

SGT NEWS



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MACHINE-MADE TABLEWARE PRODUCTION METHODS

GLASS INFORMATION GROUP

A special interest group has been formed to address the relatively poor pool of information available on glass in comparison to other materials. The Glass Information Group's aims are to provide a forum for the interchange of experiences, contacts and information, without compromising the confidentiality requirements of any participating company. A list of members is being compiled, with contact names and subject specialities.

The Society, British Glass and many companies receive several general enquiries every day and it would be useful to have an indication of each other's areas of expertise so that the best source of information can be easily referred.

Members of the group will be able to provide a co-ordination of information interests of glass companies within the UK. The information interests of the glass industry can be represented to national and international bodies such as the International Commission on Glass. The Group aim to provide a focal point for the reactivation of ICG TC12 on Documentation. The creation of a body of expertise will be formed to comment and advise on the content, form and indexing of the 'Glassfile' database.

When the Midlands Section was formed 60 years ago, Professor Turner gave a talk on the then modern methods of producing machine-made tableware. To celebrate its 60th year, the Section invited John Greenwood of The Ravenhead Co to repeat the subject in the new framework of worldwide markets and global competition.

The inaugural lecture to the Midlands Section was given by the Secretary of the parent Society, Professor W E S Turner. His talk was concerned with production methods of glass for tableware in the UK, as well as in Germany, Czechoslovakia, Scandinavia and the USA. The techniques used were examined in the light of scientific knowledge and modern practice, with particular attention paid to the relative compositions of the various glasses, furnace design and refractories used.

In his address 60 years later John Greenwood concentrated on the volume manufacture of soda-lime tableware, in particular the four production types.... pressware, spunware, blownware and stemware. Each process chosen has its advantages and disadvantages depending on the intended market and the limitations of the imagination and design features.

Pressware is made using solid

split moulds, die stamping a measured glass mass. Simple two-part moulds are common but there are also more complicated three-part moulds in use and less so the four- or more part set in a clover leaf configuration. The final products are easily fire finished and are typically volume items such as ashtrays

Spunware falls into decorative and functional categories, the value of the final product being associated with their production rates. Glass is placed in a spinning mould and is pressed. Simple flat shapes such as plates are easy to remove, while more complex ones take longer.

Blownware follows a container-like manufacturing procedure, with either a paste mould for seamless and round products or a nonpaste mould for shaped items such as octagonal pieces. A considerable amount of glass is in the moil that is cut off and remelted.

Stemware comes in two forms, either one- or two-piece, depending on where the bowl, foot and stem are formed. The stem of one-piece ware is made by pulling the foot



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away from the bowl. For two-piece ware, the bowl and foot/stem are made separately either directly in the same machine, indirectly when the two components are made in separate machines and brought together in a third machine or as an after process where the components are annealed and stored, then brought together at a later stage. One-piece ware has limitations on stem shape but not the complex multi-stage operation used for two-piece ware.

A constant concern in all machine-made glassware

production is the need to produce saleable items for the consumer. There is always a balance between lightweighting and the weight or feel of the product; too light and the product is perceived to be cheap but too heavy and the product costs too much.

One half of the glassware produced in the UK is for export but imports are of similar value. The glassware business is international, with stemware from as far away as South Korea now being present in the UK.

PILKINGTON GLASS MUSEUM EXHIBITION

The Elements is the chosen theme for the Northern Branch of the British Society of Master Glass Painters' exhibition at the Pilkington Glass Museum, St Helens, from 25 June to 31 July. As well as displaying their latest stained glass panels, participants will be on hand to demonstrate their skills and show how their design drawings, cartoons and typical tools are used. For further information, contact Ian M Burgoyne, curator, Pilkington Glass Museum, Prescott Rd, St Helens WA10 3TT, UK. Tel 0744 28882, ext 2499.

POLLUTION EMISSION REDUCTION AND RAW MATERIAL PREHEATING

With deadlines for controlling furnace exhaust emissions approaching ever nearer, the Yorkshire Section looked at a particulate and SOx reduction process which allows for simultaneous direct preheating of the batch. Jeff Alexander of Edmeston detailed the technology behind the electrostatic granule bed filter to an audience at Rockware Worksop.

Instead of using an electrostatic precipitator or filter bags, Edmeston has combined the two technologies by flowing a charged stream of hot waste gas through a large porous bed of granular material, charged with a polarising current.

The filter bed can use any kind of granular material. This introduces the possibility of including batch materials which can be preheated. The use of granular materials means a large absorbing surface area can

be exposed to the exhaust gas but this can be compressed into a small space – a filter with a footprint of 4m² can serve a 200 tonne/day furnace.

Pilot tests with a pelletised batch material as the filter bed were carried out at Thatcher Glass, USA. Around 95% filter efficiencies were attained but also the SOx content was reduced by 60%-90%. Since pelletising has not really taken off, Edmeston has turned its attention to using cullet as the filter media.

Tests using a dry sorbent such as limestone granules of around 4mm-10mm size has an efficiency of 20%. A filter can prevent any particles that are too large from getting through to the batch. Hydrated lime powder injection using two filters in series provides a 70% reduction in SOx.

Mr Alexander said that the capital costs for the filter system were around 30% less than for an electrostatic precipitator, while running costs were about the same. The question of where the filtered particulate should go was raised and it was agreed that it should only be returned to the furnace from which it originated. Furthermore, it should be treated as a raw material which needs analysing, as it would modify the batch composition. Perpetual recycling of NaCl and possible blocking of regenerators, via the introduction of vanadium from fuel oil should be avoided.



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IN PRINT

The August 1994 issue of *Glass Technology* has a report on the development of the UK glass mould making industry in the 20th century by Tom Vickers, managing director of Johnson Radley, a company which celebrates its 75th anniversary this year. A survey of art, science and technology courses and an overview of new research in glass will provide a reference source on future developments and options on training.

The issue also contains the concluding section of an overview of glass ceramics by Graham Partridge and papers on fracture in soda-lime glass and low temperature reflow of borophosphosilicate glasses from organic and inorganic sources.

Physics and Chemistry of Glasses includes a selection of papers on calcium galliosilicates, potassium niobium silicates, gel synthesis and crystallisation of sodium tetragermanate glasses, the properties of porous glasses after impregnation with caesium and potassium ions, Raman investigation of PbO-BiO_{1.5}-GaO_{1.5}, and the electrochemical determination of mixing properties of synthetic alkali feldspar glasses. There are also two short communications on x-ray emission K spectra of silicon in wollastonite and vitreous calcium silicate and hypersensitivity in the absorption spectra of lanthanide sulphate glasses. Both journals feature a wide range of abstracts from the latest scientific and technical publications.

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NEW INDIAN SECTION OFFICERS

Sushil Jhunjunwala, managing director, Radha Glass and Industries is the new President of the Indian Section. He has over 25 years experience in the glass industry and pioneered the introduction of La Opala opal glassware. Mr Jhunjunwala has previously been a president of the Eastern Glass Manufacturers Association and is also the current vice president of the All India Glass Manufacturers' Federation.

Dr J Mukerji, FSGT, senior deputy director at the Central Glass and Ceramic Research Institute (CGCRI) takes on the role of Honorary Secretary and Dr A S Sanyal, scientist CGCRI becomes Honorary Treasurer.

LEAD - GLAZING AND DECORATION

*"If we are not leadless in five years time we will only have ourselves to blame."
(K C Farrell, British Ceramic Manufacturers Federation.)*

While the lead issue has receded from the headlines, legislation has continued its steady and inevitable progress. The Potteries Committee at the Institute of Materials' Ceramic Industry Convention examined the progress in developing unleaded systems and the lessons learned for future elements on the 'hit list'.

The message "safe in normal use" has helped to quell consumers' nerves on the potential effects of lead leaching from the glaze and decoration on ceramic tableware. Producers show commitment towards their products which reassures the customer and builds confidence, identifying the product integrity and assuring a high quality level. Sales in the toughest state, California, have not dropped away.

Research is continuing into unleaded glazing and decorating systems which match 50 year old patterns and can be introduced to established equipment at a commercial cost. Boron-alkali, zinc-strontium and bismuth systems were established as the leading contenders, with a low bismuth boron-alkali glaze emerging as the best option.

The firing schedule has a role in the development of the system but the overall performance is in the same frame as those of the leaded systems. Blues can be produced by a high bismuth but non-cadmium reds have not been worked out. Unleaded encapsulated cadmium may be a possibility.

The unique qualities of lead cannot be replaced entirely and its removal will have implications for every aspect of manufacturing. A similar experience would be expected to come from the hand-made glass industry.

For the pottery industry, lead is not quite dead but it must be planned for because if anything goes wrong it will be a ban. What is the next essential element in the

glaze (or glass) which will attract the campaign? The issues behind the lead problems should be investigated and anticipated so that the next time around the mechanisms to respond are in place.

CHARITABLE DONATION

Lady Kirsty Pilkington is pictured receiving a cheque for £2000 towards the St Helens and Knowsley Hospice Appeal. The money was raised during the North West Section's Annual Dinner and Dance at The Prince of Wales Hotel, Southport. Section Treasurer, Donald Keenan (second left) and committee member John Greenwood (second right) joined Dr David Martlew at the Pilkington Glass Museum to officially hand over the cheque.



LOCAL SECTION CONTACTS
For details of forthcoming local section events in your area, contact the appropriate Honorary Secretary. All SGT members and non-members welcome.

London
- Mr M C Brew,
United Glass Ltd,
Porters Wood,
St Albans,
Herts AL3 6NY.
Tel 0727 59261

Midlands
- Mr R W Fisher,
Sismey and Linforth,
Unit 94, Heming Rd,
Redditch, Worcester
B98 0AE.
Tel 0527 529810.

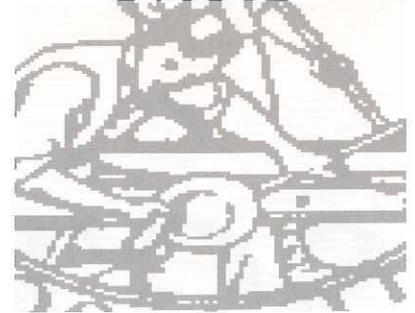
North East
- Mr J Henderson,
44 Woodside Ave,
Throckley, Newcastle
upon Tyne NE15 9BE.
Tel 091 264 4775.

North West
- Dr D J Bridson,
Pilkington Glass,
Prescot Rd, St Helens,
Merseyside
WA10 3TT.
Tel 0744 692358

Scottish
- Mr D A Rennie,
United Glass Ltd,
Glasshouse Loan,
Alloa FK20 1PD.
Tel 0259 218822.

Yorkshire
- Miss R M Sales,
20 Blackbrook Drive,
Sheffield S10 4LS.
Tel 0742 306179

QUALITY CONTROL IN A GLASSHOUSE



The practical aspects of quality control in container manufacture were reviewed by Martin Hodgson of United Glass at a joint meeting of the London Section and the Institute of Quality Assurance.

The 104-1 line at United Glass, Harlow produces up to 400 bottles/min, depending on the product. The line from the IS machine consists of a hot end control, the Lehr, cold end control, automatic inspection, final inspection, packing and warehouse dispatch. The whole system is taken as the domain of quality control; there are no barriers between hot and cold ends and the quality departments.

The cold end control has its own laboratory in situ to test around the clock. Random samples are taken from the line at final

inspection and a random audit check in the warehouse looks at the contents of palletised products. The company quality system audits for the line occur once every week. There is a monthly review to allow for minor changes to the system and improvements, while head office audits on a yearly basis, providing the site with an extra perspective.

The British Standards Institute audit is once every six months and the customer may be committed to auditing the supplier on a frequency stated in their own BS 5750 statement. A self audit by line workers is continuously in operation.

To oversee the whole operation, the company needs a very dedicated individual who is constantly pushing for the highest possible standards. The quality

assurance manager must know the product, the customers' sensitivities and be a good communicator. The individual also needs a skin like a rhinoceros in order to pursue the total quality goal.

With their own quality systems, customers are forming partnerships with container manufacturers. Information sharing, exchange visits of operators and joint problem solving tasks are strengthening links and mutually promoting further quality gains.

QUALITY INSPECTION SYSTEMS

The continuing need to balance productivity and flexibility with quality will be discussed at a one day meeting organised by the Engineering Committee on Wednesday 19 October at Keresforth Hall, Barnsley. Suppliers of inspection equipment will detail the latest technologies, while manufacturers provide an insight into integrated systems for product quality.

Details and booking forms can be obtained from Jill Costello at the Society.

product brings immediate results in more enquiries to the stores.

The decline in the market for stemware, however, is balanced by the potential for growth in giftware lines, especially for weddings and anniversaries. The ability to engrave crystal and personalise the gift enhances this appeal. In addition, packaging is an important aspect of enhancing the sale of both gift and stemware. But lead content is not an issue with customers in Mr McKee's shops – price and name are the main factors in buying crystal ware.

THE MARKET FOR CRYSTAL

Each of the last three years has seen a decline of more than 30% in the value of the crystal glass market in the UK. Les McKee, a former sales director at Webb Corbett and then Royal Doulton Crystal and the current President of the China and Glass Association, was invited by the Midlands Section to explain the roots of this collapse and the way back to recovery.

Les McKee runs his own chain of four china and glass shops. They are in rural Cheshire and away from the tourist trail. The shops began as specialist home produced ware but this has been impossible to sustain. His position as President of the China and Glass Association means that he hears opinions and problems of members throughout the country.

Independent retailers of glassware always outsell department stores, catalogues and the high street jewellery chains. The independents are specialists who get the message over. The massive discounting present in high street chains is regarded as

unfortunate and the downhill slope for any product line that appears there.

Stemware has been facing stiff competition from abroad; eastern Europe has the advantage of lower labour costs and investment in machinery has been higher in competing countries closer to the home market. Machine-made ware is also preserving its position at the expense of the hand-made sector. Machine-made styles from the continent are perceived to be elegant but informal, progressive in contrast to the UK.

Expenditure on stemware in mainland Europe is far higher than the UK but it is also more demanding. The introduction of own label lines such as Royal Doulton International which is made in France, takes advantage of this trend but does not preserve production.

The small to insignificant expenditure on advertising to the consumer is also a contributing factor to the decline. Television is a very powerful medium for putting over the message. Placement of the

