The Contract Heat Treatment Association Newsletter

# HOTLINE

Issue No. 158
December 2019

## Inside . . .



## CHTA Secretariat

Items for inclusion in *Hotline* and enquiries about CHTA activities should be addressed to:

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Alan J. Hick B.Sc., C. Eng., FIMMM



CHTA is affiliated to the Surface Engineering Association

# The long-term future: whence the heat in UK heat treatment?

***The UK's climate-change policy threatens the elimination of fossil-fuel use in coming decades. What might be the consequences for natural-gas-reliant CHTA members?***

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# Employee mental health and your responsibilities

**Amy Hinchliffe,** Associations & Partnership Marketing Executive, Croner

**According to the World Health Organisation, burnout is chronic workplace stress that has not been successfully managed, and therefore will be globally recognised as a medical condition as of 2020.**

**If not managed properly, burnout can have a significant impact on employees, resulting in physical, intellectual, emotional or behavioural issues. In 2017/18, 15.4million working days were lost due to work-related stress.**

## SPECIALIST SUPPORT

As an employer, it is essential to identify the common signs of stress and the impact on mental health for your staff. This will enable you to manage situations effectively, and ensure the wellbeing of staff before experiencing any implications in the workplace.

As a member of the Surface Engineering Association / CHTA, you have access to free advice, concerning employee mental health and wider HR issues, by calling our dedicated member support helpline on 0844 561 8133, quoting 82751.

## KEY STEPS TO TAKE

**Make sure staff take their breaks**

Remind employees that they're entitled to take a break from their work and take steps to make sure they are doing this. For example, you could prohibit staff from eating at their desks to stop them working through lunch.

**Do not permit excessive levels of overtime**

Employees need time away from work to recuperate and refresh themselves. Whilst overtime can be a useful tool in getting extra work done, you should not expect them to have to work overtime regularly in order to finish their everyday tasks outside of normal hours.

**Prevent home working**

If employees are taking work home with them regularly, you should re-think how workloads are distributed and if your workforce is large enough to handle the demands of the company.

**Consider allowing flexible working hours**

This can help employees to maintain a balanced work and home life and better manage any commitments outside of work, such as raising a young family.

**Regularly evaluate employee performance**

Identify areas where employees are struggling with workloads or workplace pressures and consider making changes.

**Train managers to look out for signs of stress**

This can include irritableness, fall in performance, visible fatigue, increased levels of sensitivity or deliberate isolation.

**Maintain strong communication levels**

Employees should be encouraged to speak to their managers about any issues they may be having in the workplace.

**Have a zero-tolerance for bullying**

Bullying can add greatly to stresses of the normal working day and make it much harder for your employees to do their job. Make sure all employees, including managers, are aware of the consequences for any issues of bullying, harassment or discrimination.

**Use an Employee Assistance Programme (EAP)**

EAPs can encourage greater discussion and identify any workplace factors having a negative effect upon the employee.

**Create and maintain a wellbeing policy**

This can outline any support that your company offers to employees who are suffering from workplace stress due to work-related or personal factors.

# Member news

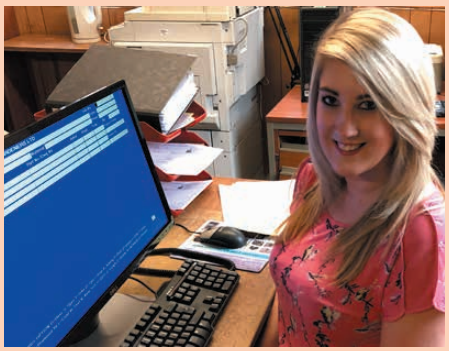
## EMPLOYEE WELFARE IS TOP PRIORITY AT FLAME HARDENERS

Flame Hardeners has become one of the first small companies in the contract heat treatment sector to appoint a designated Mental Health First Aider.

Commercial Manager, Claire Casswell, who is already qualified to Level 3 in counselling, has gained MHFA England's Certificate following their *Adult Mental Health First Aid* two-day course, which teaches people how to spot the signs of mental health issues, offer initial help and guide the individual towards appropriate support.

Claire explains: "The course covered all types of mental illness, how it affects people individually, how to recognise 'warning' signs and guide them to advice before it develops further. We also learned how to manage someone who is in crisis."

It is estimated that one in four people suffer from some form of mental illness during their lifetime, from panic attacks, anxiety, depression, self-harming and addictive behaviours, to PTSD. Most people 'keep it to themselves' because of the stigma attached to mental health issues.



*Flame Hardeners' Claire Casswell.*

"This is why it's important to maintain confidentiality, so that the person affected can feel reassured that they will be listened to non-judgementally, and that their information won't be disclosed to anyone else within the company," continues Claire.

"Having first-hand experience of the effects of mental health issues within my own family, I am looking forward to helping others to avoid the distress that these can cause" she concludes.

Flame Hardeners' Managing Director, Roger Haw observes: "The pressures within the working environment, especially a sector that is as intensive as heat treatment, are greater now than they have ever been. We feel it is important to take a holistic approach to employee welfare so that the effects of those pressures can be minimised."

# The long-term future: whence the heat in UK heat treatment?

***The previous issue of Hotline focussed on electricity supply. What about natural gas, the heat treater's preferred cheaper energy source, where appropriate, and controlled-atmosphere feedstock?***
***Whilst our USA counterparts continue to enjoy low-cost gas from fracking, the UK's climate-change policy threatens the reduction/elimination of fossil-fuel use in the coming decades. What might be the consequences for natural-gas-reliant CHTA members? We asked Inenco's Dan Hulme to comment…***

## The long-term future: your sector coming under "heat" to change fuel source?

With the government aspiring to ambitious carbon-reduction targets, including net zero carbon by 2050, there are a lot of businesses and industries that are feeling the ever-tightening pressure of process change.

The manufacturing sector is likely to experience the most significant amount of strain and, more specifically, the thermally-demanding industries such as metals, heat treatment, cement and ceramics. The de-carbonisation of the UK poses some extremely sensitive challenges to future operational costs and business continuity.

The UK currently consumes over 300TWh (300,000MWh) of electricity each year. Comparatively, we collectively consume around 870TWh (900,000MWh) of natural gas. Almost a third of this gas is used for UK electricity power generation and another third for domestic heating and cooking. The remaining third is split fairly equally between industry, energy industries and services (BEIS UK *Energy in Brief 2018*). If the UK is going to remove gas as a fuel entirely, there are two main questions to propose:

1. How is the existing process and heating demand through gas going to be met?
2. Will there be enough renewables and nuclear power generation by 2050 to displace a significant portion of our gas-fired power stations?

Natural gas is the favoured heating and process fuel for many manufacturers mainly because, as I write this article, gas is just under 50% of the price of electricity at wholesale and is only 20% of the overall delivered price of electricity. Price is not the only positive advantage of using gas; there are operational benefits such as generating controlled atmospheres required for specialised processes.

If the government net-zero target is to be achieved and natural gas is to become obsolete, there is going to have to be serious investment in research and development, over the next 5-10 years, to ensure a new alternative fuel strategy can be agreed.

If the research and investment are not undertaken, industries that rely on gas are going to have difficult decisions to make. Converting to electric heating sources will be uncompetitive in a global market and the harsh realities of business may determine that production is moved to another country, one with less ambitious carbon-reduction commitments.

Government have already begun to try and reduce the price gap between electricity and gas through increasing climate change levy (CCL) rates from April this year. In the accompanying table you can see how electricity CCL rates are forecast to reduce over the coming years, whilst gas CCL rates are steadily increasing. By 2024, we expect CCL for gas and electricity to be the same.

| Year | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 | 2021/22 | 2022/23 |
|---|---|---|---|---|---|---|---|
| CCL - Commodity Rate Electricity | 0.00559 | 0.00568 | 0.00583 | 0.00847 | 0.00811 | 0.00775 | 0.00744 |
| CCL - Commodity Rate Gas | 0.00195 | 0.00198 | 0.00203 | 0.00339 | 0.00406 | 0.00465 | 0.00530 |
| CCA - CCL Exemption Electricity | 90% | 90% | 90% | 93% | 92% | 92% | 92% |
| CCA - CCL Exemption Gas | 65% | 65% | 65% | 78% | 81% | 83% | 83% |

Fortunately, for businesses in Climate Change Agreements (CCAs), the levels of exemptions from CCL have been increased to reduce the impact of these increases. Industries in the MINMET scheme, such as heat treatment, continue to get 100% exemption from CCL. However, the closure of the CCA scheme to new entrants raises the spectre of significant changes to these schemes at the next review.

## What are your options?

Before you start to look at alternative fuels, the first step is to reduce the amount of fuel you use. Energy efficiency is the key starting point to reducing our reliance on gas and, for most businesses, this involves three steps;

- People – your employees need to be engaged with your sustainability strategy – they are the ones that will switch things off, shut outside doors along with other energy-saving actions.
- Processes – look at demand profiles; are you using energy out of hours?
- Equipment – often big savings are possible by replacing old equipment with new, but capital costs may be high. Look at the age of your equipment and factor in the energy savings when deciding on a replacement date.

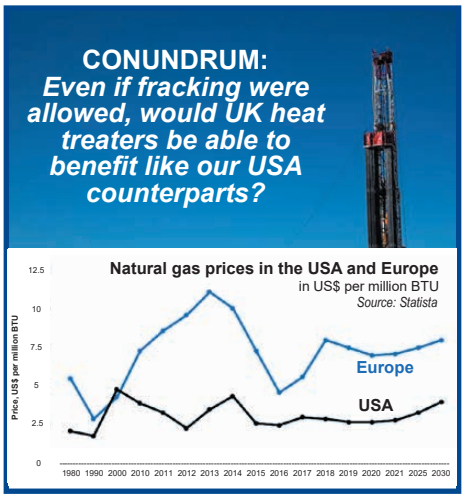
If you investigate alternative fuels to natural gas, these are the ones that you will probably come across:

### Biomass

Wood pellet or chip boilers are used by many companies for space-heating requirements. There are subsidies available through the Renewable Heat Incentive and there may already be a good business case if you currently burn expensive fuels such as LPG. However, this is generally more expensive than using natural gas and is not normally suitable for other industrial processes. If you are in an area with air-quality issues this may also make biomass a non-starter. The best business cases are for companies that can source cheap or free wood, one example being pallets. However, the quality of the wood needs to be good enough to avoid falling under the waste-incineration directive.

### Bio-methane

Methane produced from the breakdown of organic matter comes from both landfill sites and, more recently, from anaerobic digestors. Traditionally this was burned on-site by generators, which exported electricity, but over the past decade, there have been many new anaerobic digestion plants that produce biogas, clean it and then export it to the local gas grid. The




economics are only possible due to subsidies from the Renewable Heat Incentive.

Whilst new projects are still being constructed, the growth is limited by the availability of appropriate organic feed-stocks; there has been a move from digesting purpose-grown crops to the use of waste and residual materials, but there is only a finite amount of this available.

We expect bio-methane production to grow in the 2020's, but this is unlikely to displace more than one or two percent of current gas demand. If you want to buy bio-methane then there are several schemes that issue and track so-called Green Gas Certificates, but these are expensive, typically adding more than 15% to the cost of the gas.

### Hydrogen

The dream of using hydrogen to replace natural gas and to power our cars is not new. However, most hydrogen is currently made by stripping the carbon out of methane (natural gas) and the alternative method of electrolysis is only carbon neutral if the electricity that drives the process is from renewable sources. As we continue to produce more and more electricity from renewables, we are increasingly seeing periods where there is a surplus amount of generation and it may be feasible to use hydrogen production as a method of utilising this 'spare' electricity, but the costs will be high.

There have already been suggestions that some hydrogen could be blended with natural gas in our existing gas distribution network. However, the allowable levels will be small – if the concentration is too high then it will adversely affect the performance of gas burner controls in furnaces, boilers and generators throughout the country. Hydrogen also finds ways through leaks much more readily than natural gas. This means that any hydrogen schemes would be likely to utilise separate pipes and initially might be used to displace transport fuel rather than natural gas.

### Electricity

Having previously mentioned that electricity is five times more expensive than gas, you may be surprised to see it mentioned here!

Electricity may still be appropriate for certain types of process, though admittedly not that many! The processes of interest are;

- Low-temperature heating – for heating up to around 50°C, electricity can be used in heat pumps to provide around 3 units of heat for every unit of electricity. Whilst this is still more expensive than gas, there are some subsidies available through the Renewable Heat Incentive.
- There are a few industrial processes that can be achieved through either gas or electrical technologies: e.g. heat treatment, welding, desalination, fork-lift trucks. Switching from gas to electricity is likely to be the low-carbon solution in the future.

# Wolfson Heat Treatment Centre: goodbye and thank you

**With the retirement of Derek Close, Wolfson Heat Treatment Centre closes down at the end of December after almost 47 years serving the heat treatment and engineering communities.**

In a September message to the Centre's subscribers, Wolfson Manager Derek Close announced:

*"I have now reached the age of 70 and, after much deliberation and consultation with my family, I have decided to retire at the end of this year. Unfortunately, because of this, it will no longer be possible for the Wolfson Heat Treatment Centre to continue its operations beyond this date.*

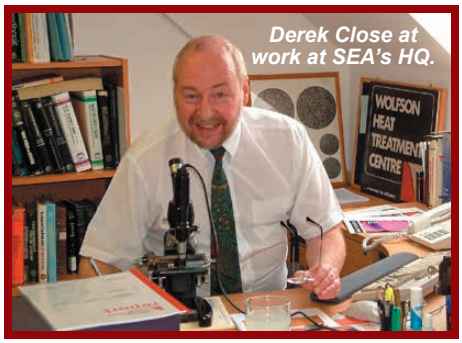
*At the end of this year, I will have been with Wolfson for just short of 39 years and it is with a great deal of sadness that I hereby announce that the Centre will close on 31st December 2019.*

*For the past 14 years, the Wolfson Heat Treatment Centre has been part of the Surface Engineering Association, to whom I am deeply indebted for offering the Centre a home when it moved from Aston University, where it was founded back in 1973.*

*I am particularly grateful to Dave Elliott (CEO) and all the staff of the SEA, who have given me continued support over those latter years, both in terms of facilities and advice. I would also like to express my gratitude to Alan J Hick, the former Manager of WHTC (at Aston) and current Secretary of the Contract Heat Treatment Association, who helped me set up within the SEA and has provided support if needed ever since.*

*Finally, I would like to thank you and your company for your continued support, and I can reassure you that I will endeavour to provide a normal service until the end of the year."*

Derek also gives his sincere thanks to all his loyal fellow speakers for their "tremendous" contributions to the Centre's *Understanding Heat Treatment* course, which is now at an end.



Derek Close at work at SEA's HQ.


With Wolfson's supportive SEA team (l. to r.): Simone Vassel, Derek Close, Dave Elliott and Michaella Mais.

## Wolfson Heat Treatment Centre, 1973-2019

Opened in April 1973, Wolfson Heat Treatment Centre, British industry's independent focal point for information, advice and education on heat treatment processing, was originally set up by the Department of Metallurgy at Aston University in Birmingham, based on the concept proposed by the late Prof. Tom Bell. There it remained for 31 years, providing metallurgist Alan J Hick with a day job as Manager and Editor of the Centre's world-renowned *Heat Treatment of Metals* journal, whilst acting as CHTA's Secretary in his "spare time".

As recorded in the final issue of *Heat Treatment of Metals* in 2004, Wolfson's fine team, including Derek Close and the late Chris Williams, achieved much during its tenure at Aston. Along with the core activities for subscribers (including many CHTA members), it kept the heat treatment community informed, through the quarterly journal and a series of over thirty conferences, and ran numerous courses. It also encouraged co-operative member-company action, on technical matters of common concern, via its Engineering Group, which: developed the quenchant test that was ultimately adopted as the international standard ISO 9950; published the series *Guidelines for Safety in Heat Treatment*; and formulated the content of early Wolfson courses.

Coincident with Alan's retirement, Wolfson relocated in 2005 to the Birmingham headquarters of the Surface Engineering Association. Under the sterling new management of metallurgist Derek Close, Wolfson continued to offer a wide range of services. These included expert information and advice, supplemented by a vast library of heat treatment information from worldwide sources, independent consultancy and metallurgical services and education/training, both centrally and on site.

The latter included the Centre's three-day *Understanding Heat Treatment* course which was initiated in 1977 and has been attended by some 2000 delegates in the 83 such events staged since.


*Wolfson Heat Treatment Centre celebrating its first ten years of operation at Aston University. Standing (l. to r.): Harry Child (part-time Director), Derek Close (Investigations Officer), Chris Williams (Information Officer) and Alan J Hick (Manager). Seated: Sylvia Spiers (Secretary).*

*The Centre's journal ceased publication in 2004.*

## Thank you

CHTA wishes Derek Close a long and happy retirement and thanks him for his much-appreciated assistance and support over the years. Wolfson Heat Treatment Centre will be sadly missed as the heat treater's valued resource.

# Whence metallurgists?

As Hauck Heat Treatment's Keith Laing noted in his *Hotline* 113 article "2500 years of metallurgical experience", whilst the level of metallurgical knowledge in general engineering appears to be on the decline, the expertise of CHTA members continues, of necessity, to be vast and cutting-edge.

How do we perpetuate this advantage with metallurgists harder to come by?

The problem was highlighted by Richard Brown, formally of Bradford College, in his 2018 *Materials World* article "Metallurgy in the UK" (*https://www.iom3.org/materials-world-magazine/feature/2018/oct/29/metallurgy-uk*). He observed that "The state of metallurgy training in the UK is dire, with very few organisations providing the opportunity for approved continuing professional development training".

Now Principal Academic and Director of Bradford-based M&C Educational Training Services Ltd, Richard outlined his company's proposals to remedy the situation at a November meeting with CHTA's Management Committee and Training Subcommittee. After detailed discussion, CHTA agreed to become a non-financial "stakeholder", affirming the real need for more true metallurgists and the virtues of part-time accredited metallurgical training, in order to encourage the support of funding authorities.

*M&C's Richard Brown (left) with CHTA Training Subcommittee members Chris Kenward (Ajax Tocco International), Debbie Mellor (Keighley Labs) and Richard Burslem (Wallwork Heat Treatment).*

## CHTA MEMBERSHIP FEES

In these hard times, our loyal members will be pleased to learn that subscriptions are not being increased next year.

The annual CHTA membership fee for a single-site company remains at £622+VAT for 2020. For multi-site companies, the additional fee stays at £158+VAT per extra division.

The 2020 fees are being invoiced on behalf of CHTA by SEA/BATF.



blended
experts in chemical gases

**BLENDED UNVEILS MAJOR REBRAND**

*Hotline* advertiser Blended has kicked-off the start of its new financial year with a major re-brand to strengthen its position as specialists in the chemical gas industry.

As part of the launch, the company has unveiled a bold new identity (including the new logo above) which reflects its growth over the last few years and captures its unique pedigree, as well as appealing to a new generation of customers.

An exciting development, Blended's Commercial director Simon Barker explained: "The launch marks the beginning of a new era for the company as we embark on another period of rapid growth. It is a variation on the original name but with a lot more punch and a fresh new look. Ultimately our core values remain the same; they are the real trademark of Blended.

"We put a great deal of time, care and effort into supplying our products and services and our people are dedicated to delivering the very highest standards of quality and personal service to our customers. Our new identity, which has been created in partnership with Fred Marketing, reinforces these unique strengths, which we feel sets us apart in the industry.

"We are never afraid to invest at Blended, as has been proven with our recent acquisition of AAA. Our new identity represents our growth and will help to elevate Blended to a new level. This is just the start though and we can't wait to share more of Blended's developments over the coming months."

Based in Elsham, North Lincolnshire, Blended have been supplying specialist chemicals and gases to both industrial and retail sectors for over 16 years. The company prides itself on having the right 'blend' of expertise, service and positive attitude that customers can rely on. Through recent investments and acquisitions, the company now offers additional services such as disposal, hazardous storage facilities and technical support.

## Seen at...

ADVANCED ENGINEERING 2019

NEC, Birmingham 30-31 October 2019

*Chris Beardshaw of CHTA-member Special Steels Ltd meets Alan J Hick at the SEA Pavilion.*

*Wallwork Heat Treatment*

*Linita Ramgi and Adrian Locke of Hauck Heat Treatment*

*Keighley Laboratories*

The Contract Heat Treatment Association Newsletter
HOTLINE
ADVERTISING

# If you supply to heat treaters, advertising in *Hotline* is a no-brainer

**The only UK publication devoted to heat treating, the Contract Heat Treatment Association's quarterly newsletter *Hotline* is circulated in hard-copy form and is also downloadable from CHTA's website at *www.chta.co.uk/newsletter/36/.***

## 2020 ADVERTISING RATES

**Single-insertion charges for black-and-white ads:**

| Size | Dimensions | Charge |
|---|---|---|
| **Quarter page** | 121mm high x 86mm wide | **£199** +VAT |
| **Half page** | 121mm high x 178mm wide or 254mm high x 86mm wide | **£352** +VAT |
| **Full page** | 254mm high x 178mm wide | **£630** +VAT |

**For full-colour ads, add an extra £265+VAT to each of the above charges.**

**Advertisers in four consecutive quarterly editions of *Hotline* are entitled to a series rate where all of the above prices are discounted by 20% per insertion.**

## ADDED BENEFITS OF SERIES ADVERTISING

**As well as enjoying a 20% discount on the rates listed, advertisers in four consecutive editions of *Hotline* are, at no additional charge, entitled to:**

- **Feature in a one-off "advertiser profile" in *Hotline*.**
- **Appear on the Suppliers page of CHTA's website *(www.chta.co.uk/suppliers/46/).***
- **Post regular items in *Hotline's* "advertiser news".**

## 2020 DEADLINES

| Issue | Publication month | Order deadline | Copy deadline |
|---|---|---|---|
| ***Hotline* 159** | March | 7 February | 14 February |
| ***Hotline* 160** | June | 8 May | 15 May |
| ***Hotline* 161** | September | 7 August | 14 August |
| ***Hotline* 162** | December | 6 November | 13 November |

## COPY REQUIREMENTS

**High-resolution PDFs are preferred**

***Hotline* does not accept recruitment advertising.**

**For further details, contact *Hotline* Editor Alan J. Hick. Tel: 0121 329 2970; e-mail: *mail@chta.co.uk***

**Devoted exclusively to the UK heat treatment community**

## FORTHCOMING EVENTS

# Diary

**January 28 2020**
**PRINCIPLES OF HEAT TREATMENT**
**Rotherham, England** *www.amrctraining.co.uk*

**January 29 2020**
**PRINCIPLES OF HEAT TREATMENT**
**Coventry, England** *www.amrctraining.co.uk*

**January 30 2020**
**CHTA PUBLICITY SUBCOMMITTEE***
**Birmingham, England**

**February 13 2020**
**CHTA MANAGEMENT COMMITTEE***
**Birmingham, England**

**March 3-5 2020**
**HEAT TREAT MEXICO 2020**
**Queretaro, Mexico**
*www.asminternational.org/web/heat-treat-mexico/home*

**March 5-7 2020**
**6TH ASIAN CONFERENCE ON HEAT TREATMENT AND SURFACE ENGINEERING**
**Chennai, India** *http://6achtse.org/*

**March 25-27 2020**
**EUROPEAN CONFERENCE ON HEAT TREATMENT 2020**
**Antwerp, Belgium**
The emphasis of this English-language conference will be on carburising, carbonitriding and carbon-based surface engineering. *www.a3ts.org/echt2020/*

**April 21-22 2020**
**7TH CENTRAL EASTERN EUROPEAN HEAT TREATMENT FORUM & EXHIBITION**
*Wroclaw, Poland www.heat-treatment-forum.pl/homepage/*

**April 30 2020**
**CHTA PUBLICITY SUBCOMMITTEE***
**Birmingham, England**

**May 14 2020**
**CHTA MANAGEMENT COMMITTEE / AGM***
**Birmingham, England**

**June 3-5 2020**
**4TH MEDITERRANEAN CONFERENCE ON HEAT TREATMENT & SURFACE ENGINEERING**
**Istanbul, Turkey** *http://mchtse2020.com*

**June 9-11 2020**
**SUBCON 2020**
**Birmingham, England** *www.subconshow.co.uk*

**June 11-13 2020**
**21ST CHINA (GUANGZHOU) INTERNATIONAL HEAT TREATMENT & INDUSTRIAL FURNACE EXHIBITION**
**Guangzhou, China**
*www.julang.com.cn/english/reculi/index.asp*

**June 17-18 2020**
**A3TS 2020**
**Nantes, France**
47th congress on heat treatment and surface engineering held in parallel with the SVTM 2019 exhibition of vacuum technologies and materials treatment.
*https://sf2m.fr/events/47e-congres-du-traitement-thermique-et-des-traitements-de-surfaces/*

**July 21 2020**
**PRINCIPLES OF HEAT TREATMENT**
**Bristol, England** *www.amrctraining.co.uk*

**July 30 2020**
**PRINCIPLES OF HEAT TREATMENT**
**Preston, England** *www.amrctraining.co.uk*

**July 30 2020**
**CHTA PUBLICITY SUBCOMMITTEE***
**Birmingham, England**

**August 13 2020**
**CHTA MANAGEMENT COMMITTEE***
**Birmingham, England**

**September 16-18 2020**
**5TH INTERNATIONAL CONFERENCE ON THERMAL PROCESS MODELLING AND SIMULATION (ICTPMS)**
**Cavtat, Croatia**
*https://ifhtse.org/event/5th-international-conference-on-thermal-process-modelling-and-simulation-ictpms/*

# Market Movements

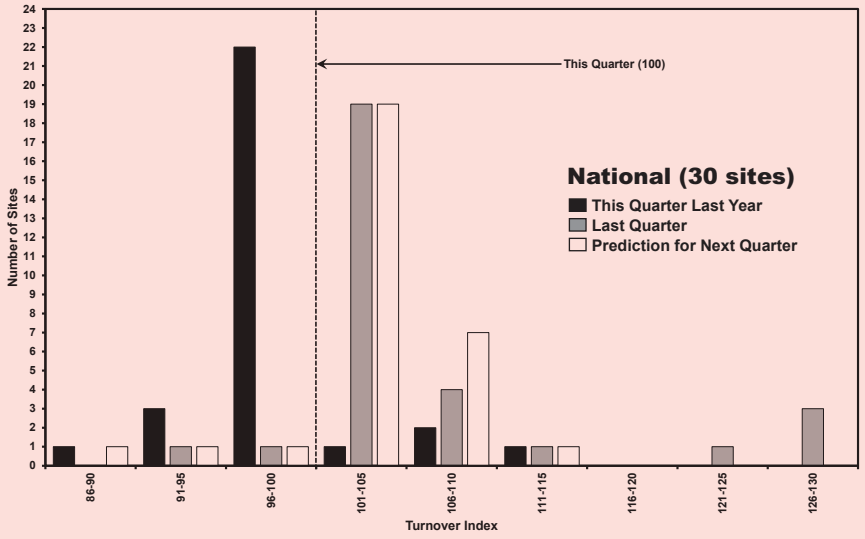
**ANALYSIS OF QUESTIONNAIRE REPLIES RELATING TO 30 CHTA MEMBER SITES**

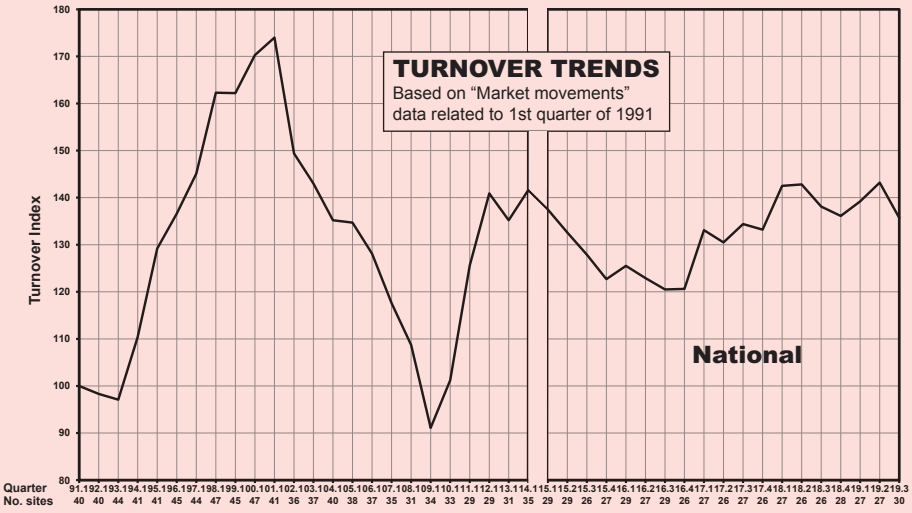
**"THIS QUARTER" =**

**1 JULY - 30 SEPTEMBER 2019**

**= TURNOVER INDEX 100**

| OVERALL ANALYSIS (30 SITES) | Mean index |
|---|---|
| This quarter last year | 99.0 |
| Last quarter | 105.5 |
| Predicted next quarter | 102.5 |




**September 23-26 2020**
**THERMPROCESS China**
**Shanghai, China**
*www.tubechina.net/en/exhibition/TPChina.html*

**September 30 – October 2 2020**
**FURNACES NORTH AMERICA 2020**
**Louisville, USA**
14th FNA conference and exposition produced by the Metal Treating Institute and its media partner, *Industrial Heating* magazine. *www.furnacesnorthamerica.com*

**October 13-15 2020**
**14TH HEAT TREAT SHOW – 2020**
**Mumbai, India**
India's largest exhibition/conference on heat treatment.
*www.htsindiaexpo.com/*

**October 20-22 2020**
**76TH HÄRTEREIKONGRESS**
**Cologne, Germany**
Heat treatment congress. *https://www.hk-awt.de/*

**Members wishing issues to be raised at CHTA meetings should notify CHTA's Secretary, well beforehand, at* mail@chta.co.uk.

## NICKEL PRICE (US$/lb)


**Please send comment and news items for March's *Hotline* 159 to: *mail@chta.co.uk***
**Deadline: February 14th**