

HotNews

from the heat transfer society



August 1998

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Our New President David Bate

David Bate was inaugurated as the *hts* president for 1998/99 at the Annual Dinner in March. He is well known in the heat transfer community as an expert on fired heaters although, modestly, he describes himself as an amateur in heat transfer.

David is Manager of the Process Engineering Team for ICI's Petrochemicals Division. He graduated from UMIST in 1965 with a BSc in Chemical Engineering and joined ICI on Teesside. He first became seriously involved with heat transfer in 1972 whilst investigating a failure in a fired process heater. In his words one thing led to another, and he became ICI's acknowledged expert on fired process equipment and a member of the company's Heat Transfer Panel.

David has been a member of the HTFS Review Panel on Fired Heaters for over 20 years, and has also become involved in the design, operation and trouble shooting of other heat exchange equipment. David also has many years of experience in general process design, primarily in Petrochemicals.

Looking back over the years, David sees his greatest achievement as having built up a team of people with the right mix of practical skill and theoretical know-how. This has included the important task training and motivating the younger members of the team.

What do you want from *hts*?

The *hts* Committee is keen to find out what you, the Members want from the Society. The *hts* is unique in that it has no special remit as a learned society, a professional body or a trade association. Its aim is to promote all aspects of heat transfer in whatever way we wish. We currently achieve this by holding various

meetings and events and by collaborating with other organisations, like the UK National Committee for Heat Transfer. But maybe you just use *hts* as an excuse to drink lots of beer.

The big question is, "Is what we do really what you want?" To help you to tell us, the Committee has prepared a one-page questionnaire which is enclosed with this *HotNews*. Please take a little time to read this and answer the questions and send the completed form to Simon Earland, at the address/fax number given on the form.

www.hts.org.uk

We are pleased to announce that *hts* has now entered the electronic age by creating a web site aimed at helping to keep Members informed about our activities. The site is in its infancy but we plan to improve it with time and in response to Members' comments. Try it out and let us have your comments.

Target heat transfer people

For £250 companies and other organisations can include an insert in an *hts* mailing. The insert is then targeted at the 450 key heat transfer specialists in the industry. This is therefore an excellent way to advertise job vacancies and heat transfer events.

Contact: Dave Evans - Tel 01235 432323, fax 01235 434351

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Annual Dinner

The Annual dinner is the major drinking event in the *hts* calendar. As in past years, it was held in the Connaught Rooms, London on the last Friday in March. Over 200 people attend the dinner with most being on the 20 or so company-sponsored tables.

David Bate of ICI was inaugurated as our new president. In his speech, David amused us with some of his experiences with fired heaters where fluids are turned from a benign single-phase to incomprehensible two-phase. He summed this up by asking, "If the order of the universe is proof of the existence of God, what is two-phase flow?"

The main speaker was Geoff Hewitt from Imperial College. As befits a university professor, he used visual aids by having members of the top table hold up the equation

$$Nu = 0.023Re^{0.8}Pr^{0.4}.$$

We sometimes forget that the groups in this equation are named after people who made great contributions to heat transfer and fluid flow. While Nusselt and Prandtl are still honoured by their countries, we in the UK have virtually forgotten Osborne Reynolds, who as Geoff put it "invented turbulence."

The Mike Ackrill trophy was awarded to John McCutchen of Yuba (see next column). An *hts* Fellowship was awarded to Geoff Hewitt for his long and significant contribution to the society, including being President in 1977. Life Membership of the Society was awarded to Jim Robertson for his active support of events over many years.

The HTFS/ICHEME award for the best paper at the UK National Heat Transfer Conference was presented to David Webb, Andrew Dell, Richard Stevenson and Karin Ax for their paper entitled "Assessment of Condensation Curves in the Design of Binary Vapour Condensers."

The raffle raised £733 for charity. HTFS-Hyprotech are thanked for having donated the prizes.

As a mark of respect we were asked to remember, during grace, two longstanding *hts* Members who died during the last year: Cambell Miller and Ted Saunders

Mike Ackrill Award

The Mike Ackrill Award is given for the best presentation at an *hts* Forum. The criteria are that the presentation

- Contains information of significant value to a sector of the heat-transfer industry especially if of topical interest
- Contains information which may be counted towards Continuing Professional Development (CPD) rather than simply being an advert for the companies products or services
- Is clearly and logically presented

The prize has been awarded to John McCutchen, the President of Yuba Heat Transfer who came over from the US to give an informative and entertaining presentation entitled "Improve high pressure process heat exchangers by thermal transient analysis with fatigue evaluation". This was presented on 22 April 1977 and is reported in the last edition of *HotNews*.

Heat Exchange Engineering

The Heat Exchange Engineering '98 exhibition and conference was held 2-4 June at the NEC Birmingham. An exciting new feature of this event was a Research Village within the exhibition where around 10 universities took the opportunity to show their expertise. Let us see this village grow into a major town in future. The two-day conference covered economic and environmental issues in heat transfer. This was followed by a one-day seminar on heat exchanger design and operation.

UK National Heat Transfer Conference

The 6th UK National Conference on Heat Transfer is being planned with the help of *hts* for 15-16 September 1999 at Heriot-Watt University, Edinburgh.

Contact: Stephanie Love, IMechE, Tel 0171 973 1312, Fax 0171 222 9881, s-love@imeche.org.uk.

Forum Evenings

Down the tubes

Kenny Graham and Alex Stephen of Torch Quality Services gave a presentation on in-line inspection of heat exchanger tubing for the November 1997 Forum. Regular inspection of tubes using new advanced techniques helps reduce in-service failure.

They discussed ultrasonic inspection (Internal Rotary Inspection System) and electromagnetic inspection including eddy current and *Centest* methods. Together these methods provide a relatively quick, accurate and inexpensive way to identify the likelihood of tube failure, with the more accurate and costly methods being used when the cheaper, easier methods indicate possible problems.

Get into print

At the January 1998 Forum, Andrew Hill brought us up to date with developments in the printed-circuit heat exchanger (PCHE) since the last presentation to *hts* by Heatric Ltd in 1991.

PCHEs are highly compact exchangers formed by etching flow channels into plates and then bonding stacks of such plates using diffusion welding. The term *printed circuit* comes from the process of defining the pattern of channels on the plates and etching them, which is similar to printed circuit technology.

Andrew told us of the wider range of applications which they had gained experience of over the seven years since the last *hts* presentation. Of particular importance is the great understanding Heatric now have in the use of these exchangers in systems with thermal cycling.

Pressure from the EC

At the February Forum Malcolm Hynd from the DTI Standards and Technical Regulations Directorate explained the importance of the European Pressure Equipment Directive.

The Directive was adopted by the European Parliament on 1997 and will enter into force on 29 November 1999, but compliance with its requirements will be optional until May 2002.

The Directive applies to the design, manufacture and testing of pressure equipment, including heat exchangers, boilers and pipework, with a maximum allowable pressure over 0.5 bar

An introduction to the Directive is given in the DTI booklet *Product Standards: Pressure Equipment*, copies of which may be obtained by contacting the DTI *Business in Europe Hotline* on 01179 444 888.

Let's get it together

At the April forum, Bob Sterling of Hyprotech stood in at the last moment to give a presentation on the integration of thermal software with process simulators. The company originally scheduled for this slot had to drop out for business reasons.

Evidently, the breakthrough in linking software is the use of the so-called object-oriented programming to provide component-based architecture, whatever that means. But, the proof of the pudding is in the eating, which in this case was illustrated by demonstrating the link between the HTFS shell-and-tube program TASC and the Hyprotech process simulator HYSYS.

Hot air

At the May Forum Bob Berryman of Vale Consultancy and Tony Meadows of More Fans told us about the developments in air-cooled heat exchangers. A key development has been in axial flow fans especially to reduce noise. Fan selection software was reviewed. Regarding the full exchanger, performance optimisation was discussed along with best practice on testing and monitoring. Some thoughts were given on future developments.

The June Forum on cryogenic heat exchangers by Richard Clarke of BOC was cancelled at the last moment because of a London Underground Strike. Several hardy *hts* Members turned up nevertheless. The Society regrets that we were unable to inform all Members of the cancellation. We emphasise that *hts* may have to cancel meetings at short notice due to reasons beyond our control and would suggest that, when in doubt, you contact Simon Earland on Tel 01245 349 160 or 01245 347 643. Also, in future, consult our web page.

Annual General Meeting

As is traditional, a few hardy souls turned up to this year's AGM which was held at the *Barley Mow*, London on 3 March.

The Hon. Chairman, Simon Earland reported on another successful year for *hts* and Dave Evans, the Hon. Treasurer convinced us that he had not pocketed the society's funds.

Due to work commitments, George Bowes, the Hon. Secretary for many years stood down from that post but was elected as a continuing member of the Management Committee. The other existing members of the Committee were re-elected along with two new members, David Norton and Graham Polley. The current full Committee is listed below.

Archie Ried and Derek Pratt were re-confirmed as auditors.

Votes of thanks were passed for the Chairman, the Treasurer and the Auditors. Votes of thanks were also passed for two companies who have helped the society during the year: Motherwell Bridge for letting us use their office for committee meetings and Bousted International Heaters for sponsoring the Presidents Night.

Full minutes of the meeting are available on request from Colin Weil, Tel/fax 0181 428 0396, colinweil@mail.bogo.co.uk

The 1998/99 Committee

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

Waste Heat

by L M Teedy

Spot the error

Speaking as a simple heat transfer man, it seems common sense that putting more greenhouse gasses like CO₂ and methane into the atmosphere will tend to increase the average temperature of the Earth. Startling evidence of this comes from our two neighbouring planets Venus and Mars. Venus has an atmosphere rich in greenhouse gases and has an average surface

temperature 470°C (and you thought Houston was hot). Mars has a very small concentration of greenhouse gases and the average surface temperature is -40°C. Earth has the right amount of greenhouse gases in the atmosphere and the average surface temperature is just right, at 15°C. This is commonly known as the "Goldilocks effect."

Of course, some greenhouse gases are a good thing. Without any, the Earth's average temperature would be nearer -15°C. But there is now incontrovertible evidence that CO₂ concentrations in our atmosphere are steadily increasing and this will eventually have a noticeable effect. Having said this, it is extremely difficult to calculate the precise effect.

But then along come the non-heat transfer people to try to muddy the water (or should I say pollute the air). They say that the temperature will vary through other things as well, volcanic action having been the favourite for some time. The new red herring is sun spot activity. Yes, of course, this will have an effect, and hence will add signal noise to the general trend, but the greenhouse effect will still be there, plodding along in the background. Moreover, we can actually do something about it. So let us keep our eye on the ball (or is it globe) and not get distracted by those who try to confuse the issue.

The views of L M Teedy are not necessarily those of the *hts*.

Future Events

- *London Forum, Thursday 10 September, "CFD, a user's viewpoint", Peter Ellerby, Cal Gavin*
- *Presidents' Night, London, Tuesday, 20 October*
- *London Forum, Thursday, 19 November, "Compact, multistream exchangers in cryogenic applications", Richard Clarke, BOC*
- *London Forum, Tuesday, January 12 1999. Topic to be decided*

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