

# Heat Transfer in Glass Melting Furnaces

## Advanced training

duration  
1 day

date  
October 13

location  
Eindhoven and/or Online

This training describes the fundamentals of heat transfer mechanisms in the combustion space, batch blanket and glass melt. It focusses on radiative heat transfer in glass melts depending on the presence of the colouring ions and the redox state of the melt. The effects of new, emerging, sustainable furnace technologies, like hydrogen combustion and full electric melting on the heat transfer mechanisms are elucidated.

### Contents

- Heat transfer in the combustion space
  - Flame emissivity
  - Effect of soot
  - H<sub>2</sub>-rich flames
- Heat penetration in batch
  - In flame furnaces
  - In electric cold-top furnaces
  - Effect of cullet type and content
- Heat transfer in glass melt
  - Radiative heat transfer using a new model for predicting thermal radiation conductivity
  - Convection in fuel-fired and electric cold top tanks

### Training methods

We offer a blended learning approach by mixing e-learning, lectures, open discussions, exercises, and case studies in teams or individually. The number of participants per course is between 8 and 20 to maximize your learning experience. Participants always receive the presentations and a training certificate.

### Level of seniority

This training is meant for advanced beginners to skilled professionals willing to deepen their knowledge.

### Investment

Training costs **€ 950** per participant. When onsite, price includes lunch and refreshments. It excludes tax and duties. The 6th participant from the same company can join for free.

### After the training

- You can estimate the effect of raw material nature and preparation on the heat penetration in the batch blanket.
- You can estimate the effect of glass chemistry, colour and redox on radiative heat transfer in the glass melt.
- You can estimate the effects of furnace design on convective heat transfer with help of characteristic dimensionless numbers.

Cancellation fees apply. 1 week before training 50%; no show, full price. In case of an unexpected event, we are happy to look for rescheduling or voucher options. CelSian reserves the right to cancel up to two weeks prior to the training, proposing new dates or refunds. Are you registering as a group? You are entitled to a 15% discount on all courses: for 5 registrations, the 6th participant can join for free.



We welcome your questions by e-mail: [academy@celsian.nl](mailto:academy@celsian.nl) Register on [www.celsian.nl](http://www.celsian.nl)

Online access to this training can be offered and the training may be fully given online.