

Meeting notes of Düsseldorf - Meeting of TC11 - Monday, 19 September 2022

Attendees:

First Name	Family Name	e-mail	Company
Rongxing	Bei	rongxing.bei@t-online.de	independent
Michel	Bogaerts	Michel.Bogaerts@agc.com	AGC
Michel	Gaubil	Michel.Gaubil@saint-gobain.com	SEFPRO
Tomoyuki	Ide	tomoyuki.ide@agc.com	AGC
MELIH	USTUN	melustun@sisecam.com	SISECAM
Christian	Kunert	christian.kunert@schott.com	SCHOTT
Jean-Pierre	Meynckens	jean-pierre.meynckens@agc.com	AGC
Stefan	Postrach	Stefan.Postrach@RHIMagnesita.com	RHIMagnesita
Daniela	Messina	Giuseppina.Messina@RHIMagnesita.com	RHIMagnesita
Andrea	Roncaglia	Andrea.Roncaglia@RHIMagnesita.com	RHIMagnesita
Sjoerd	Stelwagen	sjoerd.stelwagen@celsian.nl	CELSIAN
Trevor	Wilson	trevor.wilson@dsf.co.uk	DSF

Presentations	Autor or Speaker
Crowns deformation during furnace lifetime	Jean-Pierre Meynckens
Crowns design & material choices	Stefan Postrach/Daniela Messina
Several approaches regarding creep (laboratories tests & long term prediction)	Christian Kunert
Refractories for a Decarbonised World	Trevor Wilson (invited speaker)
Hydrogen combustion and risk for superstructure refractories	Christian Kunert
How high electrical boosting will affect glass furnaces' refractory material	Michel Gaubil
Float Bath Bottom Block problems (delamination, flaking, and bottom bubble generation)	Melih Ustun
Tin Bath Bottom Blocks_RHIM solutions	Andrea Roncaglia (invited speaker)

All presentations are enclosed in the 7zip file "TC11 – Düsseldorf presentations 2022-09-19"

Summary

1) Crowns sag during furnace lifetime - Jean-Pierre Meynckens

Industrial observation of the sag on $\alpha\beta$ Al₂O₃ large crown (span of 12 m). The presentation stressed the question about the material choice considering the available creep tests data and the corrosion risks on the crowns under oxy-firing condition.

2) Crowns design & material choices - Stefan Postrach/Daniela Messina

Industrial experience of lime free silica (Stella GNL) under oxy firing condition. Crowns design parameters (span – thickness- insulation ...), material choice (SiO₂, Al₂O₃, MgO...) and creep tests have been considered.

3) Several approaches regarding creep (laboratories tests & long term prediction) - Christian Kunert

Predictive movement of the mullite based crowns with simulation and deformation measurements on site. The predictive tool can be used for the furnace lifetime provided that the sag measurements are performed during almost the first year of the furnace campaign.

4) Refractories for a Decarbonised World - Trevor Wilson

Good performance of the spinel based material (MgO.Al₂O₃) towards the creep (stable at 1600°C) and the corrosion resistance under NaOH attack has been highlighted. Consideration about the risk of silica attack (batch or refractories with vitreous silica phase) has been discussed.

5) Hydrogen combustion and risk for superstructure refractories - Christian Kunert

From laboratory furnace, H₂ combustion has been tested showing at this stage no critical wear of the usual refractories (AZS FC, HZFC, ...)

6) How high electrical boosting will affect glass furnaces' refractory material - Michel Gaubil

Presentation of the newly developed ER 1699 RS as an intermediate material comprised between ER 1685 RR and ER 1711 RT. Effect of the blocs thickness (until 350mm) has been discussed, and compared to the usual overcoating strategy.

7) Float Bath Bottom Block problems (delamination, flaking, and bottom bubble generation) - Melih Ustun

State of the art related to the tin bath blocs usage considering the peeling, delamination and bubble generation. Tests as air permeability (Na₂O diffusion reduction) and H₂ diffusivity (thermal transpiration measurement) have been discussed together with non-destructive tests.

8) Tin Bath Bottom Blocks_RHIM solutions - Andrea Roncaglia

Development of calcium aluminate blocs (Supral CA) and cares to be taken during the tin bath heat up and the float campaign in order to avoid the dehydration (bubbles generation cause) during the glass production. Effect of the resistance to the flaking has been proved on running float lines.

Best Regards,

Jean-Pierre Meynckens

Michel Gaubil