

# **EABS: The European Association for Brazing and Soldering**

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**EABS & Solvay Fluor GmbH announce the  
**thirteenth annual presentation** of their joint  
technical training seminar entitled:**

***The theory and practice of the flame- and furnace-  
brazing of aluminium***

***Dates:  
9<sup>th</sup> & 10<sup>th</sup> September 2014***

## **Purpose of the Seminar:**

This technical training seminar will be presented in the English language at the Conference Centre and laboratories of Solvay GmbH, in Hannover, Germany. It will provide information concerning the manufacturing practices commonly used for brazing operations and, in particular, will address the **three** fundamental aspects of the industrial-scale brazing of aluminium. These are:

- **The flame brazing of aluminium.**
- **The Controlled Atmosphere Brazing (CAB) of aluminium heat exchangers with non-corrosive fluxes (NOCOLOK<sup>®</sup> Flux).**
- **The methodology of how to ensure that the brazing process selected is, indeed, the one that represents 'best practice'.**

## ***Who should attend this two-day seminar?***

- **Technical staff who need to have a specific understanding of either one or both of the fine details of the technology of the brazing of aluminium with flames, and/or the NOCOLOK<sup>®</sup> furnace brazing process.**
- **Design and production engineers who are fabricating, or who are *intending* to fabricate, aluminium pipe-work assemblies and/or condensers and/or evaporators.**
- **Production Engineering Department Managers whose duties include day-to-day responsibility for the brazing of aluminium.**

**Follow this link to see what you can expect when you attend this seminar**

**[http://www.youtube.com/watch?v=RS8Y\\_eLnK-g](http://www.youtube.com/watch?v=RS8Y_eLnK-g)**

# Seminar Programme

## Day 1 - Tuesday 9<sup>th</sup> September 2014

### 1. Introduction to the Seminar

### 2. Flame brazing aluminium

Presented by: **Derek.Davies – Flame Application Services**  
*Dr.Leszek Orman – Solvay Fluor GmbH*

#### Session 1: Introduction to Brazing Technology

- What is brazing and what are its advantages?
- Where does brazing fit in joining technology?
- The six fundamental rules for successful brazing
- The methodology of Process Analysis
- International Brazing Standards
- Basic metallurgy – part 1

#### Session 2: Process Terminology

- Process definitions
- Wetting and flow
- Basic metallurgy – part 2

#### Session 3: Flame brazing aluminium

- Joint design
- Process criteria
- Metallurgical considerations (Al to Al, Al to Cu)
- Heat pattern development

#### Session 4: Fuel gases and burners

- Heating things!
- Gases and gas mixtures (including SafeFlame project)
- Burner design and operating parameters (including SafeFlame)

#### Session 5: Automated flame-brazing

- Process criteria
- Machine types in common use
- Additional mechanisation devices

**Session 6:** Process analysis Case study; *practical demonstrations* of the flame-brazing of aluminium; and a final review of the day.

**Sessions 1 to 4** will be presented during the morning with **Sessions 5 & 6**, which will last for approximately 2¾ hours, being presented during the afternoon.

## Day 2 - Wednesday 10<sup>th</sup> September 2014

### 3. The NOCOLOK<sup>®</sup> Flux Brazing Process

Presented by: *Dr. Hans Swidersky and Dr. Leszek Orman - Solvay Fluor GmbH*

#### An introductory overview of the process.

- Fields of application
- Products that are routinely brazed via this process

#### Controlled atmosphere brazing (Process sequence)

- Factors for successful brazing
- Requirements for cleaning methods
- Guidelines for flux application

**EABS-Solvay Seminar 2014 – Programme and associated details.**

- Brazing flux characteristics and its role in the process
- The furnace brazing process and brazing reactions

### Metallurgy and materials

- Aluminium alloys for CAB (non-corrosive flux) furnace brazing
- Filler materials and their available forms
- General metallurgical consideration
- Joint clearances/ product fit-up
- Filler metal management - potential erosion aspects (core alloy dissolution)

### Troubleshooting problems encountered in the furnace brazing of aluminium

- Brazing failures and Parameter specifics
- Identification of Failure parameter
- Parameter adjustment and control
  - Temperature
  - Flux load and its uniformity of coating
  - Furnace atmosphere
  - Joint geometry
  - Filler metal availability
  - Cleanliness

### Scope:

- Technical presentation: approximately four hours (**morning session**)
- Tour of the Technical Centre and demonstration of furnace brazing: approximately two hours (**afternoon session**).

### Further information:

- All delegates will be given a folder when they arrive at the lecture theatre. This will contain brief notes on each of the topics that will be covered by the presenters during each of the two days of the seminar.
- EABS will arrange hotel accommodation required by delegates to the seminar. A sufficient number of rooms have already been booked at the **Hotel am Stadtpark**. This hotel is about a seven-minute walk from the Solvay Conference Centre where the seminar is to be held. To ensure that the hotel booking arrangements run smoothly, delegates are kindly asked to enter their booking requirements on the **Hotel Booking Form** sent with this note. **Please note that Delegates will be responsible for settling their own hotel bill when they check out from the hotel.**
- It is **very important** that [Annette.Daubner@solvay.com](mailto:Annette.Daubner@solvay.com) is advised in cases where a Company who has already booked a place or places at the Seminar needs to replace one or more delegates with another member of their staff. This information **must** reach Annette **before the 'new' delegate or delegates arrive at the Hotel am Stadtpark**. This is because Solvay has to confirm to the hotel the name of each delegate when they make the room reservation for a specific delegate. Consequently, if another person arrives whom the Hotel is not expecting they have no option but to offer the 'unexpected' delegate any other room that is currently available. This means that the room that was **originally booked on behalf of a previously named delegate remains unoccupied overnight** and, according to the Terms and Conditions of the Hotel, because it was Solvay Fluor GmbH who booked the room, the overnight charge for the empty room is billed to them! In such cases Solvay will pass this charge on to the Delegates Company. *This is why it is so important to tell Mrs Daubner of any change of a delegate that needs to be made as soon as it is known, please!*
- The seminar will begin at **09:00 on Tuesday 9th September 2014**, and is expected to finish at about **16:45 on Wednesday 10th September**.
- The cost of the seminar will be 400, (or **£350 for UK delegates**), plus tax. (VAT/MWSt/etc). Delegates who are **Personal Members** of EABS, or who are

employed by a company that is a **Corporate Member of the Association**, will receive a discount of 10% of the above fees.

- A buffet lunch will be provided during both days of the event, and all delegates are invited to attend the Informal Seminar Dinner as the guests of EABS and Solvay Fluor GmbH on the evening of **Tuesday 9<sup>th</sup> September**.
- Invoices for attendance at the Seminar will be sent by EABS directly to the delegate by e-mail and payment needs to be made **on or before Friday 15th August 2014**, please!
- Please note that the available places on **all twelve** of the previous Seminars were booked very quickly. As a result, and since space is limited to a maximum of 36 delegates, we would **strongly recommend** that to avoid disappointment you make your booking **on the Form that accompanies this Programme**, and return it to EABS, **by e-mail please**, as soon as possible!

**Please note:** Early registration for the Seminar is particularly important for delegates who will require a Visa to enter the countries of the European Union. The issue of a Visa can take up to 10 weeks, and often requires the applicant to present a letter of invitation to the seminar, together with his application for a Visa, to the **German Embassy in his country of residence**. Delegates who require a formal letter of invitation should indicate this fact, **(on the Seminar Registration form, please)**, so that EABS can arrange for one to be sent to you by Solvay Fluor GmbH.

We look forward to receiving your booking in the very near future.

Steve Kowalski

**EABS Treasurer/Secretariat**