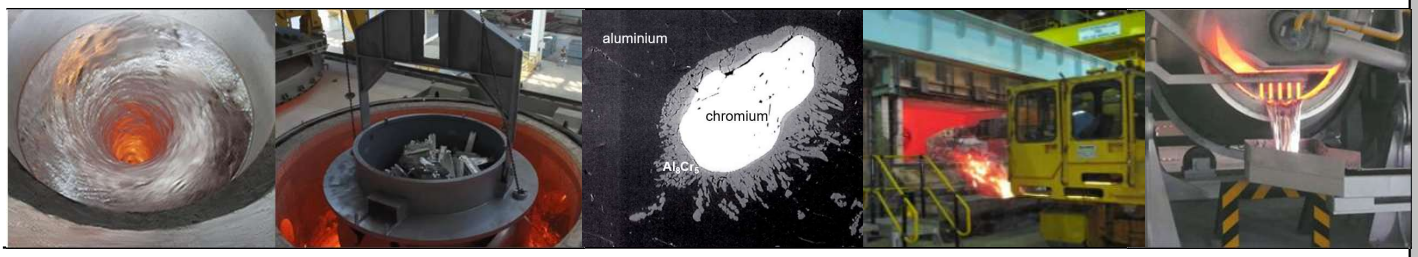
Aluminium Scrap Recycling & Melting Furnaces

Weekly Live Online Course

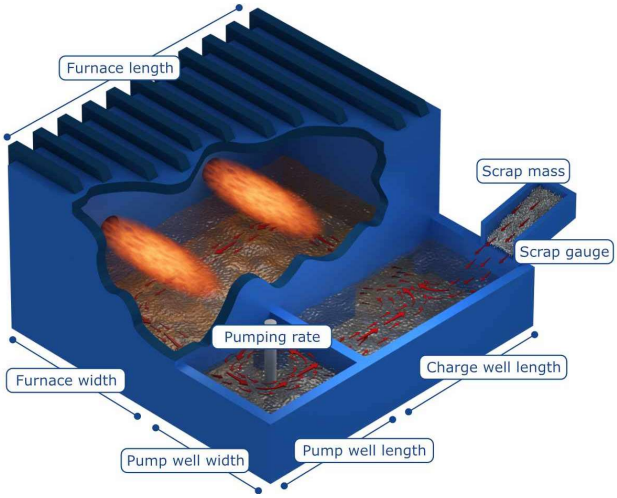
This online training course is presented over seven weekly sessions. It covers the decoating of coated scrap, melting furnace practices and dross formation and processing.



A fresh approach

Many technical training courses start from basic principles, building towards a detailed analysis of the particular technology. This often leaves attendees floundering in a sea of concepts and equations, unsure how the physical basics relate to the actual workplace.

Our approach, based on extensive experience in delivering training courses to industry, overcomes these difficulties. We first provide an appreciation of what the various technologies are expected to deliver to their customers, and why it is important. Only then do we consider how everyday operations relate to the physical basics.



Most importantly we use workshops extensively, where attendees investigate the relationships between actuators they control (*e.g.* decoating atmosphere, or furnace stirring) and the performance of each manufacturing stage. All workshops are computer based for the live online course.

After a comprehensive briefing, attendees undertake the workshops in their own time between sessions. Each new sessions starts with an interactive review of the findings from the previous workshop.

Such 'discovery-based learning' results in a deeper understanding, and better knowledge retention and usage in the workplace.

Course structure

The course focuses on:

- scrap processing and decoating
- melting, alloying, melt rate and energy efficiency
- melt loss and dross formation

Each weekly session is centred on a seminar delivered live, allowing hand-raising and discussion.

Following the seminar, a related workshop is introduced, which attendees can tackle in their own time. This workshop is reviewed at the start of the next live session.

Scrap processing and decoating

The problems with processing thin coated manufacturing and post-consumer scrap are reviewed. This leads to the need for formal decoating prior to submerged melting to minimise melt loss and dross generation. The fundamental factors controlling the decoating process are investigated: process gas composition and humidity content, peak temperature and scrap exposure. Technologies to identify scrap alloys in line are reviewed.





"Content is current, relevant and expertly put together. Practical workshops at the end of each session bring theory and real-world problems together. I can recommend the TSC courses for every specialist working in the aluminium industry."
F. Vlok, Hulamin Rolled Products

tsc Training Courses: *Aluminium Scrap Recycling and Melting Furnaces*

Aluminium Scrap Recycling & Melting Furnaces

Course structure (continued)

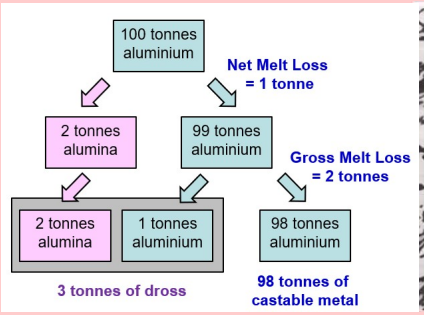


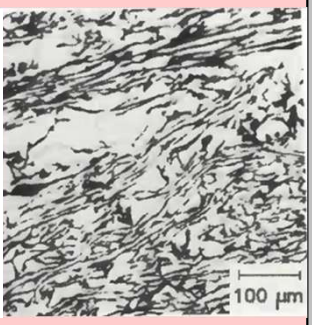
Melting furnace operations

The key metrics for a melting furnace, melt rate, energy efficiency and melt loss are introduced, and investigated in terms of the heat transfer principles of convection and radiation. The applicability of dry hearth or submerged melting practices to different charge formats is discussed, and implications for furnace performance analysed. Alloying options are compared, and the principles of OES measurement explained, including sampling and preparation.

Melt loss and dross

Net and gross melt loss are defined and related to dross formation. The key factors driving melt loss are examined (composition, temperature and gauge). The costs related to permanently lost (oxidised) aluminium and trapped aluminium, recoverable by dross processing, are quantified and compared to energy costs. Options for dross processing, and their relative efficiencies are considered.





"Would highly recommend this course to anyone who is looking to broaden their knowledge on furnace practices and metal treatment. The presenters are a great team and very knowledgeable and always happy to help."
T. Bown, Hydro.

"So in-depth and yet so practical, these sessions! The TSC team is just incredibly knowledgeable. The best part is that they are ever ready to help you!! I was fortunate to attend three different courses with them around Metal Treatment and Cast House technology."
S. Bhat, Foseco

Presenters

Paul Evans was formerly director of research for Alcan. ***tsc*** was set up to help clients develop their technology strategy, including knowledge management and technical training.

David Humphreys has managed remelts and casthouses in Alcan and Alcoa and has extensive technical and practical expertise.

Registration

You may register online by following the details on the course website:

www.training.tecstrat.com

Alternatively, you may contact us directly at the email address: **equiries@tecstrat.com**

Other courses

Note although this is a standalone course, it can also be seen as the first course in a series including: **Molten Metal Quality** and **DC Casting**, to be schedule later in the year. Check www.tecstrat.com for dates.

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