

October 14-17, 2013 • Greater Columbus Convention Center • Columbus, Oh

74th Conference on Glass Problems

where glass manufacturers & suppliers meet

conference guide

Presented by the Glass Manufacturing Industry
Council and Alfred University

Endorsed by The American
Ceramic Society

Official journal of the Conference
on Glass Problems



Alfred University



www.glassproblemsconference.org

PM, SO_x and NO_x IN ONE SYSTEM

Visit Us in
Booth #6

Ceramic Filter Systems are the New Standard for Glass Furnace Emissions Control



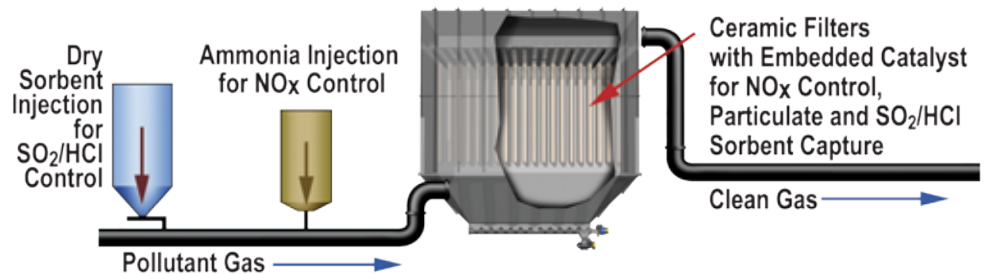
Air-Fuel Furnace Emissions

UltraCat catalyst filter system treats particulate, SO₂, HCl, metals and NO_x in a single all-in-one system

Oxy-fired Furnace Emissions

UltraTemp standard filter system treats particulate, SO₂, HCl, and metals in a single integrated system

- Lower initial capital cost
- Lower operating and maintenance cost
- Higher performance



- Treats any gas flow volume – modules are placed in parallel.
- Multiple modules provide built-in redundancy to ensure up-time. No “ESP bottleneck.”
- Each module has an inlet damper. If a module is taken off-line for service, the other modules treat the entire flow at a temporary higher pressure with no change in performance.

Contact Kevin Moss, Business Development Director, at (801) 294-5422 or kevin.moss@tri-mer.com



Technology Leader
air pollution control

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74th Conference on Glass Problems

Welcome to the 74th Conference on Glass Problems (GPC). This year's conference continues to expand the scope and value of technical resources available to serve the glass manufacturing industry. The Glass Manufacturing Industry Council (GMIC), the leading trade association bridging glass segments, in partnership with Alfred University, the leading American glass teaching and research institution, co-organize the conference, with programming direction provided by an advisory board of industry experts.

We believe that the GPC stands out by the breadth and depth of our technical educational and outreach opportunities. We also believe that our high standards in programming, as well as the publication of the proceedings set us apart.

We strive to provide one of the most extensive platforms for networking and exhibiting in North America, with not only comprehensive tabletop exhibits, but also hospitality suites, hospitality booths, and social events like common area lunches. We appreciate the participation of the industry's leading solutions providers in these events.

Last year's conference enjoyed many successes, which serve as a foundation to build upon to increase the value of this year's program. Participation grew by 17%, along with sold out hospitality salons and tabletop exhibits. Last year saw the conference grow to offer split sessions for the first time. Also for the first time, conference evaluations were collected. We are pleased that the evaluations provided high marks for the conference. But more importantly, the evaluations provided data used in planning the conference this year to more closely fit the needs of the participants. For example, a common request was to increase the "real world" problems content from fellow manufacturers. In response, not only have we increased the presentations by manufacturers, but we also encouraged solutions providers to co-present with manufacturers, citing actual data from manufacturing facilities.

Another important lesson we learned from the evaluations was the importance of technical education to our attendees. In response, we have greatly increased these offerings. On Monday, we begin with C. Philip Ross' popular Introduction to Batch and Furnace Operations, which is an excellent short course for engineers early in their careers. Also offered, is the technically rich short course by Ruud Beerken, Phenomena in Industrial Glass Melting Processes.

We are very proud to announce a new collaboration between the GMIC and the EPA's Energy Star, Energy Productivity as a Competitive Edge in Glass Manufacturing. This excellent new joint symposium has been organized by some of the leading energy officers of American manufacturing companies to present the case and technology for increasing energy efficiency in glass manufacturing.

Driven by the success of past symposia, GMIC is again organizing a full-day technical symposium, Current Topics in Glass Melting Air Emissions & Control Technologies on Thursday, October 17th. Organized by GMIC's glass manufacturing members, this full-day symposium brings together some of the leading experts in the field to provide comprehensive education on the issues and technologies of air emissions.

The 74th Conference on Glass Problems is a content-rich, technically oriented conference, designed as a high value resource for the glass industry professional. We look forward to your participation and trust you will find it a valuable and rewarding experience.



Robert Weisenburger Lipetz, MBA
Conference Director Glass
Manufacturing Industry Council



S. K. Sundaram, PhD
Program Director
Alfred University

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74th Conference on Glass Problems

PUBLICATION OF THE 74TH GPC PROCEEDINGS

Registered attendees of the 74th Conference on Glass Problems will receive a bound copy of the proceedings, published by The American Ceramic Society and Wiley, and shipped to you mid 2014.

WHO IS GMIC

The Glass Manufacturing Industry Council (GMIC) is a trade association of the Glass Industry that includes among its members, representatives of all four sectors: Container, Fiber, Flat, and Specialty glass companies as well as leading suppliers to the industry, research institutes and industry experts. Our goal is to promote the interests and growth and sustainability of the glass industry. GMIC does for individual companies what they can't easily do on their own; provide technical education, coordinate technical initiatives, advocate with law makers and promote the usage and image of glass products as a vital part of society around the globe.

If you are a glass industry manufacturer, supplier, or research organization, and you are not presently a member, we encourage you to join GMIC now to ensure the vitality of the industry through your support of the industry's trade association. Membership dues are based on company size and category. Contact GMIC's Executive Director, Robert Weisenburger Lipetz, for full information.

GMIC LEADERSHIP AND STAFF

Executive Committee: Steve Badger, Pittsburg Corning; President; Madonna Cornelissen, Corning Incorporated, Immediate Past President; Keith Bagarus, RoviSys, Inc., Vice-President; Bruno Purnode, Owens Corning, Treasurer, and Robert Weisenburger Lipetz, Secretary.

Board of Trustees: Kenneth Bratton, Emhart Glass; Patrick Gehl, World Kitchen, LLC; Terry Hartman, Libbey, Inc.; Robert Hofman, Roman Manufacturing; Aaron Huber, Johns Manville; Susan Jones, Anheuser-Busch InBev; Brian Naveken, Toledo Engineering Co., Inc.; Mohan Rajaram, Hollingsworth & Vose Fiber Company; Andrew Richardson, Linde; Andrew Zamurs, Rio Tinto Minerals; David Rue, Gas Technology Institute; Euan Evenson, Praxair, Inc.; Steven B. Smith, Verallia/Saint-Gobain Containers; Rajiv Tiwary, PPG Industries; and Steven Weiser, O-I, Inc.

GMIC Staff: Robert Weisenburger Lipetz, Executive Director and Donna M. Banks Executive Assistant

CONTACT GMIC

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GMIC MISSION

Facilitate, organize and promote the interests economic growth and sustainability of the glass industry through education and cooperation in the areas of technology, productivity and the environment.

ALFRED UNIVERSITY

The Kazuo Inamori School of Engineering at Alfred University (AU) is a leader in glass and ceramics education. Established in 1900 as the New York State School of Clayworking, the School has a long-standing history of providing industry a workforce well-educated in the manufacturing of glass and ceramic materials. Today, the School offers BS and MS degrees in five disciplines: Biomaterials Engineering, Ceramic Engineering, Glass Engineering Science general Materials Science and Engineering, and Mechanical Engineering as well as doctoral degrees in the materials disciplines.

The School also serves industry by advancing the forefront of ceramics and glass research. In addition to maintaining an active portfolio of federally funded research, the faculty routinely collaborate with industry on projects ranging from fundamental research through product/process development. Interactions with industry are conducted through the Center for Advanced Ceramic Technology (CACT) and the Center for High Temperature Characterization (CHTC). The CACT facilitates collaboration between industry and academia with the goal of creating economic impact for the CACT's industrial partners. The CHCT is a user facility that provides research unparalleled access to equipment designed for characterizing materials in situ at high temperatures.

More information about the Kazuo Inamori School of Engineering: <http://engineering.alfred.edu>

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GPC ADVISORY BOARD

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SCHEDULE AT A GLANCE

Monday, October 14, 2013

11 a.m. to 6 p.m.	Registration
11 a.m. to 12 p.m.	GMIC Board Lunch
12 to 5 p.m.	Short Courses
12 to 5 p.m.	EPA ENERGY STAR®/GMIC Joint Energy Efficiency Symposium
5 to 5:30 p.m.	Student Ambassador Meeting
5 to 11 p.m.	Hospitality Suites
5:30 to 7:30 p.m.	GPC Advisory Board Dinner

Tuesday, October 15, 2013

7:30 a.m. to 5:30 p.m.	Registration
8 to 9 a.m.	Exhibiting
9 to 12 p.m.	Plenary Session—Glass Melting
10 to 10:30 a.m.	Exhibiting
12 to 1:30 p.m.	Lunch & Exhibiting
1:30 to 4 p.m.	Split Session: Batch and Forming Split Session: Modeling, Sensing and Control

Tuesday, October 15, 2013 (cont'd)

4 to 5:30 p.m.	Exhibiting
6 to 11 p.m.	Hospitality Suites

Wednesday, October 16, 2013

8 a.m. to 4 p.m.	Registration
8 to 9 a.m.	Exhibiting
9 to 10 a.m.	Plenary Session—Refractories I
10 to 10:30 a.m.	Exhibiting
10:30 a.m. to 12 p.m.	Plenary Session—Refractories II
12 to 1:30 p.m.	Lunch & Exhibiting
1:30 to 4 p.m.	Plenary Sessions—Refractories III
4 to 5 p.m.	GMIC Membership Meeting

Thursday October 17, 2013

7:30 a.m. to 12 p.m.	Registration
8 a.m. to 4 p.m.	GMIC Air Emissions Control Technologies Symposium
11:30 a.m. to 12:15 p.m.	Lunch

PROGRAM SCHEDULE

Monday, October 14, 2013

11 a.m. – 12 p.m. GMIC BOARD LUNCH

SHORT COURSES

Introduction to Batch and Furnace Operations

12 – 5 p.m. | E150

Instructor: **C. Philip Ross**, President, Glass Industry Consulting International (GICI)

Phenomena in Industrial Glass Melting Processes

12 – 5 p.m. | E151

Instructor: **Ruud Beerkens**, General Advisor, CelSian Glass and Solar B. V., Eindhoven, The Netherlands

SYMPOSIUM

EPA ENERGY STAR®/GMIC Joint Energy Efficiency Symposium - Energy Productivity as a Competitive Edge in Glass Manufacturing **12 – 5 p.m. | E162 A/B**

Hundreds of manufacturing corporations recognize that a central energy management program not only saves energy and money across operations but also positions a company to withstand energy risks. This workshop will show you how to build a successful corporate energy program.

12 - 12:05 p.m. WELCOME

12:05 – 12:35 p.m.

Energy Management as a Business Advantage

Peter Garforth, President, Garforth International
Managing energy from a strategic standpoint makes good business sense. Learn how to initiate action in your company.

12:35 – 1:15 p.m.

Building a Basic Corporate Energy Management Program

Elizabeth Dutrow, Director ENERGY STAR Industrial Sector Partnerships, U.S. Environmental Protection Agency
Every successful corporate energy program follows certain key steps. Learn about those steps and how to put them in place in your company.

1:15 – 2:15 p.m.

Strategic Energy Management - Powerful Pathways to Excellence

J. Scott Ryan, Operations, Manager, Corning, Inc.
Lighting, compressed air, and motors are all easy targets for savings. This presentation will walk you through how to identify opportunities in each of these systems and avoid risk.

2:15 – 3:25 p.m. BREAK

2:35 – 3:20 p.m.

Learn from a Real World Corporate Energy Program

Brad Runda, Koch Industries
Koch Industries' energy program spans its diverse businesses in several energy intensive industries and creates long term value for the company. Brad will share Koch's energy best practices that help its businesses achieve their energy goals.

3:20 – 4 p.m.

Benchmarking Energy Use in Glass Manufacturing

Gale A. Boyd, Director Triangle Census Research Center & Senior Research Scholar, Duke University
Tracking, baselining and measurement are critical to energy management. Benchmarking uses energy data and enables long-term tracking and goal setting. What is the value of benchmarking energy in an energy program? How do you do it? This presentation will address these questions and lay out an approach that any company can use.

4 – 5 p.m.

Plant Energy Assessment Made Easy: Treasure Hunts

Bruce Bremer, President, Bremer Energy Consulting Services, Inc.
You can perform an energy assessment of your plants through a team you assemble. The Treasure Hunt process, perfected by Toyota, will be reviewed.

5 – 5:30 p.m. STUDENT AMBASSADOR MEETING | E161A

5 – 11 p.m. HOSPITALITY SUITES

5:30 – 7:30 p.m. GPC ADVISORY BOARD DINNER | Offsite

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PROGRAM SCHEDULE

Tuesday, October 15, 2013

7:30 a.m. – 5:30 p.m. REGISTRATION

8 – 9 a.m. EXHIBITING

9 a.m. – 12 p.m. | Ballroom 4

PLENARY SESSION - GLASS MELTING

Session Chairs: **Glenn Neff**, Glass Service, USA and **Martin Goller**, Corning

9 – 9:30 a.m.

Lecture Presenter: **Adriaan Lankhorst**, Manager Research & Development, CelSian Glass & Solar B.V.

Application of an Energy balance Model for Improving the Energy Efficiency of Glass Melting Furnaces

Author: Adriaan Lankhorst; Additional Authors: Luuk Thielen, Phd., Scientist, CelSian Glass & Solar B.V.; Johan Van der Dennen, Ir., Scientist, CelSian Glass & Solar B.V.

9:30 – 10 a.m.

Lecture Presenter: **Phillip Yu**, PhD, Industry Technical Consultant, Nalco an Ecolab Company,

Dry Batch Optimizer - Gain all the Benefits of Water-Wetting While Reducing the Drawbacks, Author: Phillip Yu;

Additional Authors: Blaine Krause, BS, MBA, Senior Industry Development Manager; Thomas Hughes, B Eng, Senior Industry Technical Consultant

10 – 10:30 a.m. EXHIBITING

10:30 – 11 a.m.

Lecture Presenter: **Ruud Beerkens**, Professor, Senior Scientist, CelSian Glass and Solar B.V.,

Observation of Batch Melting & Glass Melt Fining and Evolved Gas Analysis, Author: Penny Marson, Consultant,

CelSian Glass and Solar B.V.; Additional Authors: Ruud Beerkens; Mathi Rongen, Senior Technologist, CelSian Glass and Solar B.V.

11 – 11:30 a.m.

Lecture Presenter: **David M. Rue**, Institute Engineer, Gas Technology Institute, *Experimental*

Experimental Support for Thermo-Chemical Recuperation to Increase the Glass Furnace Energy Efficiency, Author:

David M. Rue; Additional Authors: Hary S. Kurek; Aleksander Kozlov; Mark Khinkis, Gas Technology Institute

11:30 a.m. – 12 p.m.

Lecture Presenter: **Elaine Levin**, President, Powerhouse, *Lots of Natural Gas and Higher Prices*

Author: Elaine Levin

12 – 1:30 p.m. LUNCH

12 – 1:30 p.m. EXHIBITING

1:30 – 4 p.m. | Ballroom 4

SPLIT SESSION - BATCH AND FORMING

Session Chairs: **Phil Tucker**, Johns Manville and **Ken Bratton**, Emhart Glass Manufacturing Inc.

1:30 – 2 p.m.

Lecture Presenter: **J. Terry Fisk**, Owner/President, JTF Microscopy Services, LLC

Glass Production Losses Originating from Contaminants in Cullet and Raw Materials

Author: J. Terry Fisk

2 – 2:30 p.m.

Lecture Presenter: **Andrew Zamurs**, Development Specialist, Rio Tinto Minerals

Developing a Better Understanding of Boron Emissions from Industrial Glass Furnaces

Author: Andrew Zamurs; Additional Authors: David Lever, Development Specialist, Rio Tinto Minerals; Simon Cook, Market Development Director, Rio Tinto Minerals; Suresh Donthu, PhD, Glass Business Development, Rio Tinto Minerals

2:30 – 3 p.m.

Lecture Presenter: **Heiko Hessenkemper, Dr.-Ing.**, Professor Technische Universität Bergakademie Freiberg *New Developments of Batch Briquetting*

Author: Heiko Hessenkemper, Dr.-Ing.; Additional Authors: Rolf Weigand, Dpl.-Ing., Research Assistant, Technische Universität Bergakademie Freiberg; Khaled Al Hamden, Dr.-Ing, Technische Universität Bergakademie Freiberg

3 – 3:30 p.m.

Lecture Presenter: **Alexander Fuchs**, PEM-MS-ST-GA, Manager, Applied Technology, Glass Industry Solutions, Umicore AG & Co KG

Application of Self-Supporting Precious Metal Stirrers in the Melting of Soda Lime Glass

Author: Alexander Fuchs

3:30 – 4 p.m.

Lecture Presenter: **Chendhil Periasamy**, PhD, Senior Research Scientist, Air Liquide Delaware Research and Technology Center

Long-term Results of Oxy Fuel Forehearth Heating Technology ALGLASS FH for Glass Fibers

Author: Christian Windhoevel, Dipl.-Ing., R&D Project Leader Combustion Group, Air Liquide; Additional Authors: Chendhil Periasamy, PhD, Senior Research Scientist, Air Liquide Delaware Research and Technology Center; Youssef Joumani, PhD, R&D Project Leader Combustion Group, Air Liquide Centre de Recherche Claude Delorme; Justin Wang, PhD, Staff Scientist Air Liquide Delaware Research and Technology Center

1:30 – 4 p.m. | Ballroom 5

SPLIT SESSION - MODELING, SENSING AND CONTROL

Session Chairs: **Bruno Purnode**, Owens Corning and **Larry McCloskey**, Anchor Hocking

1:30 – 2 p.m.

Lecture Presenter: **Matthias Lindig**, Manger R&D, Nikolaus Sorg GmbH

How Many Chambers are Enough? A Float Furnace Modeling Study

2 – 2:30 p.m.

Lecture Presenter: **Fabien Bèchet**, Assistant Professor, TEMPO University of Valenciennes

2D Modeling of the Whole Forming Process of a Glass Sheet Including Radiative Effects

Author: Fabien Bèchet; Additional Authors: Norbet Shedow, Phd, Researcher in Applied Mathematics, Fraunhofer ITWM Kaiserlautern; Dominique Lochenes, Dr.-Ing., Professor, TEMPO University of Valenciennes

2:30 – 3 p.m.

Lecture Presenter: **Renè Meuleman**, Glass Industry Technical Leader, Invensys Operations Management

Predictive Strategies Contribution to Improved Power Management and Decreased Energy Consumption

Author: Renè Meuleman

3 – 3:30 p.m.

Lecture Presenter: **Oscar Verheijen**, Sr. Consultant, CelSian Glass and Solar B.V.

In-situ CO Laser Sensor for Burner Control in Glass Furnaces

Author: AJ Faber, Senior Scientist, CelSian Glass & Solar B.V.; Additional Authors: Marco Van Kerbergen, Ing., Glass Technologist, CelSian Glass & Solar B.V.; Hans Van Limpt, Dr.-Ing., Manager Product Development CelSian Glass and Solar B.V.

3:30 - 4 p.m.

Lecture Presenter: **H. P. H. Muijsenberg**, Vice President, Glass Service, Inc.

An Advanced Expert System TM Control System and Batch Imaging Software for an Improved Melter Operation

Author: H. P. H. Muijsenberg; Additional Authors: Robert Bodi, Glass Service, Inc.; Meno Eisenga, Glass Service B.V.

4 – 5:30 p.m. EXHIBITING

6 – 11 p.m. HOSPITALITY SUITES

PROGRAM SCHEDULE

Wednesday, October 16, 2013

8 a.m. – 4 p.m. REGISTRATION

8 – 9 a.m. EXHIBITING

9 – 10:00 a.m. | Ballroom 4

PLENARY SESSION: REFRACTORIES I

Session Chairs: **Warren Curtis**, PPG Industries and **Elmer Sperry**, Libbey

9 – 9:30 a.m.

Lecture Presenter: **Elmer Sperry**, Technical Leader Batch & Furnace Design, Libbey Glass

Process Improvements with Bonded Alumina Channels

Author: Elmer Sperry; Additional Authors: Laura Lowe, Sr. Application Engineer, North American Refractories Company

9:30 – 10 a.m.

Lecture Presenter: **Goetz Heilmann**, Sales Director Glass America, RHI-US, Ltd.

Bonded Refractories for the Extreme Conditions in the Top of Regenerators

Author: Rongxing Bei, Phd, RHI AG; Additional Authors: Klaus Santowski, Dipl., Mineralogist, RHI-AG; Goetz Heilmann, Sales Director Glass America, RHI-US, Ltd.

10 – 10:30 a.m. EXHIBITING

10:30 a.m. – 12 p.m. | Ballroom 4

PLENARY SESSION: REFRACTORIES II

Session Chairs: **Warren Curtis**, PPG Industries and **Elmer Sperry**, Libbey

10:30 – 11 a.m.

Lecture Presenter: **Olivier Bories**, R&D Fused Cast Refractory Engineer, Saint-Gobain CREE

New Refractory for Metal Line Protection

Author: Michel Gaubil, Phd, Senior Scientist, WW Fused Cast R&D Manager, Saint Gobain CREE Additional Authors: Ludovic Massard, Phd, Industrial Development Engineer, Saint-Gobain SEPR; Isabelle Cabodi, R&D Group Leader, Saint-Gobain CREE;

11 - 11:30 a.m.

Lecture Presenter: **Rolf Weigand**, Project Manager, Technische Universität Bergakademie Freiberg

Ancorro-Refinement Technology for Refractory in Glass Melt Contact

Author: Rolf Weingand; Additional Authors: Heiko Hessenkemper, Prof. Dr.-Ing, Technische Universität Bergakademie Freiberg; Anne-Katrin Rössel, Dipl.-Ing., Technische Universität Bergakademie Freiberg; David Tritschel, Dipl.-Ing., Technische Universität Bergakademie Freiberg

11:30 a.m. – 12 p.m.

Lecture Presenter: **S. Cristina Sánchez**, Global Technical Manager, Glass, Fosbel, Inc.

Hot Bottom Repairs: Global Impact, Performance Cast Study & Development for the Americas

Author: S. Cristina Sánchez; Additional Authors: Dennis Cawthorn, Business Unit Director, Glass Americas, Fosbel, Inc.; Kevin Pendleton, Technical Development Engineer, Fosbel, Inc.; Bryn Snow, Applications Specialist, Fosbel, Inc.

74th Conference on Glass Problems

12 – 1:30 p.m.

LUNCH

12 – 1:30 p.m.

EXHIBITING

1:30 – 4 p.m. | **Ballroom 4**

PLENARY SESSIONS: REFRACTORIES III

Session Chairs: **Jack Miles**, H. C. Starck and

Martin Goller, Corning

1:30 – 2 p.m.

Lecture Presenter: **Ali Farhadi**, Manager Marketing & Engineering, Magneco/Metrel Inc.

Monolithic Crown and Its Benefits, Colloidal Silica Bonded Refractories Technology

Author: Ali Farhadi; Additional Authors: Tom Fisher, VP Sales, Magneco/Metrel Inc; Alonso Gonzales Rodriguez, Vice President of Operations, PAVISA; Mario Estrado, Senior Project Engineer, VITRO

2 – 2:30 p.m.

Lecture Presenter: **Tom Kleeb**, Manager of Product Technology, North American Refractories Company

High Emissivity Coating in Glass Furnaces

Author: Tom Kleeb; Additional Authors: Bill Fausey, Leader R&D Batch & Melting, Owens Corning

2:30 – 3 p.m.

Lecture Presenter: **Olivier Citti**, SEFPRO Bonded R&D Manager, Saint-Gobain NRDC

New Recycling Solution for Refractories from Insulation Glass Furnaces

Additional Authors: Tribault Champion, Research Engineer, Saint-Gobain CREE; Pierre Lenfant, Plant Manager, Saint-Gobain

3 – 3:30 p.m.

Lecture Presenter: **P. Carlo Ratto**, Owner, Fused Cast Technologies

An Update on the Technical/Technological Evolution (or the lack of) of Chinese Manufacturers of Fused Cast Refractories and the Value vs Cost Proposition

Author: P. Carlo Ratto

3:30 – 4 p.m.

Lecture Presenter: **Roberto Cabrera Llanos**, Float Glass Technology Manager, Vitro

Furnace Repair after a Hurricane at Monterrey, Mexico

4 – 5 p.m.

GMIC MEMBERSHIP MEETING |
Ballroom 4

ONLINE CONFERENCE EVALUATION

Help us improve the value of the Conference on Glass Problems by filling out our online evaluation.

We are continually striving to improve the quality of the conference. Your feedback from the online evaluation will be carefully considered by the GPC advisory board in designing future conferences.

Please go to the website address below for this brief evaluation.

<https://www.surveymonkey.com/s/N962MDP>

Thank you for taking the time to provide your feedback on the conference.

Online Conference Evaluation (for exhibitors only)

If you presented a tabletop exhibit at the 74th Conference on Glass Problems, we would appreciate your feedback to help us continue to improve the exhibiting opportunity. (This survey is for exhibitors only)

Please go to the website address below for this brief evaluation.

<https://www.surveymonkey.com/s/NYD9F5X>

Thank you for taking the time to provide your feedback on conference exhibiting.

Online Conference Evaluation (for hospitality suites hosts only)

If you presented a hospitality booth or salon at the 74th Conference on Glass Problems, we would appreciate your feedback to help us continue to improve the opportunity. (This survey is for hospitality suite hosts only)

Please go to the website address below for this brief evaluation.

<https://www.surveymonkey.com/s/NYM368T>

Thank you for taking the time to provide your feedback on conference hospitality suites.

GMIC SYMPOSIUM

Thursday, October 17, 2013

11:30 a.m. – 12 p.m. REGISTRATION

8 a.m. – 4 p.m. | E161-162

Current Topics in Glass Melting Air Emissions & Control Technologies

A symposium organized by the Glass Manufacturing Industry Council

Program Committee: Chairman: **C. Philip Ross**, President, Glass Industry Consulting International (GICI); **Brian Naveken**, Furnace Design Engineer, TECO; **Steven B. Smith**, VP Environment and Regulatory Affairs, Verallia; **Patricia Pride**, Manager, Environment Health and Safety, PPG; **Steve Weiser**, Director, Corporate Engineering, O-I; **Robert Weisenburger Lipetz**, Executive Director, GMIC.

8 – 8:30 a.m.

Introduction – Environmental Pollutants and Manufacturing Processes - C. Philip Ross - Chairman

Pollutants & Sources from Glass Furnaces

- Fine particulates
- NO_x
- SO_x
- Hazardous Air Pollutants (HAPS)
- CO₂ Greenhouse gas emissions

Historical Review and Update on Regulations: Permitting, potential trigger issues that result in your status being changed. Loss of grandfathering.

8:30 – 9:30 a.m. PROGRAM I - REGULATIONS

8:30 – 9:00 a.m.

Regulation Status and Trends, Federal, State and Regional – Daniel Steen, Vice President, Government Affairs, O-I

- NAAQS
- Regional haze (Massachusetts far reach)
- California cap and trade
- Copy cat legislation

9 – 9:05 a.m. Q&A

9:05 – 9:25 a.m.

Recent Experience with Regulations in the Fiber Glass Industry – “Residual Risk” from Fiberglass MACT Standard, EPA’s Supplemental Area Source Proposal, and Others - Angus Crane, Executive Vice President, General Counsel, North American Insulation Manufacturers Association

9:25 – 9:30 a.m. Q&A

9:30 – 9:50 a.m. BREAK

9:50 – 11:30 a.m. PROGRAM II - DESIGN AND CONTROL TECHNOLOGIES

Part I - Particulates Capture

9:50 – 10:10 a.m.

Particulate Capture with Electrostatic Precipitators (ESP) – TJ Shay, Sales Manager, McGill Air Clean

10:10 – 10:15 a.m. Q&A

10:15 – 10:35 a.m.

Filtration Technologies for Particulate Capture – Rod Gravley, Technology Director, Tri-Mer Corporation

10:35 – 10:40 a.m. Q&A

10:40 – 11:00 a.m.

Acid Flue Gas Treatment within the Glass Industry – Melissa Sewell, New Business Development Manager, Lhoist North America

11 – 11:05 a.m. Q&A

11:05 – 11:25 a.m.

Aspects of Glass Furnace Combustion Technologies for NO_x Reduction – Marcus Graham, Senior Sales Engineer, Eclipse Processing Engineering, Inc.

11:25 – 11:30 a.m. Q&A

11:30 a.m. – 12:15 p.m. LUNCH

12:15 – 2:15 p.m. Part II - Greenhouse Gas Emissions

12:15 – 12:35 p.m.

Status of Greenhouse Gas Rule Making – Steven B. Smith, VP Environment and Regulatory Affairs, Verallia

12:35 – 12:40 p.m. Q&A

12:40 – 1:00 p.m.

Waste Heat Recovery in Glass - an Overview from the Oxyfuel Perspective – Uyi Iyoha, Combustion Applications R&D, Praxair, Inc.

1 – 1:20 p.m.

Batch & Cullet Preheating – Matthias Lindig, Manager R&D, Nikolaus SORG, GmbH

1:20 – 1:30 p.m. Q&A

1:30 – 1:50 p.m.

Heat Recovery – Heat Recovery Opportunities with the Organic Rankin Cycle – Daniel Ramshaw, Sales Engineer, GEA Process Engineering

1:50 – 1:55 p.m. Q&A

1:55 – 2:15 p.m. BREAK

2:15 – 3:30 p.m. PROGRAM III - FUTURE REGULATORY TRENDS

2:15 – 2:35 p.m.

Emission Regulations in the European Union for Glass Industries Based on Best Available Techniques and Methods – Andreas Kasper, PhD., Leader of Departments, Chemistry of Glass Melting and Chemical Laboratories, Saint-Gobain; International Commission on Glass, Technical Committee 13

2:35 – 2:40 p.m. Q&A

2:40 – 3:40 p.m.

Panel Discussion - Future Challenges and Industry Preparedness – Angus Crane, Executive Vice President, General Counsel, North American Insulation Manufacturers Association; **Daniel Steen**, Vice President, Government Affairs, O-I; **Steven B. Smith**, VP Environment and Regulatory Affairs, Verallia; **Patricia Pride**, Manager, Environment Health and Safety, PPG; **Paul S. Lewandowski**, Director, Regulatory Law, Owens Corning; **Kenneth Carney**, Manufacturing Technology Leader, Owens Corning

3:40 – 3:50 p.m.

Concluding Remarks – **C. Philip Ross**

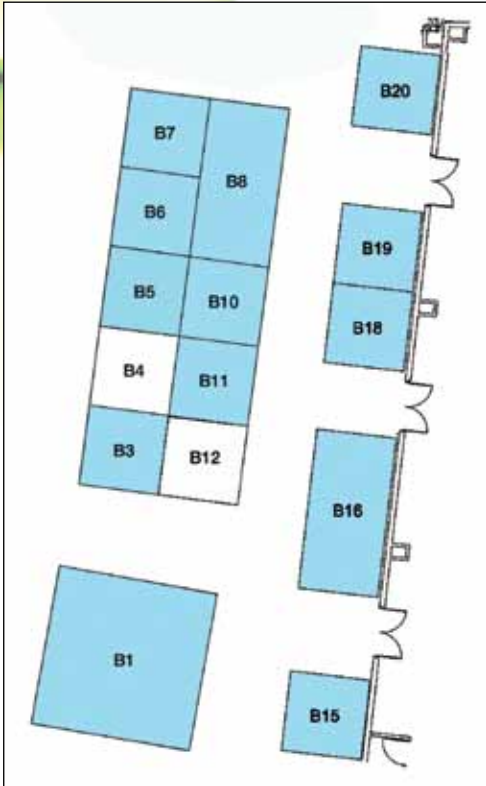
4 p.m. SYMPOSIUM ENDS

74th Conference on Glass Problems

HOSPITALITY BOOTHS & SALONS EXHIBITORS

Monday, October 14, 5 – 11 p.m. | Tuesday, October 15, 6 – 11 p.m.

Booths, located on 1st floor



Salons, located on 2nd floor



Advanced Control Solutions, Inc.

Booth: D242, T23

8750 Resource Park Drive, Sylvania, Ohio 43560

Phone: +1-419-843-4820

www.acsitoledo.com

As an integrator of information and control system solutions, ACSI engineers in both the United States and Europe are able to provide customers with quality technical engineering, system design, factory acceptance, installation supervision, commissioning services, and training. Our knowledge can be applied to Float Glass, Fiberglass, Container Glass, Tableware, Lighting, Tubing, and Specialty systems. Types of solutions we provide are temperature control, DCS replacement, batching control, glass level control, model based control, packaging & sortation control, and production tracking.

Air Products

Booth: B1

7201 Hamilton Blvd., Allentown, Pennsylvania

18195-1501

Phone: 1-800-654-4567 or +1-610-706-4730

www.airproducts.com/glass

We are the leader in proprietary oxygen enrichment and oxy-fuel technologies that, with minimal capital investment, can help you increase production, lower fuel costs, reduce emissions, and improve your operation. Our In-house melting experts can help you improve combustion to increase glass production, improve glass quality, reduce fuel consumption and emissions including NO_x , SO_2 , CO_2 and particulate matter with our latest Cleanfire® technologies and services.

BASF Corp., Temperature Sensing Products

Booth: D241

13 Warren Drive, Old Bridge, New Jersey 08857

Phone: +1-732-679-0532

www.catalysts.basf.com/tempsensing

BASF supplies Temperature Sensing Products that increase profit. Over 60 years of glass industry experience makes BASF uniquely qualified to provide critical temperature insights for increased process yields. BASF's High Temperature Thermocouples and Exactus[®] Optical Pyrometers incorporate technology breakthroughs which enable more profit from existing production facilities by providing unique temperature measurement solutions for process critical applications, such as:

- Gob
- Container Mould
- Fiber Glass Stream
- Fiberizing Disk
- Forehearth
- Furnace Crown and Bottom

Canty

Booth: B10

6100 Donner Road, Buffalo, New York 14094

Phone: +1-716-625-4227

<http://jmcanty.com>

Canty High Temperature insertion cameras are ideal for demanding applications such as glass furnaces involving visual inspection or verification in extreme. Glass Level, Ribbon, Speck Detection and Particle Size are among other applications.

Fosbel, Inc.

Booth: B7

20600 Sheldon Road, Brook Park, Ohio 44142

Phone: +1-216 362 3900

www.fosbel.com

Fosbel Provides Innovative Glass Furnace Maintenance Solutions. Fosbel offers a wide range of repair and inspection services and has conducted more than 2,500 repairs to virtually every type of glass furnace around the world. In addition to Ceramic Welding technology to repair refractory at operating temperature, Fosbel has also developed many innovative hot repair solutions including Port Floor Restoration, Checker Cleaning, Dual Crown Overcoating and Hot Bottom Repairs. Fosbel's experienced engineers and technicians are familiar with almost any furnace condition, and repairs are conducted in an effective and efficient manner, providing improved energy efficiency while minimizing production downtime.

Frazier-Simplex, Inc.

Booth: B6

P.O. Box 493, 436 East Beau Street, Washington, Pennsylvania 15301

Phone: +1-724-225-1100

www.frazier-simplex.com

Frazier-Simplex, Inc. was founded in 1918 in Washington, PA and has remained under Frazier family ownership for three generations. For over 90 years, Frazier-Simplex, Inc. has had continuous service to the glass industry in equipment and designs from raw materials through glass conditioning. Innovative furnace designs and equipment are just examples of why Frazier-Simplex, Inc. has been a respected member of the world-wide glass community for many years. We are experienced in all types of glass and glass production, from soda lime to borosilicate pharmaceutical glass.

Fuse Tech/Hot Tech Group

Booth: D245

3400 Silica Road, Sylvania, Ohio 43560

Phone: +1-419-841-9323

www.fusetech.com

Fuse Tech's core business is Ceramic Welding and Refractory Repair on both cold and hot furnaces. We also have equipment to photograph inside the furnace for use in damage and operation evaluation. Through the use of high pressure water lasers, Fuse Tech is able to remove debris from port sills as well as the tops of checker packs and flues and tunnels. Hot Tech will help you with your Refractory and Operational Problems. Specializing in drilling, rebuilds, hot repairs, cold repairs, diamond chainsawing, burner block replacements and overcoats. Fuse Tech/Hot Tech also is a source for Consulting on furnace operation and refractory problems.

GEA Process Engineering, Inc.

Booth: B3

9165 Rumsey Road, Columbia, Maryland 21045

Phone: +1-410-997-8700

www.niroinc.com

GEA Bischoff offers a wide range of technologies in gas cleaning to get cleaner air with the Process industries. This includes dust collection, dry and wet processes for removing gaseous pollutants from process gases, separating heavy metals, abating acid gas, dioxins and furans and other emission-relevant off-gas components. GEA Bischoff is a part of the "Emission Control" business unit within the GEA Process Engineering segment.

74th Conference on Glass Problems

Glass Service, Inc.

Booth: B18

Glass Service USA, Inc., 3340 SE Federal Highway, #200, Stuart, Florida 34997

Phone: +1-772 287 6061

<http://gsl.cz>

Glass Service, Inc., (GS) is a leading global consultant in the field of glass melting and conditioning, furnace control, operation, troubleshooting, and optimization of furnace designs. The Expert System, ESIITM, and the glass furnace modeling software known as GFM 4, have been developed by GS and are successfully deployed worldwide. Glass Service provides defect analyses in its own labs and utilizes basic and applied research in its glass melt testing facilities. Headquarters are located in the Czech Republic, with offices in the Netherlands, Slovakia, United States, and China. Co-exhibitor FlammaTec supplies burners and combustion equipment to the glass industry.

GMIC

Booth: B15, T28

600 N. Cleveland Avenue, Suite 210, Westerville, Ohio 43082

Phone: +1-614-818-9423

www.gmic.org

GMIC is a trade association of the glass industry that includes among its members, representatives of all four sectors: Flat, Container, Fiber and Specialty glass companies, as well as leading suppliers to the industry, research institutes and industry experts. Our goal is to promote the interests and growth of the glass industry.

Henry F. Teichmann, Inc.

Booth: D243

3009 Washington Road, McMurray, Pennsylvania 15317

Phone: +1-724-941-9550

www.hft.com

The world's leading Glass Process Engineering Contractor dedicated solely to the glass industry. For 63 years, we have been providing turnkey projects that include engineering, procurement, technical service, construction and project management for clients worldwide. Projects consist of complete float, fiberglass and container plants. Providing turnkey services for specialty plants such as sodium silicate, borosilicate tubing, television, tableware and lighting products. In addition to successfully converting TV glass furnaces and fiberglass furnaces to oxy-fuel firing, HFT has worked with PPG in converting two PPG float furnaces into oxy-fuel firing additional work includes teaming up with PPG to provide solutions and up-to-date float technologies, and oxy-fuel technology to the glass industry worldwide.

Klug Systems by Optimization

Booth: B20

50 High Tech Drive, Rush, New York 14543

Phone: +1-585-321-2300

www.optimization.us

Optimization offers a multi-disciplined design team for any aspect of your batch processing needs, with best practices for equipment arrangements, dust collection, storage, weighing, mixing and transport of batch. With years of experience, the team has tackled a full-range of batch problems, providing leading-edge solutions for end clients in a variety of glass industries. During the feasibility phases of your projects, Optimization can provide services for cost assessment, risk assessment and high-level design. Once capital approval is secured, the design team is available for engineering drawing packages, equipment schedules, site plans and test plans.

Lilja Corp.

Booth: D233

229 Rickenbacker Circle, Livermore, California 94551
Phone: +1-925-455-2300
www.liljacorp.com

Lilja Corp. is an assertive leader in industrial and glass furnace construction. Our managers, supervisors and craftsman are known industry wide for their high standards, performing quality work, meeting project schedules and a commitment to a safe working environment. We are a full service general engineering contractor, specializing in the construction of processing, manufacturing and warehousing facilities, glass melting furnaces and all related systems and industries. Lilja Corp. has been serving the needs of the glass industry for over 35 years with offices located in the US and Canada.

Magneco/Metrel, Inc.

Booth: B16

223 W. Interstate Road, Addison, Illinois 60101
Phone: +1-630-543-6660
www.magneco-metrel.com

Magneco/Metrel, Inc. is a privately owned manufacturer of specialty refractory monolithics that optimize availability and provide exceptional value to glass manufacturing applications.

McGill AirClean LLC

Booth: B19

1777 Refugee Road, Columbus, Ohio 43207
Phone: +1-614-829-1200
www.mcgillairclean.com

McGill AirClean has over 40 years of engineering and manufacturing experience helping companies meet stringent air pollution control regulations for boilers, furnaces, incinerators, and a variety of industrial processes in industries such as wood products, pulp and paper, automotive, chemical, pharmaceutical, food, metals, petrochemical, electrical power and steam generation, and solid waste incineration. We have extensive experience and a large number of installations for many types of glass applications. Products and services include dry and wet electrostatic precipitators, fabric filter systems, spray-dry scrubbers, regenerative thermal oxidizers, DeNOx (SCR) reactors, dry reagent injection systems, mobile testing services, and parts and service.

North American Refractories

Booth: D232

400 Fairway Drive, Moon Township, Pennsylvania 15108
Phone: +1-412-375-6600
www.anhrefractories.com

North American Refractories Company engineers, manufactures and supplies a full-line of refractories to support the most demanding glass making applications. NARCO's experienced Installation Group provides the Glass Industry with high quality hot and cold repair service as well as hot sealing of new furnaces. Our Glass Support Team is located in Pittsburgh, PA and Cincinnati, OH with Sales Representatives that cover the United States, Latin America, South America, Europe and Asia. Our Glass Support Team works closely with each customer to ensure the best possible refractory solutions are met.

Praxair, Inc.

Booth: B8

39 Old Ridgebury Road, Danbury, Connecticut 06810
Phone: 1-800-PRAXAIR
www.praxair.com

Praxair is a leader in innovative oxyfuel technologies for the glass industry. With over 70 years of oxyfuel combustion experience in the glass industry and over 200 oxyfuel projects completed worldwide, our technologies can deliver substantial fuel savings, increased productivity and product quality, reduced NOx emissions and alkali volatilization, and prolonged furnace campaign. Praxair is a Fortune 300 company. We also supply atmospheric, process and specialty gases, high performance coatings, and related services and technologies. Among the gases we supply are oxygen, nitrogen, argon, carbon dioxide, helium, and hydrogen. To learn more about Praxair's gas supply expertise, call us at 1-800-PRAXAIR.

74th Conference on Glass Problems

RHI US Ltd.

Booth: D231

1077 Old State Route 74, Batavia, Ohio 45103

Phone: +1-513-753-1254

<http://rhi-ag.com>

RHI AG is the world market and technology leader in high-grade ceramic refractory materials. A global player with Austrian roots, RHI employs roughly 8,000 people worldwide at 33 production sites in Europe, North America, Latin America, South Africa and China and is represented by over 70 sales offices in four continents. RHI is the only global refractories supplier to offer products for all aggregates of the basic industry. The RHI umbrella brand combines a series of traditional brands that have been established in the market for many years, including Didier, Veitscher, Radex, Dolomiti Franchi, Interstop and Monofrax.

RoviSys

Booth: B11

1455 Danner Drive, Aurora, Ohio 44202

Phone: +1-330-995-8103

www.rovisys.com

RoviSys is an engineering services company that specializes in process control and information automation. Our Glass division has incorporated state of the art systems around the world for all major glass manufacturers. As an independent company, we work with you to design and develop the best solution to meet your needs.

Saint-Gobain Sefpro

Booth: D244

SSOE Group

Booth: D234

1001 Madison Avenue, Toledo, Ohio 43604

Phone: +1-419-255-3830

www.ssoe.com

At SSOE, our experience spans decades and includes projects with every major glass manufacturer, every aspect of plant operations, and furnace design. We promise to save you time, trouble, and money. We can make this promise because we've achieved savings on multiple projects. Over 800 projects completed in the last five years alone. SSOE has worked extensively in the glass industry, and we apply this broad knowledge to come up with the best solution for clients that manufacture containers, specialty glass, fiberglass, float glass, residential shingles and automotive glass.

Toledo Engineering Co., Inc.

Booth: D230, T18

3400 Executive Parkway, P.O. Box 2927, Toledo, Ohio

43606

Phone: +1-419-537-9711

www.teco.com

The TECO Group, consisting of Toledo Engineering Co., Inc., TECOGLAS Ltd., KTG Systems, Inc., KTG Engineering Ltd., ZEDTEC Ltd. and Dreicor Inc. specialize in the design and construction of glass melters of all types, including fuel-fired regenerative and recuperative furnaces, oxy-fuel furnaces, electric melters, electric boost systems and forehearth and distributors/working end. The TECO Group also provides batch plants, emission control systems and process control systems on a turnkey basis. KTG Engineering Ltd. manufactures many items of furnace equipment such as batch chargers, electrode holders, and spy hole covers.

Varo Engineers, Inc.

Booth: B5

2751 Tuller Parkway, Dublin, Ohio 43017

Phone: +1-614-459-0424

www.varoengineers.com

Varo Engineers, Inc. is a full service engineering consulting and design firm with 60+ years of experience. We emphasize on customer service, while tailoring to our client's needs in the industrial, manufacturing, institutional and power generation markets. Our specialties include process applications, material handling systems, furnace design, nuclear services, energy audits and electrical power and controls. We also provide project management and client site services for multidiscipline projects. We serve our clients through a flexible, multidiscipline approach that results in a project specific solution.

TABLETOP EXHIBITORS

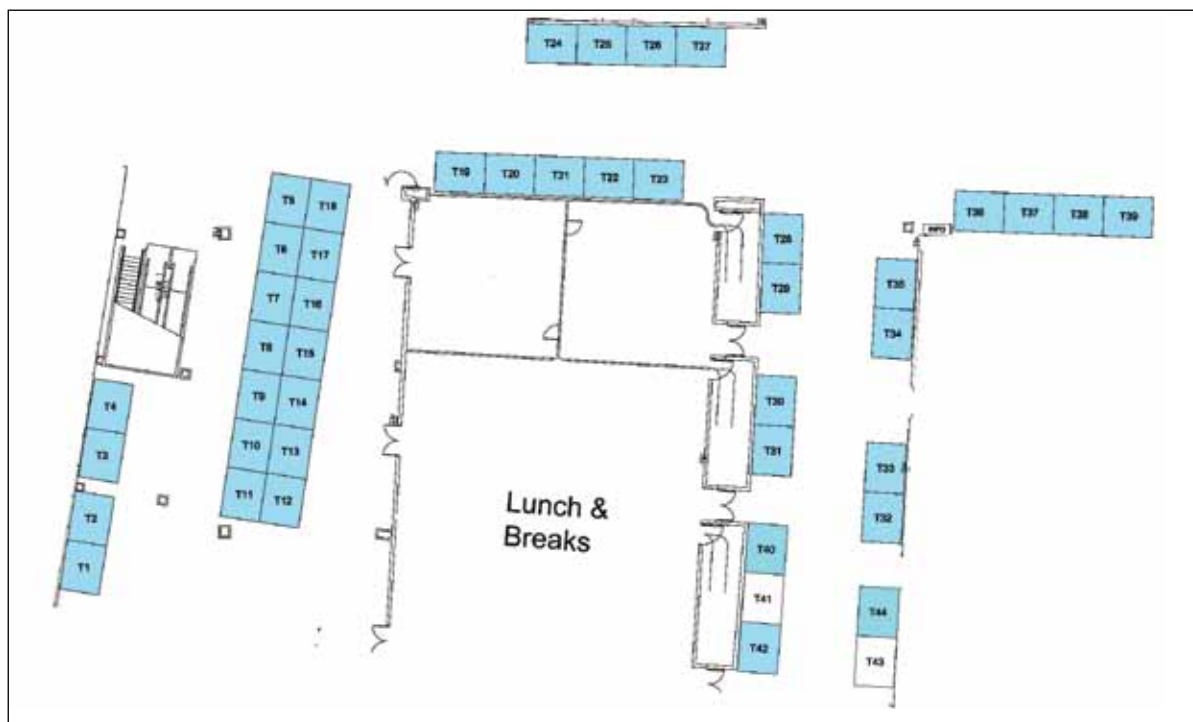
Tuesday, October 15

Wednesday, October 16

8 – 9 a.m. | 10 – 10:30 a.m. | 12 – 1:30 p.m. | 4 – 5:30 p.m.

8 – 9 a.m. | 10 – 10:30 a.m. | 12 – 1:30 p.m.

Tabletops, located on 1st floor



Advanced Control Solutions, Inc.

Booth: D242, T23

8750 Resource Park Drive, Sylvania, Ohio 43560

Phone: +1-419-843-4820

www.acsitolledo.com

As an integrator of information and control system solutions, ACSI engineers in both the United States and Europe are able to provide customers with quality technical engineering, system design, factory acceptance, installation supervision, commissioning services, and training. Our knowledge can be applied to Float Glass, Fiberglass, Container Glass, Tableware, Lighting, Tubing, and Specialty systems. Types of solutions we provide are temperature control, DCS replacement, batching control, glass level control, model based control, packaging & sortation control, and production tracking.

American Ceramic Society, The

Booth: T1

600 N. Cleveland Ave., Suite 210 Westerville, Ohio 43082

Phone: 1-866-721-3322

www.ceramics.org

More than 9,500 scientists, engineers, researchers, manufacturers, plant personnel, educators, students, marketing and sales professionals from more than 70 countries make up the members of The American Ceramic Society.

American Glass Research

Booth: T17

615 Whitestone Road, Butler, Pennsylvania 16001

Phone: 1-866-721-3322

www.americanglassresearch.com

American Glass Research stands as the preeminent consultant to the glass packaging industry and is committed in the years to come to continuing the traditions of service excellence and building on a documented history of providing customer value.

Ametek Land, Inc.

Booth: T16

150 Freeport Rd., Pittsburgh, Pennsylvania 15238

Phone: +1-412-826-4444

<http://ametek-land.com>

North America Sales for Land Instruments. On-line thermometers and systems, portable infrared thermometers, thermal imagers, infrared linescanners, combustion efficiency monitors, stack gas emissions analyzers, portable gas analyzers, coal fire detection systems, and turbine blade temperature monitoring.

74th Conference on Glass Problems

Area Impianti S.p.A.

Booth: T43

VIA LEONINO DA ZARA 3/A, 35020 ALBIGNASEGO,
PADOVA, ITALY

Phone: 00390498626426

www.areaimpianti.it

Area Impianti projects, installs and manages flue gases treatment and co-generation turnkey plants world-wide. Area Impianti's FGT systems boasts of the most advanced technology aimed at reducing emissions of pollutants such as acid gases, dust, dioxins and NOx. The company is mainly present in waste incineration sector, glass industry, foundries, smelters, cement and tyres incineration factories. The company also designs complete lines of incineration, fermentation and anaerobic digestion that process green and agricultural wastes, sludge and biomass in order to produce electric and thermal energy. The company is certified ISO 9001, 14001, OHSAS 18001 UL and SOA OS 14.

Borton Lawson

Booth: T41

3897 Adler Place, Bethlehem, Pennsylvania 18017

Phone: +1-484-821-0471

www.borton-lawson.com

Borton-Lawson is a full-service architectural and engineering design firm, comprised of a team of more than 175 experienced professionals whose daily mission is to "Make our Client's Vision a Reality."

Our organization is structured to support client needs in the healthcare, education, energy, oil and gas, industrial, government, private development and transportation sectors. The Borton-Lawson team provides a comprehensive range of traditional and non-traditional services, delivers cost-effective and on-time solutions and focuses on delivering project value consistent with clients' needs

Carmeuse Lime & Stone

Booth: T20

3600 Neville Road, Pittsburgh, Pennsylvania 15225

Phone: +1-412-777-0747

www.carmeuse.com

Carmeuse Lime & Stone is a leading manufacturer of lime and limestone/dolomite to the glass industry. Carmeuse has 28 plants that supply and serve most of the USA and Eastern Canada. We also have a technical service laboratory in Pittsburgh PA, staffed by glass industry experts.

CelSian Glass & Solar b.v.

Booth: T35

PO Box 7051 5605 JB Eindhoven, The Netherlands

Phone: +31 888 66 2501

www.celsian.nl

CelSian Glass & Solar B.V. is a Technology and Knowledge provider to the glass & solar market. Our key areas are process optimisation and innovation on the complete production chain from raw materials to final product by industrial solutions, applied research and training & consultancy.

DSF Refractories & Minerals Ltd.

Booth: T24

Friden, Newhaven, Nr. Buxton, Derbyshire, SK17 0DX,
England

Phone: +00 44 1629 636 271

www.dsf.co.uk

DSF Refractories & Minerals Limited; established in 1892 in the Derbyshire Peak District is the largest shaped refractory manufacturer in the UK. Recognized as one of the worlds leading suppliers of bonded refractories to the glass industry, products include a wide range of high alumina refractory bricks & shapes based on mullite, andalusite, chamotte, bauxite, spinel and pure alumina. Shapes are manufactured by pressing or casting techniques which are then high fired to give optimum properties in service. The company has a highly knowledgeable sales & technical team with a determination to provide the best solution for our customer-steam with a determination to provide the best solution for our customers.

Edward Orton Jr. Ceramic Foundation, The

Booth: T44

6991 Old 3C Highway, Westerville, Ohio 43082

Phone: +1-614-895-2663

www.ortonceramic.com

The Foundation has three distinct areas of products and services:

- Pyrometric Monitoring Devices for thermal processing.
- Thermanalytical Instruments for measuring thermal properties.
- Material Testing Services to measure thermal properties

Emhart Glass

Booth: T12

405 East Peach Ave., PO Box 580, Owensville, Missouri 65066

Phone: +1-573-437-2132

www.emhartglass.com

Emhart Glass is the world's leading international supplier of equipment, controls and parts to glass container industry. With broad-based expertise in glass container forming, glass conditioning, gob forming, ware handling, cold end inspection, refractory parts and quality assurance, the company's machines and systems are established as standard products worldwide. Emhart Glass also provides installation, training, production assistance, and maintenance related services.

Fives Stein, Ltd.

Booth: T26

4A Churchward, Southmead Park, Didcot, OX11 7HB, United Kingdom

Phone: +44 1235 811 111

www.fivesgroup.com/fivesstein/uk

Fives Stein Limited is a leading supplier in high-quality glass melting and conditioning for all types of glass, from large volume container production to small output hand-made lead crystal. Having supplied many electric melters, boost systems, working ends and over 1,000 forehearth, the company is able to tailor its equipment to best match production requirements. Our parent company, stands as the major engineering and hot end equipment specialist supplier of the new glassmakers and has successfully delivered Hot Ends for float glass plants worldwide. Our workforce includes more than 600 employees, with subsidiaries in Belgium, Spain, India, China, Russia, the USA and the UK.

General Glass Equipment Company

Booth: T10

645 South Mill Road, Suite 1, Absecon, New Jersey 08201

Phone: +1-609-345-7500

www.generalglassequipment.com

General Glass Equipment Company is an engineering and manufacturing organization that has dedicated its corporate activities exclusively to the domestic and worldwide glass manufacturing industry for more than 80 years. The activities of the firm encompass virtually every aspect of glass manufacturing from plant design and construction, personnel training, project engineering, and general consultation to innovative product development for manufacturing economies. Our extensive background in the industry offers General Glass clients the benefit of a comprehensive perspective of glass manufacturing on a domestic and an international scale.

Glassworks Hounsell

Booth: T37

www.glassworkshounsell.co.uk

GMIC

Booth: B15, T28

600 N. Cleveland Ave., Suite 210, Westerville, Ohio 43082

Phone: +1-614-818-9423

www.gmic.org

GMIC is a trade association of the glass industry that includes among its members, representatives of all four sectors: Flat, Container, Fiber and Specialty glass companies, as well as leading suppliers to the industry, research institutes and industry experts. Our goal is to promote the interests and growth of the glass industry.

H.C. Starck, Inc.

Booth: T34

45 Industrial Place, Newton, Massachusetts 02461

Phone: +1-617-630-5800

www.hcstarck.com

H.C. Starck's innovative research, engineering development, manufacturing execution, and diverse product portfolio make it a leading manufacturer for the glass melting industry. H.C. Starck is one of the world's largest suppliers of the refractory metals: molybdenum, tungsten, tantalum, and niobium. Large diameter molybdenum tubing suitable for quartz melting vessels and orifice plates are extruded at its premier extrusion and forging facility. Fabricated products from molybdenum and tungsten include: glass melting electrodes, crucibles, extruded tubes, and other components. H.C. Starck's molybdenum, with its exceptional purity level (99.95% minimum), has outstanding resistance to chemical corrosion, degradation, and minimal detrimental glass discoloring.

Heraeus Materials Technology

Booth: T33

Heraeusstr. 12-14, 63450 Hanau, Germany

Phone: +1-201-647-8672

www.heraeus.com

Heraeus specializes in the manufacture of platinum, gold, iridium, and specialty metal parts for the glass industry. With over 150 years of experience in precious metals and worldwide operations, Heraeus has the capability to provide the highest quality products in the most sophisticated designs. Items include stirrers, liners, electrodes, crucibles, cladding, and other custom designed parts, in high strength alloys and grain stabilized materials, specifically designed for glass manufacturing. All of our products are backed by our expertise and world-class technical support.

74th Conference on Glass Problems

Hotwork USA

Booth: T36

223 Gold Rush Rd., Lexington, Kentucky 40503

Phone: +1-859-276-1570

hotwork@hotwork.com | www.hotwork.com

Worldwide supplier of glass furnace heating, expansion control supervision, regenerator sulfate burnouts, glass draining with hot water recycling, wet cullet filling, furnace cooldowns and hol hots, and electronic crown rise monitoring. The only continuous operating Hotwork heatup company since 1965 and proud sponsor of The Phoenix Award Committee.

Invensys Eurotherm

Booth: T7

44621 Guilford Drive, Suite 100, Ashburn, Virginia 20147

Phone: +1-703-724-7300

www.eurotherm.com

Invensys offers enterprise control systems for the glass industry, in addition to highly advanced process control solutions. Process control systems operate in a timescale appropriate to the production process, whereas Management Information Systems typically provide time delayed information. This delay seriously impacts the decision making process for both management and operators. Invensys enables the glass industry to transfer productivity data into information in a timely manner, thereby providing. Both management and operators information indicating real time profitability in a dashboard format. Invensys will discuss several offerings including Wonderware System Platform, Eurotherm process control, Foxboro field devices and Avantis Asset Management.

Johnson Matthey Noble Metals

Booth: T3

1397 King Road, West Chester, Pennsylvania 19380

Phone: +1-859-276-1570

www.glass.noble.matthey.com

Johnson Matthey Noble Metals is a long-established supplier of platinum group metals (PGM). These alloys are inert in contact with molten glass and provide unequalled resistance to erosion.

Johnson Matthey is the only global fabricator offering a complete range of complementing PGM technologies for glass manufacturers.

Lahti Precision Oy

Booth: T15

Ahjokatu 4 A, PL 22, 15801 Lahti, Finland

Phone: +358 03 829 21

Lahti Precision is the only industrial scale supplier focusing on the glass industry. We use our own technology and products for weighing, dosing and mixing like load cells, hopperscales, weighing controllers and Lahti mixers. This ensures us excellent possibilities to develop the best solutions to our customers in glass industry – working closely together with the customers. Our basic arguments in the batch plants are excellent dosing accuracy quality of the mixed batch and high operational reliability of the plant.

Lenox Instrument Co.

Booth: T40

265 Andrews Rd Feasterville, Treose, Pennsylvania 19053

Phone: +1-215-322-9990

www.lenoxinst.com

Manufacturer & distributor of remote visual inspection (RVI) tools including borescopes, fiberscopes & videoscopes. Borescopes include rigid borescopes, micro borescopes & sectional borescopes. More... Customized borescopes for temperature extremes, corrosive environments, explosive or flammable atmospheres & radiation exposure applications are also available. Bore-scope accessories include light sources including high intensity, portable, explosion-proof & ultra-violet light sources, light cables, camera systems & adapters for still & video images, environmental protection including protective shrouds & radiation hardened lenses & specialized optical accessories. Industries served include petro-chemical, building construction, pulp & paper, power generation, foundry, automotive, aviation, glass, pharmaceutical & waste incinerating.

Longwall Services, Inc.

Booth: T13

63 South Country Club Rd., PO Box 737, Meadow Lands, Pennsylvania 15347

Phone: +1-724-228-9898

USA agent: Argent Enterprises Inc.

Phone: 724-499-5800

www.longwallservices.com

Longwall Services Inc. manufactures and supplies cullet conveyors, glass breakers, bottle sinkers and conveyor belt cleaners for the glass industry. Products for the glass industry include:

- Water Bath Scraper Conveyors
- Glass/Bottle Breakers
- Bottle Sinkers
- SMART brush belt cleaners

Luoyang Dayang High-Performance Material Co., Ltd.

Booth: T29

Songzhuang Development Zone, Mengjin, Luoyang, Henan, P.R.China 471121

Phone: +008613933586785

www.dyrefractory.com

Leading Chinese Fused Cast Materials Manufacturer, 10,000 tons /year salable products of AZS 33, AZS 36, AZS 41, α - β Alumina, and Fused high Zirconia in 88% and 95%.

Mixer Systems, Inc.

Booth: T25

190 Simmons Avenue, PO Box 10, Pewaukee, Wisconsin 53072

Phone: +1-262-691-3100

www.mixersystems.com

Founded in 1979, Mixer Systems, Inc. is dedicated to the design and manufacture of technology for the concrete products, industrial and environmental markets. Manufacturer of the legendary Turbin Mixer, Mixer Systems is the largest maker of pan mixers in North America. Today, there are more than 3,000 Turbin Mixers in use worldwide. Mixer Systems was formed when company founder William Boles purchased the Turbin & Tilter mixer lines from the T.L. Smith Company. A Milwaukee, Wis. company, T.L. Smith introduced the pan mixer concept to North America in 1955.

Motim Fused Cast Refractories Ltd.

Booth: T14

MOTIM FUSED CAST REFRACTORIES LTD., Timföldgyári ut 9-13. Mosonmagyaróvár, 9200, HUNGARY

Phone: +1-724-499-5800 | 011 36 96 574 100

<http://motim.hu>

Motim Fused Cast Refractories Ltd. is recognized as a world leader producing fused cast AZS and alumina refractories, refractory castables. Our products are used in the glass manufacturing furnaces. More than 95% of our turnover is from export sales. Our traditional markets are Western and Central Europe, but we are present with our products on all continents of the World. Motim is represented in the USA by ARGENT. ENTERPRISES. INC.

Nalco An Ecolab Company

Booth: T38

1601 W. Diehl Road, Naperville, Illinois 60563

Phone: +1-630-305-2414

Nalco is the world's largest Sustainability Services Company. We utilize our expertise and innovation in helping our customers to save water, reduce energy consumption, and improve water and process operations. Our highly trained site engineers will work with you to develop an effective engineering solution that meets your corporate cost, production, and sustainability goals.

Nikolaus Sorg GmbH & Co. KG

Booth: T21

Stoltestrasse, 23 D-97816 Lohr am Main, Germany

Phone: +1-724-366-6513 | +49 (0) 9352 507 0

www.sorg.de

The SORG Group through their member companies can supply turnkey installations from raw material delivery through the glass gob globally. This includes all aspects of the furnace lifetime cycle. From sustainable designs, construction, services, repairs, through demolition at the end of the campaign. SORG through EME, Nikolaus Sorg GmbH & Co. KG, and SKS delivers Made In Germany solutions to all sectors of the glass industry globally. Our latest products include the BATCH3 system comprising often the IRD[®] Doghouse, EME-NEND[®] charger and the proven Sorg[®] Batch Preheating system.

74th Conference on Glass Problems

Pacific Consolidated Industries

Booth: T32

12201 Magnolia Ave., Riverside, CA 92503-4820

Phone: 1-800-309-8935

<http://pci-intl.com/>

Our oxygen solutions product line includes state-of-the-art portable liquid oxygen plants and gaseous oxygen generators, which utilize a proprietary Vacuum Swing Adsorption (VSA) process that eliminates many of the design problems associated with traditional Pressure Swing Adsorption (PSA) systems. Our VSA technology offers the lowest operating cost and most reliable oxygen generator in its class, all in a turnkey system.

Parkinson-Spencer Refractories Ltd.

Booth: T29

Holmfild, Halifax, West Yorkshire,

HX3 6SX, United Kingdom

Phone: +44 (0) 1422 254472

USA exclusive agent: Argent Enterprises Inc.

Phone: +1-724-499-5800

www.parkinson-spencer.com

Parkinson-Spencer Refractories Ltd manufacture and supply refractories, engineer products and systems for the glass industry.

Products include:

Refractories Division

- Feeder forehearth refractories for all types of forehearth
- Dense bonded alumina glass contact blocks for the distributor and forehearth
- Forehearth channel blocks in zircon-mullite
- Furnace blocks
- Pots for hand-made glass industry

Technical Services Division

- Forehearth and distributor systems
- Forehearth and distributor combustion systems
- Forehearth and distributor control systems
- Special cord dispersal stirrer systems

Plansee USA

Booth: T27

115 Constitution Blvd., Franklin, Massachusetts 02038

Phone: +1-508-553-3800

www.plansee.com

PLANSEE will be present at the Glass Problems Conference to discuss the features of their products. Whether its molybdenum glass melting electrodes, tank reinforcements or stirring and gobbing equipment, PLANSEE's leading edge technologies and high performance materials provide for an efficient glass melting process. For decades PLANSEE has significantly contributed to making glass production more effective and environmentally friendly. As the largest fully integrated partner worldwide for the glass industry, PLANSEE provides its customers with technically advanced designs manufactured from our high performance materials resulting in excellent corrosion resistances, coarse grain structure, and highest purity.

Pneumofore S.p.A.

Booth: T8

Via N. Bruno 34, 10098, Rivoli (TO), Italy

Phone: +39 011 950.40.30

USA exclusive agent: Argent Enterprises Inc.

Phone: +1-724-499-5800

www.pneumofore.com

Pneumofore manufactures and provides full solutions for the supply of compressed air and vacuum in industrial plants worldwide. Vacuum systems and air compressors specially designed for the glass industry are supplied to hundreds of plants worldwide with constant focus on respect for the environment, minimal Life Cycle Cost and energy savings. Celebrating 90 years since its foundation in 1923, Pneumofore continues to research and develop the rotary vane technology at its best.

Poco Graphite

Booth: T31

300 Old Greenwood Road, Decatur, Texas 76234

Phone: +1-940-627-2121

www.poco.com

Poco Graphite's precision ware handling solutions and unique GLASSMATE® graphite materials can improve performance in container glass production, reduce machine downtime and increase yields. POCO is known for its designs, particularly precision holders and inserts that allow fast accurate machine setup and insert replacement. Inserts are available as semi-finished blanks, or can be precision machined to a specific finish. POCO also offers graphite dead plate assemblies, lehr bars, sweep-out assemblies, and custom components. Application specialists can assist in the selection of the optimum graphite grade based on pickup, application, and length of the production run.

Pyrotek, Inc.

Booth: T2

1285 Claremont Road, Carlisle, Pennsylvania 17015-9727

Phone: +1-717-249-2075

www.pyrotek.info/glass

Improve quality and pack rates, lower costs and narrow your vendor base with Pyrotek, a global company headquartered in North America. Pyrotek offers an entire line of custom-made products for glass ware handling.

- Take-out Holders with DuPont™ Vespel® Inserts
- Sweep-outs
- Stacker Bars
- Transfer Wheel Parts
- Shear Blades
- Expendable Refractory Feeder Parts
- High Temperature Rollers and Insulation
- Custom Manufactured Seals and Gaskets
- Glass Bending and Tempering Stainless Steel Cloths and Tapes

Visit us at Glass Problems, Stand E17, to see Pyrotek's complete line of ware handling products.

Refractory Machining Services, Inc.

Booth: T4

610 East Butler Road, Butler, Pennsylvania 16002

Phone: +1-724-285-7674

www.refrmachserv.com

Refractory Machining Services is dedicated to serving the glass and refractory industries. We specialize in precision machining of standard and custom refractory shapes. We offer grinding, sawing, drilling, shaping, and construction of custom assemblies including canals lip and spouts assemblies. RMS has over 120 years of combined experience and knowledge in the refractory industry. We understand the requirements of our customers and combine quality with service.

S.I.G.MA. S.r.L.

Booth: T22

Refrattari Tecnici Industriali, Via delle Grigne, 12/A, 22070, Locate Varesino (CO) Italy

Phone: +39 0331 82 31 95

www.sigmaref.it

S.I.G.MA. S.R.L., specialized in the production of refractory materials for the glass industry for almost 20 years, supply the full high quality range of products for the glass industry, including Sillimanite, Mullite, Zircon-mullite, Zircon, High alumina materials, Fireclay materials, Fused cast materials, Insulating materials, Magnesite materials, Silica, Special cement and concrete. S.I.G.MA. S.R.L. produces about 9,000 tons per year of special pieces and controlled by its laboratory as per ISO 9001:2000 certification and, completing the range, about 5,000 tons per year produced by our partners, who are selected and controlled continuously by our technicians both in production phases, as well as with regards to final testing.

Safety Controls Technology

Booth: T30

5075 Taylor Drive, Bedford Heights, Ohio 44128

Phone: +1-216-587-3000

www.safetycontrolstech.com

Safety Controls Technology, Inc. (SCT) provides safety and health services for glass demolition and rebuild sectors including clients that have requirements to comply with local, state or federal regulations. SCT is a Woman-Owned Business Enterprise (FBE, DBE, SBA, EDGE) delivering comprehensive Occupational and Environmental Engineering consulting services to both the public and private sectors.

Sheppee International Limited

Booth: T39

Halifax Way, Airfield Business Park, Elvington, York

YO41 4AU, United Kingdom

Phone: +44 1904 608999

www.sheppee.com

Sheppee International is a world leader in Hot Glass Ware Handling for both the container and tableware industries, with over 50 years of experience. Supplying innovative and dependable solutions in the field of hot container conveying, lehr loading, glass contact materials and synchronous drive systems. The Triflex three Axis servo loader offers maximum flexibility for the operator and provides a job storage facility. The MRS-9000 two Axis servo loader is ideal for replacing existing mechanical machines. A full range of ware transfer units have been designed, suitable for handling the smallest pharmaceutical containers up to the largest champagne bottles.

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Special Shapes Refractory Company, Inc.

Booth: T5

1100 Industrial Blvd., Bessemer, Alabama 35022

Phone: +1-205.424.5653

www.ssrco.com

Special Shapes Refractory Company (SSRCO) is a family owned business that manufactures specialized, engineered pre-cast refractory shapes utilizing SSRCO developed refractory mixes for use in the Glass Industry. We offer grinding and finishing services, quick turn-around times for emergency repairs, and with our co-op partners, we can provide refractory solutions that assist our customers for either "hot or cold" repairs. As we move into our second quarter century, SSRCO is still continuing to work on refractory developments, both in refractory material and shape designs, that will continue to help our customers compete in the Global Market.

Toledo Engineering Co., Inc.

Booth: D230, T18

3400 Executive Parkway, P.O. Box 2927, Toledo, Ohio 43606

Phone: +1-419-537-9711

www.teco.com

The TECO Group, consisting of Toledo Engineering Co., Inc., TECOGLAS Ltd., KTG Systems, Inc., KTG Engineering Ltd., ZEDTEC Ltd. and Dreicor Inc. specialize in the design and construction of glass melters of all types, including fuel-fired regenerative and recuperative furnaces, oxy-fuel furnaces, electric melters, electric boost systems and forehearths and distributors/working end. The TECO Group also provides batch plants, emission control systems and process control systems on a turnkey basis. KTG Engineering Ltd. manufactures many items of furnace equipment such as batch chargers, electrode holders, and spy hole covers.

Tri-Mer Corp.

Booth: T6

1400 Monroe St., Owosso, Michigan 48867

Phone: +1-801-294-5422

www.tri-mer.com

Tri-Mer Corporation offers the UltraCat Catalyst Filter System for glass furnace emissions. Based on low-density ceramic filters, the technology offers a high-performance approach to removing Particulate, SO₂, HCl, and NO_x in a single all-in-one system. Acid gases such as SO₂, HCl, and HF are removed with dry sorbent injection. NO_x is destroyed by nano-bits of SCR catalyst embedded in the filter element in conjunction with ammonia injection. Other pollutants such as metals are effectively captured. If only PM or PM+ SO₂/HCl need to be controlled, standard filters without catalyst are highly efficient at temperatures up to 1650°F.

TSI, Inc.

Booth: T42

500 Cardigan Road, Shoreview, Minnesota 55126

Phone: +1-651-490-2738

www.tsi.com

The ChemReveal LIBS Desktop Elemental Analyzer from TSI provides rapid and direct quantification of heavy and light elements (e.g. Li, B, Na) in glass without the need for dangerous acids and lengthy digestive processes. The ChemReveal LIBS system also features a high-throughput technician-mode interface that manufacturers and industry scientists expect. For more information, talk to one of our experts today!

Umicore AG&Co KG

Booth: T11

Umicore AG & Co. KG, Platinum Engineered Materials, Rodenbacher Chaussee 4, 63457 Hanau-Wolfgang, Germany

Phone: +49 6181 59 8197

<http://umicore.de>

Umicore's business unit Platinum Engineered Materials is a global technology leader for either cast or FKS Platinum materials based single-source, tailor-made, engineered system solutions to the special glass industries. We support key players to reach the best possible performance with their special glass production processes at the interface of our Platinum Group Metal Components and its immediate periphery by means of our Process Excellence Model. Process Excellence translates into total cost reduction (savings), increase of competitiveness (solutions, and reduction of risk security).

Usable Glass Strength Coalition, LLC

Booth: T28

600 N. Cleveland Ave., Suite 210, Westerville, Ohio 43082

Phone: +1-614-818-9423

www.gmic.org/ugsc.htm

Most glass companies cannot independently support a fundamental research agenda to understand and improve the usable strength of glass. However by working together with pooled funding and shared risk, the opportunity to improve the usable strength of glass is achievable. The UGSC supports fundamental, pre-competitive research on increasing the useable strength of glass across all sectors; provides an opportunity for researchers to develop expertise in industrial applications; develops tools and measurement techniques for the advancement of glass science; and publishes valuable pre-competitive glass research in the public domain.

Vesuvius USA

Booth: T19

753 Enterprise Road, Dillon, South Carolina 29536

Phone: +1-843-774-6026

www.vesuvius.com

The Fused Silica Division is a worldwide leading supplier of fused silica products used in Primary Glass Fabricating, Glass Forming, Heat Treatment, Specialty Steel and Photovoltaic Industries. In addition to our ability to manufacture on three continents, VESUVIUS has an extensive amount of technical expertise to support our existing market segments as well as to assist in developments of new solutions for applications such as Thin Film Coating Systems, Diffusion Furnaces, and Crystal Fusion.

save the date

The 75th Conference on Glass Problems is November 3-6, 2014 in Columbus, Ohio.

The Exhibit and Technical Sessions will take place in the Greater Columbus Convention Center. The Hospitality Suites will be located across the street at the Hilton Columbus Downtown.



To make glass better,
put us in the mix.

Our in-house melting experts can help you improve combustion to increase glass production, reduce fuel consumption, improve glass quality, and reduce emissions. Including NO_x, SO_x, CO₂ and particulate matter every day.

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Call 800-654-4567 to put the skills and experience of our global team to work for you. When you want improved melting, add one key ingredient. Us.

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