

TC09 of ICG: Energy demand for glass production

**1. meeting
28.11.2013
Eindhoven**

**B. Fleischmann
HVG
Offenbach**



HVG-DGG



**Hüttentechnische Vereinigung
der Deutschen Glasindustrie
(HVG)**

Research Association of the German Glass Industry



HVG-DGG

(gegründet/founded 1920)

25 Mitgliedsfirmen/member companies
mit/with 40 angeschlossenen Zweigwerken/subsidiaries

15 assoziierte Mitgliedsfirmen/associated members
(Zulieferer/suppliers)
mit/with 4 angeschlossenen Zweigwerken/subsidiaries



- Die HVG ist die **technisch wissenschaftliche Vereinigung** der Glasindustrie.

The HVG is the Research assoziation of the German glass industry

- Als **Mitglied der Arbeitsgemeinschaft industrieller Forschungsvereinigungen (AiF**, Mitglied seit 1955) führt die HVG **praxisorientierte, vorwettbewerbliche** Projekte der **Gemeinschaftsforschung (IGF)** in Zusammenarbeit mit der Glasindustrie und Hochschulen durch.

Is member of the AiF, carrying out pre-competitive industrial research in close co-operation with glass industry and university

- Sie bietet Glashütten eine Reihe von **Dienstleistungen** zur Lösung von Problemen bei der Glasherstellung an.

Applying services for glass industry in the field of emission measurements and technology as well as glass technology



HVG Department of Environmental Technology

Laboratory and Measuring Institute

Accreditation DIN EN ISO/IEC 17025:2005
§ 26/28 BImSchG (German Law)



Waste Gas Components

O_2 / CO_2 / CO

NO_x / SO_2 / SO_3 / HCl / HF / NH_3

Dust / Particulate Matter (PM 10/4/2.5)

Metals (particulate and gaseous)

Boron (particulate and gaseous)

PCDF / PCDD / Total Carbon

Moisture / Pressure / Acid Dew Point



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Services

(as required by national and international guidelines)

Emission Measurements
Calibration of Continuous Emission Monitoring
Expert Advice
(eg.: Emission Limit Values of Oxy-Fuel Tanks)
Emission Projections
Stack Height Calculations



Specials

Optimization of Combustion Conditions
(NO_x Reduction / O_2 and CO Control)
Improvement of Sorption Stages
Quick Analysis During the Sampling on Site
Parallel Sampling at Several Measuring Points
(Top of Regenerator – Raw Gas – Clean Gas)
Mass Flow Balances (sulfur, boron, chloride)

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HVG Department of Glass Technology

Service around the Furnace

Endoscopic Inspection of the Refractory Material
Endoscopic Inspection of Flames (UV, VIS)

Heat Balance Measurements
Furnaces
IS Machines

Voltammetric Start Up Measurements
Sulphur
Iron
Oxygen

Design and Aging of Regenerator Chambers

Additional Services

Literature Research
Special Services and Measurements on Demand



Topics of In-House Training Courses

Introduction to Glass Production
Sulphur Chemistry
Strength and Fracture
Refractories
Measurement of Elevated Temperatures
and other topics on demand



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TC09 ?



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Interest:

- Working with statistical data

problem: energy demand for the production of glass in Germany

75 PJ/y

90 PJ/y

all are using the same data?

end -

primary energy

Definitions !?

What are we talking about

- Energy balance/heat balance

different thermodynamic data base are used

→ different / opposite results

Common data base!

Thermodynamic calculations

- Energy efficiency / saving potentials

- Furnace (with regenerator/recuperator)
- Alternative furnace concepts
- Heat recovery systems
- (alternative) fuels

Energy saving potentials



Interest:

More and better international
statistical data!

What to measure
and how?
to receive reliable data

Not only furnace but the
whole glass production
process chain

Definitions !?

What are we talking about

Common data base!

Thermodynamic calculations

Energy saving potentials

Sustainability/balancing:

grade to grade

life time assessment





Thank you
for your attention



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Service and Research in the Field of Glass