



**TRAINING SESSIONS**  
 November 20, 2019  
 Crowne Plaza Istanbul Asia  
 Hotel & Convention Center  
 Istanbul, Turkey

## HEAT TRANSFER IN GLASS MELTING FURNACES

CelSian

### INTRODUCTION

In this one-day training course the fundamentals of heat transfer processes in the different domains (combustion space, batch blanket and glass melt) of industrial glass melting furnaces will be presented. The course will especially focus on radiative heat transfer in glass melts, depending on the presence of colouring ions and redox state of the melt. Exercises and exemplary calculations are part of the course, so that after the training day the participants know how to apply the knowledge, e.g. for estimating the effect of glass chemistry, colour and redox changes on heat penetration in the glass melt and in the batch blanket.

### AGENDA

09:00 - 10:15	<ul style="list-style-type: none"> <li>Heat transfer in the combustion space of glass furnaces, including effects of combustion gases, gas mixtures and soot on flame emission</li> <li>Exercise</li> </ul>
10:15 - 10:45	<ul style="list-style-type: none"> <li>Heat transfer in the batch blanket, including effects of batch chemistry and batch characteristics like particle size, cullet% and cullet types</li> <li>Exercise</li> <li>Questions/ Answers</li> </ul>
10:45 - 12:00	
12:00 - 13:00	Lunch
13:00 - 14:45	<ul style="list-style-type: none"> <li>Heat transfer mechanisms in glass melts               <ul style="list-style-type: none"> <li>- Discussion of conduction, convection and radiative heat transfer</li> <li>- Effects of glass chemistry, colour and redox</li> <li>- Heat input by flames and/or electrodes</li> </ul> </li> <li>Exercises</li> <li>Questions/ Answers</li> </ul>
14:45 - 15:15	
15:15 - 17:00	

### PRICING

The participation fee amounts to EUR 950,00 per attendance with a minimum number of participants of 20. The number of seats are limited.

### LANGUAGE

Training will be given in English language.



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## BIO OF THE TRAINER

**Mr. Anne Jans Faber**  
**Senior Scientist**  
**CelSian Glass & Solar B.V.**

Anne Jans Faber (57) finished his study Experimental Physics at Utrecht State University (NL) cum laude in 1985. He started his career as project leader at the TNO Institute of Applied Physics in Delft in 1986. During the nineties he has been leader of the group Glass Melting Technology of TNO Science and Industry in Eindhoven. Since January 2012 he works as senior scientist at CelSian Glass & Solar (former TNO Glass Group). He has written a large number of scientific publications and is holder of several patents.

In 1997 he received, together with 3 colleagues of TNO, the Otto Schott Research Award for applied and fundamental research in the area of glass technology and glassy materials. In 2005 he received the Descartes-Huygens prize from the French Government/Academy of Sciences for his contribution to the scientific cooperation between France and The Netherlands, especially in the domain of innovation. In June 2012 he received the German Industry prize (Adolf Dietzel Industriepreis) from the German Glass Society (Deutsche Glastechnische Gesellschaft). He is chairman of the Managing Board of GlassTrend ([www.glasstrend.nl](http://www.glasstrend.nl)), an industrial consortium of worldwide operating, glass manufacturing and supplying companies (Europe, Asia, Americas). GlassTrend aims at coordinating and promoting R&D and knowledge transfer within the international glass industry to improve the competitive strength of its members. A specific goal of GlassTrend is to support the glass industry in the transition to CO<sub>2</sub> neutral glass production in view of the Paris climate agreement. Currently, more than 50 international companies are member of the GlassTrend consortium. In the framework of the organization GlassTrend he organizes industrial R&D consortia and Seminars and he presents Glass Technology training courses for international glass companies.

## CONTACT

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