subsequently confirmed as a **BPS**, will inevitably be describing **a specific, and perhaps unique, brazing process!** One can be certain that both documents will be unique in their content, and apply **only** to the **particular process** being described! For example, the task(s) of an operator who is to control a vacuum-brazing furnace in a production situation will be very different indeed to those demanded of an operator who is responsible for the production of brazed assemblies from an eight-station rotary indexing brazing machine. In the latter case the equipment might incorporate a number of ancillary mechanisation devices such as automatic flux application, the automatic application of a predetermined amount of filler metal wire to the mouth of a joint that has been pre-heated to brazing temperature, automatic water cooling and automated removal of the brazed parts from the machine using a specialised pick-and-place system. It is the fundamental features in the mode of operation of the overall brazing procedure that will define the precise details that **must** be included in a **pBPS** when it is initially committed to paper! Consequently it is of fundamental importance that the development of the **pBPS** is **always** undertaken by people who have an in-depth knowledge of the finer points of the

brazing process that will be used during the qualification test that the operator will eventually undergo. If such people are not available in the company requiring that their operators are accredited it is strongly recommended that specialists, perhaps from TWI/EABS, be asked to give advice on the matter. Clearly, by adopting this approach companies can avoid the embarrassment, (not to mention the extra costs that will inevitably arise), of finding that the initial **pBPS** that they submit to a Qualified Authority such as TWI fails to gain the approval of that Qualified Authority for it to be used as the **BPS** for the procedure that is to be assessed. Clearly, this would mean that it had to be modified and re-presented at a later date!

It is now more than fifteen years since EABS consultants developed a method for the in-depth analysis and auditing of all brazing processes that inevitably leads to the identification of the 'best practice' solution of any specific brazing problem. This is just one of the reasons why EABS are a suitable partner to assist companies in the development of a 'fit for purpose' **pBPS, that vital first step** towards the successful accreditation of a brazing operator!

Companies who wish to pursue this matter with EABS should contact us by e-mail at:

eabs@btconnect.com

End of text

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.....and, finally, something for new readers!

It is an internationally recognised fact that, happily for the Secretariat, English is recognised as 'the' language to speak if you wish to discuss technical matters. The reasons for this are manifold, but perhaps the more important is that its vocabulary is so vast that one has no difficulty in expressing even highly complex concepts in a form that is easily understood, even by people whose English was learned in an overseas country 26 years ago and where the local language was as different from English as chalk is as different from cheese! This undoubted advantage that we English have has been much improved by recent developments in computer software. All of us now have automatic access via our PC's to both a very extensive thesaurus and a system that, as we place words on the page, checks the accuracy of our spelling. If it is not right the machine places a mark beneath the inappropriately spelled word as a sign that we need to check the spelling we have used.

Unfortunately this wonderful system is not foolproof since the memory within the computer weak on both grammar and syntax and does not have an in-depth knowledge of English usage. The following verse indicates why we should not rely too heavily on this electronic method of checking our spelling.

I have a brand new spell cheque
It came with my pea sea
It clearly marks, for my revue
Miss takes I fail to sea
I ran this poem threw it
I'm shore your pleased two no
It spellings perfect in its weigh
My spell cheques tolled me sew!

Remember.....if yew put rubbish into your machine, ewe can be shore, it will bee rubbish that comes out!!

End of Newsletter