

# Hot News

from the heat transfer society



May 1996

Issue 96/1

## Keith Mangnall - Our New President

Keith was installed as the 1996 *hts* President at the Annual Dinner on Friday 29 March. Keith is a mechanical engineer with additional experience as an electrical engineer. He has been with Hick Hargreaves and Company for an impressive 49 years where he has been Technical Director since 1969.

Keith studied engineering at Bolton Technical College and then completed an apprenticeship with Hick Hargreaves. He spent two years in the RAF as a design engineer on special projects before returning to Hicks.

Over the years, Keith has taken a leading roll in all of the company's new products which have mainly been for the power industry. This has included the first pannier condensers, which are at Didcot Power Station, and the first 550MW underslung condensers. In addition to developing condensers, he has also worked on high vacuum steam ejectors and direct contact feedwater heaters. Keith attributes his success as an innovator to his willingness to take a lateral approach to design rather than following the well trodden paths.

He has also seen the value of good research and has therefore had a successful long collaboration with David Webb at UMIST. A joint paper with David and one of David's students was judged the best paper presented at the 2nd UK National Heat Transfer Conference in 1988. The authors received the *hts* Mike Ackrill award for this achievement.

We wish Keith every success in his presidential year. His President's Night will be in October.

## Hot News - The New *hts* Newsletter

Old timers of the society will remember that we had a very lively Newsletter which was written for many years by the new Society Fellow, Chris Norman. Your committee has decided to re-introduce the Newsletter to keep you informed of *hts* activities and, we hope, to entertain you.

This is your Newsletter. Please tell us what you want in it or, better, still send contributions on anything which you think will excite your colleagues.

We plan two issues a year, in April and November, to follow the Dinner/AGM and the President's Night.

Dave Butterworth has (foolishly?) taken on the task of editing the newsletter. Send your views and contributions to Dave at the address given on the back page.

## This Issue

- The Annual Dinner - without beef
- The Mike Ackrill Award
- The Helixchanger - new twists in heat transfer
- Small is beautiful - compact heat exchangers
- What's so exciting about dirty exchangers
- Keep cool when specifying your fired heaters
- The AGM
- Heat Exchange Engineering '96

## The Annual Dinner

The Dinner, the most prestigious event of the *hts* year, was held at the New Connaught Rooms, London on 29 March. Around 200 people attended and there were 19 company tables. The menu was notable for the absence of beef!

Keith Magnall was installed as our new President. His inaugural speech took an ironic look at today's obsessions in design and research. He pointed wryly to the fact that the paperwork accompanying some designs can be heavier than the exchanger. He looked forward to CEN and ISO bringing back some order to the growing chaos.

There were two main speakers, Bernard Doyle, Group Operations Director of Glynwed International, and Dai Somerville-Jones, Chief Executive of the Energy Industries Council. The latter told us about the work of the Energy Industries Council whilst the former delivered a seemingly endless series of hilarious jokes which cannot be repeated here lest this first new Newsletter be our last.

Our Chairman, Simon Earland, gave the traditional report on the year in the face of the even more traditional loud barracking from the well lubricated audience.

### ***Life Members***

Simon's pleasant duty of the evening was to announce Life Memberships for Roland Fuller, Geoffrey Walter and Vernon Jones. All three have been devoted members of the society attending meetings regularly. Vernon Jones recently resigned from 13 years on the Committee.

### ***Society Fellow***

Simon also announced that Chris Norman had been appointed a Fellow of the Society for his exceptional contributions over many years which included periods as Chairman and editor of a very lively Newsletter.

Reed Exhibitions, organisers of *Heat Exchange Engineering '96*, sponsored a prize raffle with the first prize being a lunch or dinner for two at the Metropole Hotel at the NEC, Birmingham. The proceeds, £380, were in aid of charity.

Colin Weil had done his usual magnificent job in organising this event and ensuring everything went off without a hitch.

## **Mike Ackrill Award**

**This year's award went to the authors of the best paper of industrial relevance presented at the 4th UK National Heat Transfer Conference held in Manchester, September 1995.**

**The winning paper was "Scale formation on a boiler tube bundle" by T Bartlett, H Müller-Steinhagen and M Jamialahamadi.**

**Non of the authors could attend the annual dinner so the opportunity was taken to present the cheque and cup to Hans Müller-Steinhagen on the occasion of his Professorial Inaugural Lecture at University of Surrey on 21 February 1996. The presentation was made by Simon Earland.**

**The Memorial Cup was immediately taken possession of by Hans' small son who was last seen dashing around with it amongst those attending the post-lecture drinks.**

**A report on the lecture is given on the facing page.**

## **Come along to the next Forum**

**Forum Evenings are held monthly in London with a breaks for Christmas and the summer. They are normally held in the Barley Mow, Horseferry Road with a pre-lecture buffet. Members distant from London also hold lively regional meetings from time to time.**

**With the increased emphasis on continuous professional development you should think of these events as one way of keeping yourself up to date. See the back page for future events.**

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## Forum Evenings

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### *New Twists in Heat Transfer*

At the *hts* forum on 23 November, Rik van de Plöeg of ABB Lummus Heat Transfer told us that helical flow is good but zigzag flow is bad. He was referring to shell-side flows in heat exchangers.

The conventional shell-and-tube with segmental baffles wastes pressure drop with the turnaround at each baffle window. Their Helixchangers, however, use a clever arrangement of tilted, quadrant baffles to give a smoother helical flow. This achieves a better conversion of pressure drop into heat transfer. It also improves the shell-side flow distribution thereby reducing possible fouling. A special double-helix design can give more tube support to avoid flow-induced vibration.

This novel design was obtained from a Czech research group who first presented the idea to the Society at a Forum in May 1992.

### *Small is beautiful*

David Reay, of David Reay and Associates and Heriot Watt University, gave us an extremely comprehensive review of compact heat exchangers at the Forum on 15 February 1996.

He covered the exchanger types with which we are all now familiar through other Forum Evenings. This included gasketed plate, plate-fin, welded-plate and diffusion-bonded plates.

However, he went on to tell us about amazing micro-engineered exchangers. He showed a slide of an exchanger with a surface area density of  $15000 \text{ m}^2/\text{m}^3$ . For comparison, a plate-fin has typically  $1000 \text{ m}^2/\text{m}^3$  and shell-and-tube around  $100 \text{ m}^2/\text{m}^3$ . One slide showed a normal-looking finned tube used in a missile application until it was pointed out that the huge metal object next to it was a pin head!

### *Fouling is Fun*

The Society was invited by the Vice Chancellor of University of Surrey to attend the Professorial Inaugural Lecture of Hans Müller-Steinhagen.

Hans entitled his lecture “What’s so exciting about dirty exchangers” He had the daunting task of explaining an apparently dull and technically difficult subject to a mixed audience of experts and lay people.

The lecture achieved the seemingly impossible of entertaining the lay people while telling the rest of us new and interesting things. He took us from the first reported anti-fouling additives, which occurred when workers lost potatoes which they were cooking in boiler feedwater, up to novel exchangers which employ fluidised particles to keep surfaces clean.

He completed his talk by describing his exciting new research involving ion implantation to make surfaces *non-stick* to fouling agents.

### *Specifying fired heaters*

At a very well attended forum on 23 April, Ed Watters of Born Heaters told us all we wanted to know, and more besides, on specifying fired heaters.

His main messages included stick to API 560 unless you really know what you are doing, don’t assume that your favourite anti-corrosion metals will work at high temperature, fired heaters are big and must, therefore put out a lot of sound *power*, and erection requires more than one line in a 200 page spec!

Ed also covered modulisation. The story was build as much as you can in the factory or on the quay side unless transport costs are prohibitive and weather on site predictably perfect.

He prompted a lively discussion on whether the potentially carcinogenic properties of used ceramic fibres really mattered given the other hazards to be found in a heater after operation.

## AGM

The AGM on 5 March was well attended. Simon Earland, Dave Evans and George Bowes were re-elected unopposed as the Chairman, Treasurer and Secretary, respectively. Vernon Jones retired from the committee after thirteen years. Mike Herbert did not seek re-election since he is on assignment in SE Asia. Dave Butterworth and Bob Agar were elected as new members of the committee. David Jones was also adopted as a member at the first meeting of the new committee on 21 March.

The report of the year from the Chairman showed continued progress of the *hts* in establishing itself as an important national focus of industrial heat transfer activities. This included promoting industrial sessions at the 4th UK National Heat Transfer Conference, collaborating on HEXAG meetings and supporting Heat Exchange Engineering '96. The Chairman was also pleased to see an increase in attendance at Forum Meetings following the slump of a few years back.

The Treasurer reported that the *hts* finances remain in good order. As a non-profit organisation we aim to break even each year and this was achieved to within a small deficit of under £30. Reserves remain at a healthy figure approaching £3500. The Treasurer also noted that we now pay tax on profits on our business activities: eg charging companies for mailshots.

### *The 1996/97 Committee*

S Earland (Chairman)	R Berryman
G Bowes (Secretary)	D Butterworth
D J Evans (Treasurer)	M Gough
G R Agar	D Jones
K Bacchus	N Smith
S Baker	C Weil

## Heat Exchange Engineering '96

This exhibition, held at the NEC in Birmingham 16-18 April, was supported by the *hts* and was the brainchild of two committee members, Martin Gough and Bob Berryman. Forty six companies exhibited including exchanger manufacturers, thermal-fluid suppliers, contractors, software producers and publishers.

A parallel conference, *Advances in Industrial Heat Transfer*, covered the design, construction and application of a range of heat exchanger types with the emphasis on new developments. This was followed by a one day European event where leading researchers discussed future research needs. Over the three days, 110 people attended the conference, one quarter from overseas.

The exhibition and conference were opened by Martin Stanley, the new Chief Executive of the DTI *Oil and Gas Projects and Supplies Office*. In his speech, Martin Stanley commented that the UK heat transfer industry appeared innovative with a strong R&D base but that it needed to brush up its marketing.

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## Future Events

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- *London Forum, 23 May, "Twisted tube heat exchangers" Alan Guy, Byron Black and David Butterworth, Brown Fintube*
  - *London Forum, 18 June, "Windows gives a new view of heat exchanger performance" Laurie Haseler, HTFS*
  - *London Forum 12 September, "Emissions control by Callidus low NOx burners" Peter Jackson, Paul Barrett and Roy Godwin, Callidus Technologies UK Ltd.*
  - *Presidents Night, October 23, Keith Magnall, Hick Hargreaves.*
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The next *Hot News* will be in November 1996. Contributions please by 18 October to

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