



We would like to announce:

## **SOLVAY International Brazing Seminar 2018**

### ***The Theory and Practice of the Flame- and Furnace-Brazing of Aluminium***

***Date: October 9 & 10, 2018 in Hanover/Germany***

#### **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.
- Controlled Atmosphere Brazing (CAB) of aluminium heat exchangers with non-corrosive fluxes (NOCOLOK® 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® 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**

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

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# SEMINAR PROGRAM

Day 1 - Tuesday 9<sup>th</sup> October 2018

## Introduction to the Seminar Flame brazing of aluminium and its alloys

**Presented by:** *Derek.Davies – Technical Consultant EABS/IOM3*  
*Dr.Leszek Orman – Solvay Fluor GmbH*  
*Hynek Pawera – Solvay Flux 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
- Pastes for flame brazing

### Session 4: Fuel gases and burners

- Heating things!
- Gases and gas mixtures
- Burner design and operating parameters

### Session 5: Automated flame brazing

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

### Session 6: Summary

- Introduction to Brazing standards including new standard development. ISO/CD 22688 Quality requirements for the BRAZING of metallic materials.
- 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.

## SEMINAR PROGRAM

Day 2 – Wednesday 10<sup>th</sup> October 2018

The NOCOLOK® Flux Brazing Process - Controlled Atmosphere Brazing (CAB) of aluminium

**Presented by** Dr. Hans Swidersky and Dr. Leszek Orman - Solvay Fluor GmbH  
Hynek Pawera – Solvay Flux 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
- Brazing flux characteristics and its role in the process
- Flux application methods incl. Paint Flux and Pastes
- 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 seminar room. 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.
- **Please note that delegates will be responsible for booking and settling their own hotel bill.**
- The seminar will begin at **09:00 on Tuesday, Oct. 09, 2018**, and is expected to finish at about **16:45 on Wednesday, Oct. 10, 2018**.  
The cost of the seminar will be **€450 plus tax (VAT/MWSt/etc.)**.
- A buffet lunch (included) will be provided during both days of the event, and all delegates are invited to attend the Informal Seminar Dinner as the guests of SOLVAY on the evening of **Tuesday Oct. 09, 2018**.
- Invoices for attendance at the Seminar will be sent by SOLVAY directly to the delegate by e-mail and payment needs to be made **on or before 01 September, 2018**.
- Please note that the available places on all 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 SOLVAY, **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, so that SOLVAY can arrange for one to be sent to you.

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