

TC09 minutes meeting 28 November 2013

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Date: 31st January 2014

1. Introduction

The ICG launched a new Technical Committee (TC09) on Energy Efficiency in Glass Production. The kick-off meeting with 13 experts took place at the premises of CelSian in Eindhoven

As a result of the very comprehensive ICG roadmap activities, the International Commission on Glass has launched a new Technical Committee addressing the need to focus on energy efficient glass production in order to decrease greenhouse gas emissions and primary energy consumption in industrial glass production. Its name is TC09: Energy Efficiency in Glass Production. The aim is to bring experts together to discuss the energy saving potential and energy saving technologies available for all steps in the process of industrial manufacturing (from raw materials to glass product) and for all glass sectors.

At the first meeting, 13 experts from institutes, industry and suppliers of glass industries met in Eindhoven on the 28th of November 2013; 5 glass companies, 4 institutes and 2 supplying companies were represented. The number of participants is expected to rise over the next few years.

The main direction of this TC is to define activities and studies of a technical and scientific nature. The most important suggestions proposed include:

- Investigations of new technologies applicable for energy efficiency improvement in glass production;
- Sharing experiences with application of new energy saving technologies or energy recovery from waste heat;
- Development of tools and models to investigate energy balances of glass furnaces & forehearth or other thermal processes in glass industries;
- Collection of data on energy consumption in glass industries per country and per process step or furnace (benchmarking);
- Organize symposia or sessions on Energy Efficiency or Energy Saving Technologies at conferences;
- Preparing guidelines to standardize methods of analysing energy efficiency of glass production and setting definitions for units of energy consumption, specific energy consumption and defining reference states.

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TC09 will address all process steps, but the first priority will be glass melting, since this contributes on average about 60-65 % to the total energy consumption in glass production.

TC09 will become part of the Glass Production TC cluster of the ICG and will work alongside: TC11, TC13, TC14, TC18, TC15-21, and TC23. TC09 is chaired by Dr. Ing. Hans van Limpt from CelSian Glass & Solar. Soon a vice-chair, secretary and webmaster will be nominated and proposed. TC09 aims to set up a website and wants to cooperate with other TCs within the cluster especially TC13 (Environment) and TC18 (Glass Melting).

2. Participants

TC09 - participants	company
1 Hans van Limpt	Celsian
2 Roel van Herten	Philips
3 Richard Hulme	Guardian
4 Bernhard Fleischmann	HVG
5 Ruud Beerkens	CelSian
6 Simone Tiozzo	SSV
7 Alfeo Caputo	BDF Industries
8 Valli Murthy	British Glass
9 Francois DeBlock	AGMS
10 Herve Charles	AGMS
11 Olga Martin	Vidrala
12 Wolfgang Schmidbauer	Schott
13 Emre Dumankaya	Sisecam
Apologizes from:	
Andrew Keeley / Simon Slade	NSG
Álvaro Medina	Cristoro
Olivier CITTI	Saint-Gobain - SEFPRO
Theo van Dalen	Ardagh
Youssef Joumani	Air Liquide
Wilfried Linz / Stefan Schmitt	Schott
Hans Strauven	CNUD

More candidates from all over the world are invited to participate in TC09.

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3. Welcome & ICG issues

Participants to the meeting are welcomed by Joris Goossens, managing director at CelSian Glass&Solar. On behalf of the ICG Ruud Beerkens introduced the International Commission on Glass (ICG) and their mission.

The greater part of the continuing activity of the ICG is carried out by its Technical Committees (TCs). Created at the initiative of the member organisations, the TC's cover vital topics in glass science and technology. Their operating procedures are described in a set of guidelines, that explain the different roles and responsibilities of Council, the Steering Committee, the Coordinating Technical Committee (CTC), TC chairs and TC members.

The members of the TCs have access to resources and facilities which are contributed freely to the pursuit of the technical objectives defined by the individual TCs. Meetings of the TCs are held regularly to discuss the results of inter-laboratory experiments and surveys. In addition to advancing glass science and technology, the TCs are also concerned with the definition of standards. Many scientific publications originate from the work of TCs.

The TCs are organized into groups according to their R&D activity fields, and are supported by coordinators (CTC members). But cooperation between the TCs is not limited to these R&D activity fields, since ICG has a broad understanding of its role in providing an R&D platform. The work of the different TCs is related to the various R&D activity fields described below.

TC members are experts in their particular fields and are selected from universities, institutions and industry. Each year the CTC publishes an Annual Report of the activities of the Technical Committees.

TC09 belongs to the group 'Glass Production' that is coordinated by Mrs. Hande Sesigur from Sisecam. The Glass Production group exists of:

TC09: Energy Efficiency	Hans Van Limpt	hans.vanlimpt@celsian.nl
TC11: Materials for Furnaces	Martin Dunkl	felix_dunkl@t-online.de
TC13: Environment	Andreas Kasper	andreas.kasper@saint-gobain.com
TC14: Gases in Glass	Detlef Koepsel	detlef.koepsel@schott.com
TC18: Glass Melting	Jaroslav Klouzek	Jaroslav.Klouzek@vscht.cz
TC21: Modelling Melting	Erik Muijsenberg	erik.muijsenberg@gsl.cz
TC25: Modelling Forming	Adnan Karadag	adkaradag@sisecam.com

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ICG expects that the TC's will organize congresses or workshops, projects and round robin tests. Candidate members of TC's have to be approved by the ICG, guests can be invited to participate in meetings. The chairperson of a TC can remain maximum for 3 periods of 3 years.

4. Adaption of the agenda

The agenda was adapted by all participants

1. Welcome & ICG issues
2. Introduction of all participants
3. Adoption agenda
4. Allocation of roles (chair, vice-chair, secretary, webmaster)
5. General scope of TC09
6. Lunch Break
7. Laboratory tour CelSian
8. Individual expectations of TC09
9. Scope definition – roadmap TC09
10. Activities
11. Any other business
12. Next meeting

Fixed agenda points for the future are:

- European Energy Efficiency Directive (EED). Probably every 4 years an energy audit will be mandatory. In 2014 the EED will be implemented in the individual member states. More information can be found on: http://ec.europa.eu/energy/efficiency/eed/eed_en.htm. Glass Alliance Europe will follow the status of this EED.

Action Valli Murthy: Update EED

- Roadmaps. Different European countries (UK, NL) develop roadmaps for the glass industry. Updates will be given every meeting.

Action Valli Murthy & Hans van Limpt: Status roadmap UK / NL

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5. Introduction participants

The chair initiated a round table introduction of all participants in attendance.

6. Allocation of roles

TC09 has 4 'vacancies' to be filled: 1) Chair, 2) Vice-chair, 3) Secretary and 4) Webmaster. Hans van Limpt (CeISian) is candidate as chair and Wolfgang Schmidbauer is candidate as vice-chair ??

Actions TC09 members: candidates for different functions

7. Individual expectations TC09

The different companies presented their main activities and their expectations for TC09. The presentations of the different companies will be sent separately. A list of expectations of the different companies is listed below:

- Short term breakthrough solutions for furnaces,
- Waste gas heat recovery,
- Technical discussions,
- Worldwide developments on energy savings
- Knowledge sharing and exchange of information,
- Development of best practices in energy consumption
- Understanding of relationships between glass composition and energy
- Encouraging new technologies/techniques
- Learn about energy efficiency and best practice,
- R&D topics,
- Economic feasibility / CAPEX,
- Accurate energy balance measurements / protocol,
- Understanding of the needs of the glass industry,
- Roadmap glass industry,
- More and better international statistical data,
- Better, international accepted definitions,
- Common databases,
- Focus on whole glass production process.
- Technology monitoring and first evaluation of new options for all kind of energy saving / cost reduction available on the market

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- Input from other industries (e.g. steel, cement, power stations....) for energy savings,
- Invited talks: technology suppliers, best practice overview,
- Reviews and assessments concerning energy efficiency regulations,
- Reviews to state of the art technologies,
- Inventory of present situation regarding energy consumption (benchmarking);
- Overview of existing energy savings technologies (e.g public data, glass BREF),
- Round-robin tests of tools like energy balance models, energy furnace audits, LCA audits....
- Development of a Roadmap for the glass industry (similar as NL, UK);
- Communication via congress papers and/or scientific papers in glass magazines;

8. Scope definition

A questionnaire has been prepared to define the scope and mission of TC09. Finally a list of 15 different topics was defined and prioritized by a voting procedure. The 15 topics are:

1. Identification major process steps for energy improvement
2. Selection of appropriate technologies
3. Testing & development, evaluation tools
4. Define research activities
5. Organize symposia
6. Energy data sharing
7. LCA data sharing
8. Sharing of practical experiences
9. Vision or roadmap document
10. Publications new developments
11. Organisation excursions
12. Broadcasting
13. Regulations on energy and energy savings
14. Definitions & standarization
15. Recruiting new members from all over the world.

In first instance TC09 will focus on the glass furnace, in a later stage other process steps will be considered.

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It was unanimously decided that the topics 13 (Regulations on energy and energy savings) and 14 (Definitions & standardization) will be fixed agenda points on every TC09 meeting. Other topics in order of importance are:

- a) Sharing of practical experiences,
- b) Selection of appropriate technologies,
- c) Identification major process steps for energy improvement,
- d) Testing & development, evaluation tools,
- e) Energy data sharing,
- f) Vision or roadmap document,
- g) Organize symposia,
- h) Define research activities.

Actions TC09 members: collection of information (topics a to d)

9. Next meeting

TC09 aims to meet twice per year. The next meeting will be held on **Friday, 30th May 2014 in Aachen**, Germany at the DGG, ACERS-GOMD and Advances in Fusion and Processing of Glass Conference which will take place from 25-30 May 2014. Bernhard Fleischmann arranged a meeting room for 15 to 20 persons from 09:00 till 15:00. Lunch and coffee breaks are arranged.