

PROGRAM

16th INTERNATIONAL SEMINAR ON FURNACE DESIGN – Operation & Process Simulation

TUESDAY | JUNE 20

12:00 – 21:00 **SEMINAR REGISTRATION (Hotel Horal – Lobby)**

13:00 – 16:00 12th GFM USERS' MEETING (for users of GS GFM Software, based on invitation)

Place: Hotel Horal – Conference Room

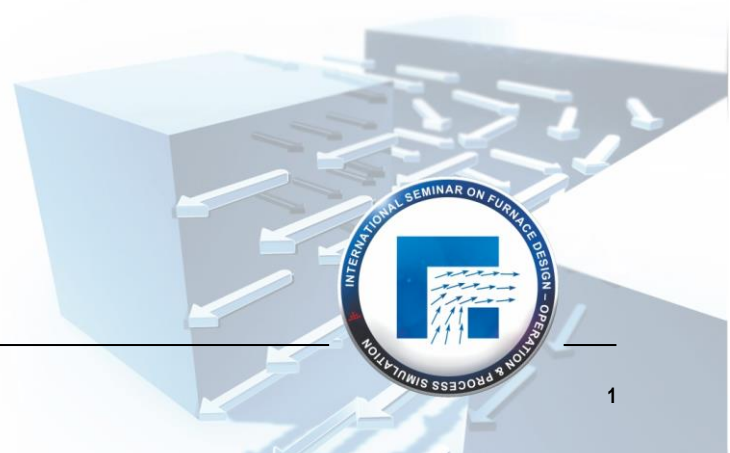
14:00 – 18:00 GLASS DEFECTS WORKSHOP

Place: Hotel Lanterna – Meeting Room

16:30 – 18:00 MEETING OF TC15/21 | GLASS FURNACE DESIGN & OPERATION

Program Coordinator: Aaron Huber
Place: Hotel Horal – Conference Room

19:30 – 23:00 **MEET & GREET PARTY (Hotel Horal)**
Small Refreshment Served



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WEDNESDAY | JUNE 21

06:30 – 08:30 **SEMINAR GOLF TOURNAMENT 2023 (Hotel Horal)**

08:30 – 14:00 **SEMINAR REGISTRATION (Hotel Horal – Lobby)**

08:55 – 09:20 **WELCOME SPEECH**

Program Coordinator: Erik Muijsenberg
Place: Hotel Horal – Conference Room

09:20– 12:45 **TECHNICAL SESSION 1 | THERMODYNAMICS & THE PATH TO DECARBONIZATION**

Chairmen: Aaron Huber, Bruno Purnode
Place: Hotel Horal – Conference Room

09:20 – 09:50 **OPENING LECTURE**
Furnace Modelling – Progress Made and Future Challenges
Graham Unwin (NSG Pilkington)

09:50 – 10:15 **Schott's Technological Transformation Path of Becoming Climate Neutral**
Sebastian Wolf, Wolfgang Schmidbauer, Matthias Kaffenberger, Stefan Knoche, Stefan Schmitt, Alexander Strobel, Rainer Eichholz, Janina Costard, Michael Hahn (Schott AG)

10:15 – 10:40 **INVITED LECTURE**
Assessment of Irreversibilities in the Performance of Glass Furnaces
Reinhard Conradt (uniglassAC GmbH)

10:40 – 11:05 **Thermodynamics of Glasses and the Batch Melting Process**
Malte Sander (Glass Service, a.s.)

11:05 – 11:30 **COFFEE BREAK**

11:30 – 11:55 **Case Study for Using Computational Modeling Results to Build a Business Case for Capital Investment Complete with Validation by Operational Data**
Donn Sederstrom (Johns Manville)

11:55 – 12:45 **Pyrex Furnace: Modeling, Expertise, Partnership... Progressing on the Path to Decarbonation**
Johann Brunie (La Maison Francaise du Verre)
Christoph Jatzwauk (F.I.C. Germany GmbH)
Hans Mahrenholtz (Glass Service, a.s.)

12:45 – 13:00 **GROUP PHOTO 2023 (Hotel Horal – Terrace)**

13:00 – 14:30 **LUNCH (Hotel Horal – Restaurant)**



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WEDNESDAY | JUNE 21

14:30 – 17:50 **TECHNICAL SESSION 2 | FURNACE MODELING & OXY-GAS & OXY HYDROGEN WAYS TO ACHIEVE CARBON REDUCTION**

Chairmen: Stuart Hakes, Jan Viduna
Place: Hotel Horal – Conference Room

14:30 – 14:55 **CO₂ Reduction Strategies: Case Study Tableware Plant**
Peter Vrabel (Rona a.s.)

14:55 – 15:20 **CFD Simulation of Float Furnace Using New Accurate Glass Thermal Radiation Conductivity Model**
Nicolas Bourgeois, Francois Bioul (AGC Glass Europe)
Anne-Jans Faber (Physica Fit Faber)

15:20 – 15:45 **Advanced Techniques to Improve Process Efficiencies and Sustainability in Glass Fiber Manufacturing**
Bruno Purnode, Pat Prescott, Jong Han, S. X. He (Owens Corning Science & Technology Center)

15:45 – 16:10 **Development of Oxygen Fired Combustion for Glass Production and the Contribution of CFD Modeling**
Aaron Huber (Johns Manville)

16:10 – 16:35 **COFFEE BREAK**

16:35 – 17:00 **Modelling and Implementation of an Oxy-Fuel Combustion System in a Recuperative Furnace while It Is in Operation and Has Two Years of Remaining Campaign**
Joaquin de Diego (Nippon Gases Euro-Holding)
Masashi Yamaguchi, Yoshiyuki (Taiyo Nippon Sanso Corporation)

17:00 – 17:25 **Numerical Modeling of Hydrogen Combustion for Glass Furnace Combustion Atmosphere Design**
Canalp Kulahli (Sisecam)

17:25 – 17:50 **Advanced Decarbonisation in Glass Production: Industrial-Scale Hydrogen Utilisation for Air- and Oxy-Combustion**
Tilen Sever, Gorazd Krese, Tilen Varlec, Saso Fekonja (Steklarna Hrastnik d.o.o.)
Spela Polak (University of Ljubljana, Faculty of Chemistry and Chemical Technology)

19:30 – 23:00 **RECEPTION – Welcoming Ceremony (Hotel Horal)
GS MODELING AWARD 2023**



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THURSDAY | JUNE 22

09:00 – 12:50 TECHNICAL SESSION 3 | ALL ELECTRIC & HYBRID MELTING

Chairmen: Michel Gaubil, Christoph Jatzwauk
Place: Hotel Horal – Conference Room

- 09:00 – 09:30 **Use of Modelling in Decarbonising the Glass Industry – What Are We Missing?**
Stuart Hakes (F.I.C. UK Limited)
Christoph Jatzwauk (F.I.C. Germany GmbH)
Erik Muijsenberg, Marketa Polachova, Tomas Denk (Glass Service, a.s.)
- 09:30 – 09:55 **Use of Varivolt for Electric Melting in the Glass Industry and Optimized Busbars for High Amperage**
Philippe Bernard (Bernard Bonnefond)
- 09:55 – 10:20 **All-Electric Melting: CTVM Furnace Road to Upscaling – Challenges to Overcome**
Sergio Silva (Fives Stein)
- 10:20 – 10:45 **Electric Melting of Glass – A Parameter Study**
Max Kallert (Horn Glass Industries AG)
- 10:45 – 11:10 **COFFEE BREAK**
- 11:10 – 11:35 **Hybridisation of the End-Fired Regenerative Furnace Concept**
Gorazd Krese, Tilen Sever (Steklarna Hrastnik d.o.o.)
- 11:35 – 12:00 **On the Effect of Turbulence Model on the Prediction of Flow Field and Pressure Drop of Buoyant Flow in Regenerator Channel**
Vojtech Betak, Tomas Krobot, Miroslav Trochta, Tomas Denk (Glass Service, a.s.)
- 12:00 – 12:25 **How Numerical Simulation of Refractory Corrosion Can Support Glass Furnace Soldier Block Monitoring**
Stephane Schaller, Michel Gaubil (SEFPRO Refractory Solution Department)
Zi Kang Low, Emile Lopez (SGR Provence)
- 12:25 – 12:50 **Applications of Mathematical Modelling in the Glass Industry**
Jose Oskar Torres Perez (Nikolaus Sorg GmbH & Co. KG)
- 13:00 – 14:30 **LUNCH (Hotel Horal – Restaurant)**



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THURSDAY | JUNE 22

14:30 – 17:55 TECHNICAL SESSION 4 | DETAILED CFD MODELS, WASTE GAS ENERGY RECOVERY & FORMING

Chairmen: Peter Vrabel, Tomas Denk
Place: Hotel Horal – Conference Room

- 14:30 – 14:55 **Furnace Simulations to Assist in Daily Operation**
Andries Habraken, Rui Carneiro, Johan Lötter (CelSian Glass & Solar B.V.)
- 14:55 – 15:20 **Fully Resolved Multiphase Modeling of Bubble Chains in Glass Melt**
Engin Deniz Canbaz (Sisecam)
- 15:20 – 15:45 **Modern Tool for Energy Savings and Glass Quality Improvement – Simulation and Analysis of FG Mixing Electrode**
Bartlomiej Kubera, Kasper Kaczmarek (Forglass)
- 15:45 – 16:10 **Enhanced Accuracy in Bubbler Approximation for Glass Furnaces Using Detailed Simulations**
Vaclav Heidler (Glass Service, a.s.)
- 16:10 – 16:35 **COFFEE BREAK**
- 16:35 – 17:00 **CO₂ Reduction in the Flue Gas – How to Implement an Efficient ORC and Generate Electricity**
Matthias Hagen (DÜRR Systems AG)
- 17:00 – 17:25 **Complete De-Carbonisation of a Glass Furnace**
Gurhan Dural, Reha Akcakaya (7Cbasalia Global AG)
- 17:25 – 17:55 **About Process Design and the Influence of Day-Night Variations on Mould Cooling of IS Machines**
Harald Zimmermann, Andreas Hanninger (THD – Technologie Anwender Zentrum Spiegelau)
- 19:30 – 24:00 **FAREWELL PARTY with Live Music & Dancing (Hotel Horal)**



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WEDNESDAY – THURSDAY | JUNE 21 – 22

09:00– 17:00 POSTER EXHIBITION

Place: Hotel Horal – Meeting Room

The History of Superboosting in Czechoslovakia from 1992 to the Present

Karol Skultety (Glass Boosting Technology)

Role of Melt Flow Character in Glass Melting Process

Marcela Jebava, Petra Cincibusova, Vladislava Tonarova, Lubomir Nemeč

(Laboratory of Inorganic Materials, joint workplace of the University of Chemistry and Technology Prague and the Institute of Rock Structure and Mechanics of the ASCR, Prague)

Miroslav Trochta (Glass Service, a.s.)

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