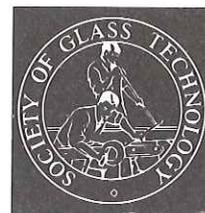


SGT NEWS



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INCREASING ROLE FOR OXYGEN IN GLASS MELTING TECHNOLOGY

IN PRINT

The December issue of *Glass Technology* has a special feature on coating and decorating, with a paper on coatings for architectural glass and a look at enamels without the heavy metal component. Refereed papers on oxy-fuel firing to an E-glass furnace and viscous flows in a forehearth model complete the issue.

Physics and Chemistry of Glasses has papers on helium and deuterium migration in alkali silicates, network structure of borate glasses, formation and properties of lead chlorosilane glasses, crystallisation and optical properties of gallium cerium lanthanum sulphide glasses, oxidation states of copper in lead borate glass and sodium transport in sodium silicate glasses.

Both journals include the full author and subject indexes for the abstracts and papers published in 1993. The range of material published throughout the year reflects the active development of glass and the Society's role in its promotion.

The introduction of oxygen has become an established means of supplementing glass furnace combustion. This role has recently been extended to provide full furnace combustion requirements. New burners have been designed specifically for the glass industry and advances in oxygen production technology have improved the economics of the oxy-fuel option. Meeting environmental demands will add further weight to its potential. The Yorkshire Section gathered a panel of speakers from oxygen supplier BOC and glass producer Corning to discuss the implementation of this technology.

Oxygen has established itself in large regenerative furnaces because of its ability to increase campaign life, maintain high outputs from ageing tanks and relieve regenerator blockage problems. Oxygen can be introduced into the furnace by three different means: Enrichment of the combustion air before the burners; underflame enrichment; and oxy-fuel burners.

Combustion air enrichment is the simplest and least expensive method, where oxygen is introduced before the burners. Its limitations are the temperature the furnace refractories can withstand. This often restricts levels to 2% or less.

Underflame enrichment enables a more directional flame to be introduced. It improves the heat flux to the glass melt, while leaving the crown refractories unaffected.

Oxy-fuel burners are the most directional option, particularly suited to the elimination of cold spots or temperature enhancement over a specific area. Complete 100% oxy-fuel melting can reduce the capital costs involved in the construction of large regenerative furnaces by dispensing with the expensive heat recovery system. For a pure oxygen-fuel mix, the only source of nitrogen is the fuel rather than the atmosphere, thus the amount of NO_x can be reduced drastically.

Tank 10 at Corning's Sunderland plant was converted to full oxy-fuel combustion with electric boosting in 1990. It has now been producing Pyrex products for over two years. The furnace was split into two zones by a baffle wall on top of the cross wall. The first zone is split 75-25 electric to oxy-fuel, while the second zone is 25-75 electric to oxy-fuel. Superstructure temperatures are down in zone one and about the same in zone two when compared to the previous campaign with conventional heating.

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SOCIETY MEETINGS

The Society has arranged a 'New researchers forum on glass' on Tuesday December 14th at Warwick University.

Looking further ahead, the annual Spring meeting is scheduled for Wednesday 11th to Friday 13th May 1994. Ware handling and inspection is the theme and The Grange Park Hotel, Willerby, near Hull the venue.

► CONTINUED

Energy consumption on the new furnace melting borosilicate glass was around 100MWh/day, a saving of more than half. However, the utility costs for electricity and oxygen were 60% higher. The quality of the melt was improved and defects were down to 3%-4%. Waste gas volume was down on a doubled pull.

Particulate concentrations are high but this is because the reduced volumes are not diluting the mix. SO_x is not a problem as there is no sulphur in the gas, while NO_x falls within the compliance if measured by mass emission. Chlorides were reduced by removing potassium chloride from the batch.

The life of the furnace looks likely to exceed the previous tanks by a minimum of two years, saving £300K depreciation per year. Stability and quality improvements bring yearly savings of £30K. Less volatilisation above the melt means a greater retention of material and savings of another £30K. More flexible operations are possible with higher maximum pulls.

The overall assessment of costs was thought to be marginal in comparison to other furnace designs but maintenance considerations, a significantly better working environment and other incalculables all weighed in favour of the oxy-fuel option.

NORTH AMERICAN SECTION INAUGURATION



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The first American Section of the Society of Glass Technology was inaugurated on Sunday 25 July 1993 at Alfred University, New York State.

Prior to the meeting 'Glass: emerging science and technology', a group of 12 members, including Norbert Kreidl, gathered to talk about the formation and organisation of the Section and decide on its title. Discussion began after a welcome by Professor Alistair Cormack and a short talk by Jill Costello from the Sheffield office, who had been invited to attend the inauguration and advise on Society procedures.

Responses to a postal ballot to decide on officers were counted and resulted in Professor Jack Wenzel being elected chairman and Dr Alix Clare as secretary. It was agreed unanimously to ask Professor Guy Rindone, the current American treasurer, to continue in this role. Professor Wenzel then took the chair for the rest of the meeting.

'North American Section' was decided on in order to include Canada and Mexico. All members resident within the area automatically become members of the Section, receive its news and are invited to events, which will be aimed at covering the many different aspects of glass. Another aim of the meetings will be to give the widely dispersed members a chance to come together to talk about their shared interests, get to know one another and link the industrial to the academic.

The group felt that although the UK Sections hold meetings on a regular

basis throughout the year, given the new Section's geographical size, a one day conference should be held each year. A Saturday towards the end of May 1994 was provisionally decided for the first of these, with Pittsburgh suggested as a good, central location. Delegates could meet socially on the Friday evening, hear invited papers on some of those glass problems not touched on by other conferences on the Saturday morning and perhaps visit a factory in the afternoon. As with all Local Section meetings, this will be open to any interested members around the world.

The inaugural gathering was punctuated by an excellent lunch but the North American Section was truly launched by a champagne finale, when all present filled their glasses and raised them to the future success of the new Section. Given the strong levels of enthusiasm shown by all during the day, there is no doubt that the North American Section will expand and thrive and prove a welcome addition to the SGT.

LOCAL SECTION DIARY DATES

The following meetings are planned around the UK over the coming weeks. Further details are available from the relevant local section secretary.

LONDON

'This is glass' is a presentation by Jim Frost, to be given at Imperial College, London on Wednesday December 7th and 8th. This is a joint meeting with Imperial College and IOM SE Ceramics Group.

To start the New Year, on Tuesday January 11th, a speaker from Stein Atkinson Stordy Ltd will review the development of lehrs. Venue for the meeting is United Glass Ltd, St Albans.

MIDLANDS

The Midlands Section stages its traditional Christmas party on Thursday December 2nd. And on Monday January 10th, Local Section Chairman Peter Hoar will speak on latest developments in hand glass manufacture.

Both meetings will be held at Pedmore House, Stourbridge.

NORTH EAST

Pin back your ears for what is described as an 'audio equipment demonstration' by Lintone Audio on Tuesday December 7th.

NORTH WEST

'Platinum group metals in high temperature applications' is the theme of a presentation by Mr P Raw of Engelhard on Thursday January 20th.

YORKSHIRE

Cutlers Hall, Sheffield is the venue once again for this Section's annual dinner and dance (Friday December 3rd).

