ICG International Commission on Glass

TC11: Materials for Furnaces

Meeting notes of Düsseldorf - Meeting of TC11 - Monday, 21 October 2024

Attendees:

Surname, First name, company	e-mail	Company
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Presentations	Autor or Speaker
High thermal insulating ceramic materials	Tomoyuki Ide
Refractory corrosion under hydrogen combustion conditions	Sjoerd Stelwagen
Refractory behaviour in case of glass melting process change	Ronxing Bei
Investigations on Advanced Melting Crown Linings for Improved Energy Efficiency	Daniela Messina & Andrea Roncaglia
Sustainable Refractory Solutions for Long Life Throat Glass Furnace Supported by Corrosion Numerical Simulation	Michel Gaubil & Stéphane Schaller
NDT for refractories - from quality control to final use in glass furnaces	Jean-Pierre Meynckens
AMCC Fees & Benefits 2030 rules Council & potential TC11 round robin tests	Michel Gaubil

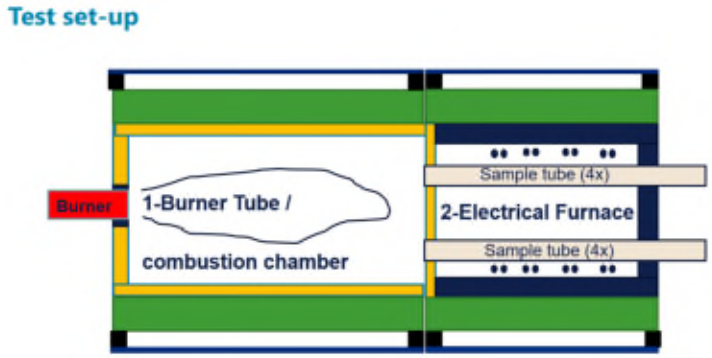
All presentations are enclosed in the sharepoint “TC11 – Düsseldorf presentations 2024-10-21”

Summary

1 - High Thermal Insulating Ceramic Materials – Tomoyuki Ide

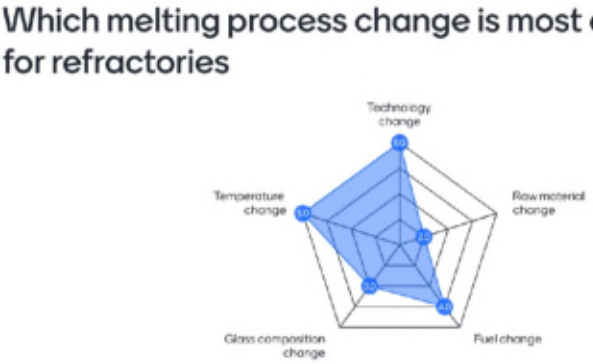
Development of High Thermal Insulating Ceramic Materials as one of the energy saving technologies. The material provided in monolithic or in pre-cast shapes has been applied in the regenerators, breast wall and melter crowns (air fired or oxy fired) since more than 14 years, showing stability and substantial energy saving compared to the conventional design.

2 - GlassTrend GT 37 Refractory corrosion under hydrogen atmosphere – Sjoerd Stelwagen



Presentation of a test set-up to evaluate the refractories corrosion by atmosphere (natural gas or hydrogen with oxygen or air). Accelerate tests will be carry out by enhancing the chemical reactive species (S & Na). Consortium of 22 industrial partners is formed around this GT 37.

3 - Refractory behaviour in case of glass melting process change - Rongxing Bei



A few examples is illustrated showing how the refractories can be attacked due to the process change. Impact of raw materials, glass composition, fuel changes, temperature changes, technology changes are discussed.

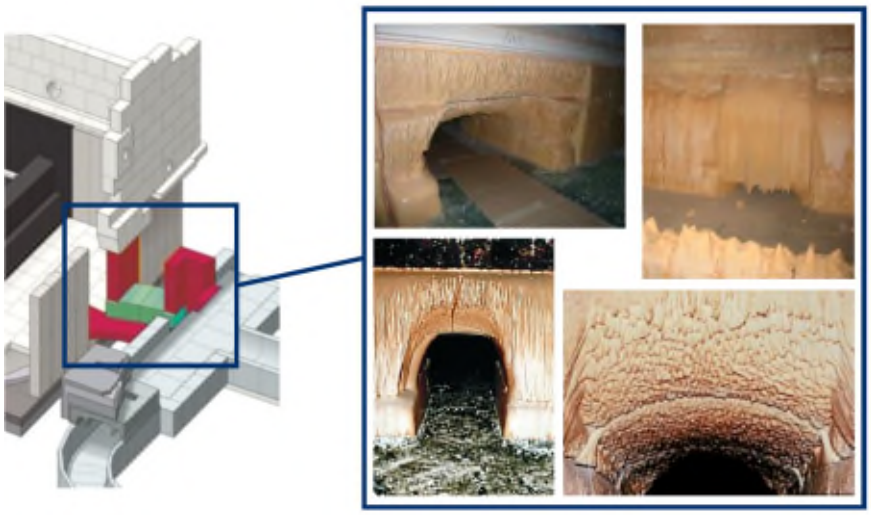
4 - Investigations on advanced melting crown linings for improved Energy Efficiency – Daniela Messina

Epsilon concept included in RHI Magnesita portfolio since 2023.

Honeycomb concept offered by RHI Magnesita since 1989.

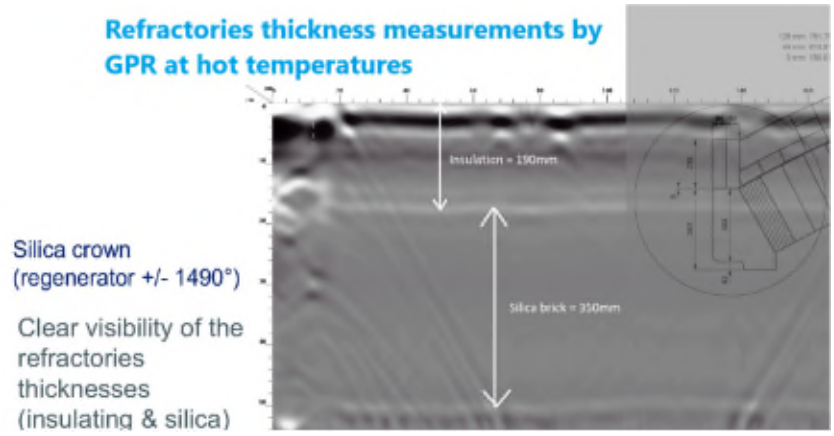
Honeycomb (special bricks design) and Epsilon (additive in the brick) concepts are used to improve the crowns emissivity in the case of silica bricks in the melter. Industrial references are reported having a fuel saving of about 5% in the case of standard silica bricks. Both concepts can be also used for lime free silica.

5 - Sustainable Refractory Solutions for Long Life Throat Glass Furnace Supported by Corrosion Numerical Simulation – Michel Gaubil & Stéphane Shaller



Corrosion resistance in the Throat of FC AZS & HZ and Chromic oxide is evaluated in laboratory, checked by post mortem investigations and detailed by numerical simulation. Factors as temperature, design, type of glass & upward drilling corrosion are considered in this report.

6 - NDT for refractories - from quality control to final use in glass furnaces – Jean-Pierre Meynckens



At room temperature, ultra sound is used mainly to detect the refractories batch homogeneity whilst the microwaves (GPR) are used to check the inner structures of FC AZS & HZ refractories. Examples of non-conformities detected by NDT are reported.
The GPR can be used to evaluate the refractories thicknesses under hot conditions. Examples on bottom structures and crowns surveys realised on running furnaces are described.

7 - AMCC Fees & Benefits 2030 rules Council – Michel Gaubil

Cooperation in the frame of ICG and potential implication of TC11 for the year 2025.

Best Regards,

Jean-Pierre Meynckens Michel Gaubil