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CHTA Secretariat

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Climate Change Agreements – an unrealistic target review

The Surface Engineering Association's **Dave Elliott** reports on Defra's "completely unrealistic" proposals for tightening CCA targets and appeals for the help of CHTA members in fighting them.

We have been informed by Defra that they are proposing to tighten our existing Climate Change Agreement targets for 2010 by 7.3% for the surface engineering sector and by 10.1% for the heat treatment sector. This means that the heat treatment sector is expected to make savings of around 17% from now until 2010 – an utter nonsense and completely unrealistic for the vast majority of companies therein.

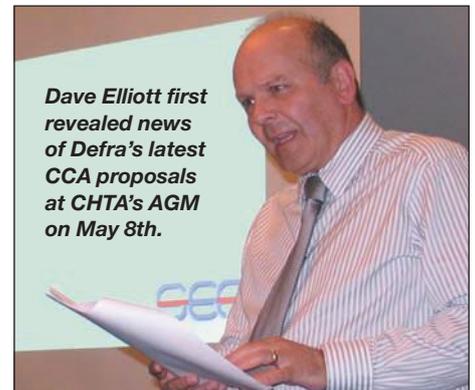
Defra explained their reasoning for this as follows:

"By way of background, you will recall that the original targets set in 2001 were estimated to achieve 2.5MtC savings annually by 2010 when measured against Business As Usual (BAU). These targets were revised in 2004 when, taking into account the addition of a number of new sectors, the estimated savings increased to 2.9MtC.

However, BAU projections were revised last year to take account of energy price rises. This increased the savings predicted due to BAU by 1MtC. Consequently, the estimated savings that the current CCA 2010 targets will achieve has fallen to 1.9MtC.

An across-the-board tightening of targets by 4%, plus the consolidation of overachievement, will enable the CCA targets to properly reflect the potential for cost-effective energy savings that are apparent from performance in the first three target periods.

This will also address concerns of the Environmental Audit Committee that the current 2010 targets are too lax. The Committee has recommended that: "Given both that targets have been readily overachieved so far and that meeting



Dave Elliott first revealed news of Defra's latest CCA proposals at CHTA's AGM on May 8th.

them should have saved participating firms money, and given the overall imperative to accelerate carbon reductions, we recommend that targets are considerably toughened at the next milestone period."

We will be opposing these proposals strenuously but require the help of CHTA members in providing documented evidence that shows that the proposed target tightening is not achievable by the vast majority of companies in our sector.

If you have documentation that may prove useful in our discussions, then please do not hesitate to contact me. In particular I'm looking for items such as Carbon Trust energy surveys which highlight potential savings. I'm sure that these will show that the targets proposed by Defra are both unachievable and unrealistic.

What better way than to provide them with evidence from another Government-funded source!

The requested evidence should be addressed to: Dave Elliott, CEO, Surface Engineering Association, Federation House, 10 Vyse Street, Birmingham B18 6LT (e-mail: Dave.Elliott@sea.org.uk; tel: 0121 237 1123; fax: 0121 237 1124).

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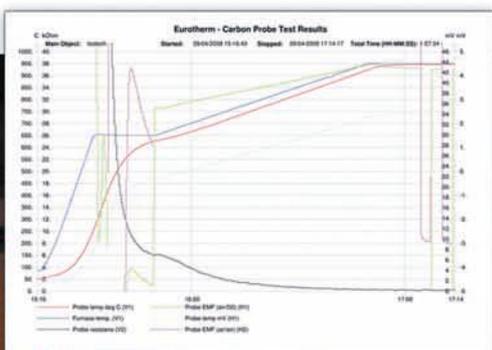
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3G Plus - new solution delivers quality improvements for gas carburising processes

Nigel Tucker outlines one of the advances for heat treatment control/management introduced by Hotline advertiser Eurotherm Ltd.

In the two major global markets (aerospace and automotive) served by the heat treatment industry, quality has always been one of the driving forces. To many heat treaters, the concept of quality is a double-edged sword; on the one hand, a cost to be borne to compete in these markets and, on the other, a competitive advantage to those companies able to achieve higher levels of accreditation and product than their peers.

Regulatory standards are driving process control and quality higher up the agenda of the users of heat-treated products. Advances in furnace control are enabling heat treaters to meet these demands in a cost-efficient manner. As Henry Ford, the grandfather of today's automotive industry, once observed: "Quality means doing it right when no one is looking."

CONTEMPORARY FURNACE CONTROL

The ability to measure and control all parameters in a process enables a company to assure the quality of its products.

The gas carburising process is a cornerstone in the modern production of automobiles and aircraft, as well as many other industries. However, the critical process of dissolving carbon atoms into the surface of the steel component takes place in a furnace when no one is looking. Contemporary control systems allow the user to control many of the key process variables, but they work on the principle that the levels of certain unmeasured furnace gases, such as carbon monoxide and methane, remain constant throughout the process. The nature of the carburising process means that the furnace atmosphere will vary during the process, and the level of uncracked methane in the furnace does have an effect on the end result. This can be overcome by the use of a "correction" factor, a constant calculated when the furnace is commissioned and applied to furnace recipes, which enables the user to produce the required case depth.

However, most furnaces run many different loads over different cycles, and a single constant is unable to deal with the variations of multiple variables in different circumstances. This makes the rate of

carburising and the resulting case depth more difficult to predict, and can lead to poor quality and scrap where case depths do not meet customer requirements.

Carbon probe limitations

A carbon (oxygen) probe has high repeatability and is a good comparator with rapid response, but the accuracy is overstated for a variety of reasons:

High millivolt outputs:

- the probe sheath material construction (nickel alloy / platinum) can result in the catalytic breakdown of free methane into CO and H₂, resulting in high millivolt outputs in high free-methane atmospheres;
- sooting – ineffective carbon probe burn-offs (probe cleaning) will result in high local levels of carbon potential (Cp).

Low millivolt outputs:

- contamination of reference air;
- sensor leakage.

HOW ERRORS CAN CREEP INTO A PROCESS

Non-equilibrium atmospheres

All manufacturers' carbon-potential calculations assume equilibrium gas conditions; that is, the main furnace gas reactions are in balance. These conditions rarely exist in a furnace and will take many hours to come into equilibrium.

For example, it is assumed that the CO content in endothermic carrier gas, produced from methane, is 20%. At the start of a heat treatment cycle, the CO content may fall to 16%, recovering to 20% over an hour or so. The calculated Cp assumes a constant value for CO content in the furnace atmosphere. Because it varies, there is a need to use a

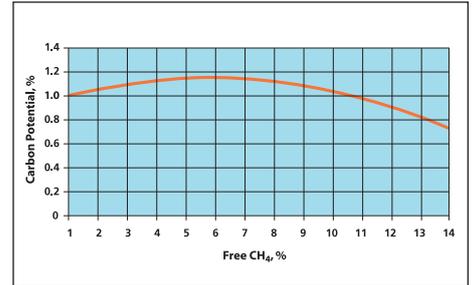


Fig.1. The effect of free methane on carbon potential.

correction factor in the Cp calculation to compensate, and this will be an average value over the total cycle.

Carrier-gas variations

The CO content in the furnace carrier gas may vary depending on the source: For endothermic gas generators (typically 20% CO):

- condition of the generator catalyst;
- air:gas ratios.

For nitrogen/methanol systems (typically 16-20% CO):

- ratio deviations;
- methanol impurities;
- nitrogen bubbles in methanol;
- condition of vaporiser;
- low furnace temperature – poor cracking.

The effect of free methane

In an atmosphere with significant free methane, carburising takes place but, as the level of free methane increases, it has a dilution effect on the atmosphere, thereby reducing the overall %CO. Without measuring and taking into account the effects of free methane in the carbon potential calculation (Fig.1), the real carbon potential is not known.

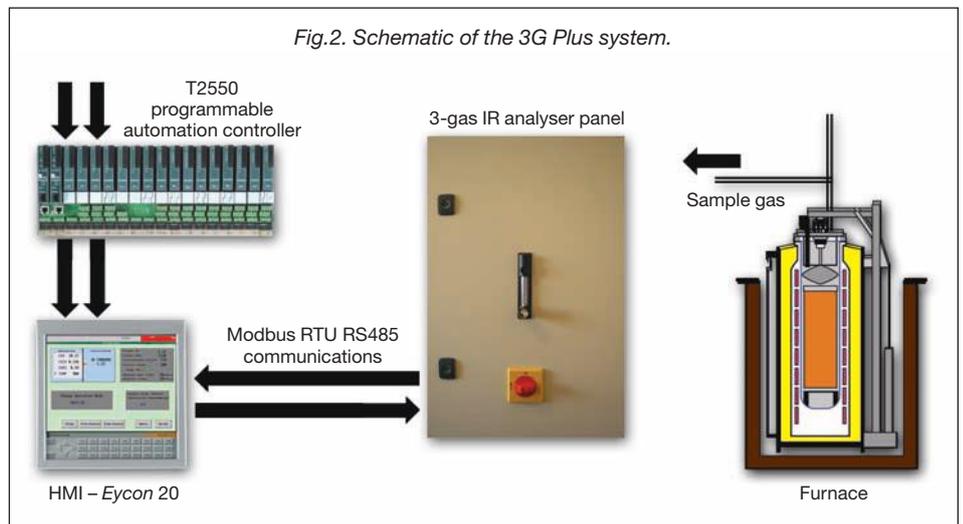


Fig.2. Schematic of the 3G Plus system.

A NEW VISION OF YOUR PROCESS

Released in early 2008, the Eurotherm "3G Plus" system takes the quality assurance of gas-carburising furnaces to a new level. Designed to eliminate re-work and scrap by giving the furnace control system the most comprehensive vision of the furnace atmosphere, the 3G Plus system measures the levels of CO, CO₂ and CH₄ in the furnace atmosphere. It uses these to apply a compensation to the oxygen probe reading in order to calculate the true instantaneous carbon potential in the furnace.

3G Plus is intended as an enhancement to Eurotherm's LIN-based atmosphere control solution based on Eycon and T2550 controllers. It is a single-point system dedicated to one furnace (Fig.2).

The 3G Plus analyser extracts the furnace atmosphere, using its internal sample pump, via the sample line, filters and flowmeter. The furnace atmosphere content of CO, CO₂ and CH₄ is analysed by three individual NDIR analysers (one for each gas). The 3G Plus system calculates the "IR Cp", based on the values of the gases CO, CO₂, CH₄ and temperature, to determine accurately the furnace atmosphere carbon potential.

3G Plus then calculates a correction factor, based on the IR Cp, that is required to make the carbon-probe Cp = IR Cp. When the 3G Plus system is in active mode, the calculated correction factor is applied to the carbon-probe Cp calculation.

The result: the carbon potential now reads the same as the calculated IR carbon potential. The carbon probe may be sooted, or even failing – 3G Plus will compensate. The absolute accuracy of the carbon probe becomes unimportant. The carbon probe handles the second-to-second Cp control loop, its calculated Cp being regularly updated by the 3G Plus system.

The type of correction factor employed is user-selectable based on one of the following:

- process factor;
- CO factor;
- probe mV offset.

Trials have shown that a furnace controlled using the Eurotherm 3G Plus system is three times more accurate than one regulated with an oxygen probe alone, with a tolerance of ±0.06% of Cp.

Integrating the 3-gas analyser, within the furnace control system, enables highly-repeatable treatments, with quality built into the process. In an industry where quality is paramount, the 3G Plus adds a new dimension of accuracy and repeatability to process control.

Professor Tom Bell

Many of us will have fond memories of Professor Tom Bell FEng who sadly passed away on April 17th, a month short of his 67th birthday. Primarily, we think of him as a highly-regarded leading figure in the worldwide heat treatment and surface engineering community. At his April 23rd funeral mass at St Joseph's Church in Blundellsands, near his native Liverpool, the huge congregation heard that he managed to accommodate so much more into a very full life.

Achievements

Summarising such a life is not easy. As long-time friend Brian Birch observes in the Bodycote website tribute "A Sad Day for Surface Engineering":

"It would take a substantial volume to record all of Professor Bell's achievements. Hopefully, one day the International Federation for Heat Treatment and Surface Engineering (IFHTSE), the organisation he helped to found and for which he worked tirelessly for some four decades, will be prevailed upon to produce such a book."

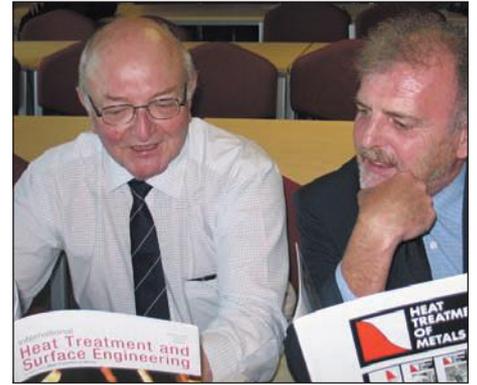
IFHTSE Secretary-General Bob Wood concurs. In his obituary in the May edition of *Materials World*, he writes:

"Tom Bell made a broad, deep and highly-visible impact nationally and globally on his field – heat treatment and surface engineering – which no simple CV can even begin to describe. He was recognised over a period of nearly 40 years as an effective communicator of science and technology, a teacher, and a multi-disciplinarian. He influenced progress from the viewpoints of materials science, materials engineering, design engineering, tribology, economics, and environmentally-benign process development."

"Originator of the concept and term 'surface engineering', and its foremost promoter, Tom's effective teaching has produced graduates that are now contributing to progress in this field worldwide. He bridged the gap between academia and industry more effectively than most, serving as a consultant to Bodycote and many other companies for around 35 years."

Bob goes on to highlight some of Tom's many achievements including:

- his academic career (University of Liverpool / Hanson Chair of Metallurgy at the University of Birmingham / many honorary professorships and doctorates);
- his pioneering research (particularly into nitriding, ferritic nitrocarburising and the surface engineering of titanium);
- his editorship of *Surface Engineering* journal;
- his devotion to the cause of IFHTSE



One of Tom Bell's last major projects was 2007's introduction of *International Heat Treatment and Surface Engineering* journal, of which he was Joint Editor. Here, with Alan J. Hick (right), he compared it with *Heat Treatment of Metals*, which the new publication incorporates.

and other international organisations (e.g. as UNIDO's Senior Technical Adviser to the People's Republic of China);

- his receipt of copious awards worldwide (including being made an Academician of the Chinese Institute of Mechanical Engineers, a rare honour for a Westerner).

Support

My own personal memories of a good friend? Tom Bell was responsible for my having what my peers were to describe as "the best job in heat treatment"!

We first met in the early 1970s when Tom was conducting research for his *Survey of the Heat Treatment of Engineering Components*, instigated by the Heat Treatment Joint Committee of The Iron and Steel Institute, The Institute of Metals and The Institution of Metallurgists.

One of the recommendations of his famed ultimate report, the formation of a national heat treatment advisory bureau in the UK, resulted in Aston University setting up the Wolfson Heat Treatment Centre in 1973, with me fortunate enough to be appointed Manager. Tom was ever supportive, contributing some classic articles for Wolfson's *Heat Treatment of Metals* journal, which I was proud to edit.

Wolfson soon became the first Secretariat for CHTA, in its formative period 35 years ago. Again, Tom offered encouragement, generously acknowledging (in *Surface Engineering*, 2004) the Association's "high professional standards".

Encouragement of others was a trademark of Tom Bell, a unique character who will be much missed. A dedicated family man, he in turn received massive support, throughout his career, from his wife Catherine and his six children and extended family. CHTA's sincere condolences go out to them all.

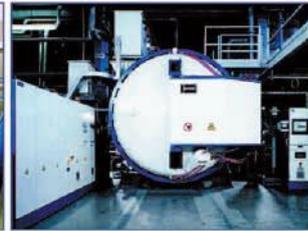
Alan J. Hick



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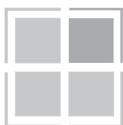
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CHTA Chairman Paul Handley (Heat Treatment 2000 Ltd) flanked by company colleague Paul Barber (left) and SEA CEO Dave Elliott.



(L. to r.) Simon Day and Arron Rimmer of ADI Treatments Ltd with Wallwork's Mike Allen and Richard Burslem, CHTA's Junior Vice-Chairman.



Mohamad Mirza of new CHTA member Workheath Heat Treatment Ltd, CHTA Secretary Alan J. Hick and Kevin Bannister (Tamworth Heat Treatment Ltd).



CHTA AGM

A healthy 35% of member sites were represented amongst the 30 delegates that attended CHTA's May 8th Annual General Meeting, the 30th since the Association became incorporated as a company limited by guarantee in 1978. Staged for the first time at the National Motorcycle Museum, Solihull, the event proved an excellent opportunity for convivial networking, useful updates by CHTA's Chairman and SEA's CEO, and a lively open-forum discussion of some of the important issues currently challenging our sector.



CHTA Management Committee members Roger Haw (Flame Hardeners Ltd), Mark Florance (Techniques Surfaces (UK) Ltd) and Roger Bird (TTI Group Ltd).



Vladimir Murawa (Holt Brothers (Halifax) Ltd), Peter Carpenter (Wallwork Heat Treatment Ltd) and Wallwork's Simeon Collins, the new Chairman of CHTA's Publicity Subcommittee.



Stuart Robertson (HHT (Midlands) Ltd), Simon Cockfield and Chris Kenward (both Ajax Tocco International Ltd).



Mike Leach (Alpha-Rowen Treatments Ltd) and Keith Laing (TTI Group Ltd).



Kevin Rowen (Alpha-Rowen Treatments Ltd), Alan Whitehouse (Tamworth Heat Treatment Ltd), Nick Archer and Peter Stokes (both Century Heat Treatment & Plating Co. Ltd) and Dave Walker (Beta Heat Treatment Ltd).



CEO Dave Elliott updates on relevant activities of the Surface Engineering Association, to which CHTA is affiliated.

Customers of CHTA members are contending with rapidly-increasing steel prices. A recent briefing paper from UK Steel, abridged here, explains why...

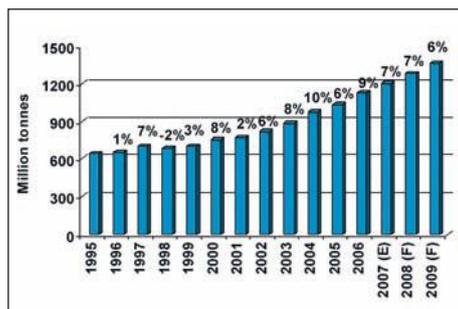
Analysis of steel price developments – Spring 2008

This paper summarises recent developments in the global steel market and the implications for steel prices in the UK. Global steel demand continues to show strong growth – particularly in a number of key newly-industrialising countries. This in turn is putting pressure on the supply of steelmaking raw materials, resulting in rapid price increases – most notably for iron ore. Together with escalating freight and energy costs, these developments are in turn forcing steel producers around the world to raise their prices. The UK and EU steel market is no exception to this global trend. All producers are rapidly raising their prices as they seek to recover the cost increases. UK Steel's members understand the impact on UK steel consumers. However, this is a global phenomenon, and UK consumers' foreign competitors will be similarly affected. Furthermore, as this paper also demonstrates, steel prices still remain historically low in real terms.

STEEL CONSUMPTION

World steel consumption has continued to grow at historically high rates, and this trend is forecast by the International Iron and Steel Institute (IISI) to continue. Graph 1 is based on IISI forecasts produced in March 2008.

China continues in volume terms to be the main driver of this growth. Although Chinese demand growth has abated somewhat from the peaks reached in the early years of the decade, it is still rising at nearly double the global average rate.



Graph 1: World apparent consumption of finished steel products (million tonnes). Source: International Iron and Steel Institute.

Table 1: Forecast steel consumption in 2008 compared with 2007. (Source: International Iron and Steel Institute).

Region	2008 Forecast		
	Million tonnes	Change over 2007, %	Share of world total, %
EU27	195.3	+1.6	15.2
Other Europe	33.1	+6.0	2.6
CIS	60.5	+8.9	4.7
NAFTA	144.2	+1.9	11.3
Central & South America	44.6	+8.9	3.5
Africa	26.8	+5.9	2.1
Middle East	49.2	+11.1	3.8
China	455.1	+11.5	35.5
India	55.3	+8.9	4.3
Japan & Korea	137.3	+1.8	10.7
Other Asia	71.9	+5.6	5.6
Oceania	8.8	+2.0	0.7
WORLD TOTAL	1282.1	+6.7	100.0

China is forecast to consume 35% of the world's steel this year (Table 1), compared with only 15% in 1995.

Other countries and regions however also continue to experience strong growth. This growth continues primarily to be focused in a number of developing countries, the CIS and the Middle East. Russia, Argentina, Brazil, Peru, Saudi Arabia, China, Indonesia and Vietnam are all predicted to enjoy double-digit growth this year as, in Europe, are Poland, Romania and Serbia. For the so-called BRIC (Brazil, Russia, India and China) countries in total, growth is forecast at 11%.

While the EU is forecast to be more subdued in 2008, this follows a relatively strong performance in 2006 and 2007. Demand is also forecast to pick up in the USA this year, after the sharp drop experienced in 2007.

INPUT COSTS

The constantly-increasing demand for steel is in turn causing tight supply of, and pushing up the price for, most steelmaking raw materials, at the same time as most other costs are continuing to rise.

Iron ore

Iron ore is sold on an annual contract basis. After a couple of more subdued years, the 2008 contract price looks set to rise by 65%, based on settlements reached by a number of important companies with the Brazilian mining company Vale (formerly CVRD), the major supplier to Europe. Since 2004, iron ore prices have increased by nearly 300%.

The world iron ore industry is highly concentrated, with the top three suppliers (BHP Billiton, Vale and Rio Tinto) accounting for around 75% of the market. Steelmakers have warned that a

successful takeover of Rio Tinto by BHP Billiton would increase the market power of the iron ore miners still further, creating in effect a duopoly. This would put further upward pressure on ore prices in the future.

Coking coal

Although coking coal prices have been trending downwards since their peak in 2005/06, they remain at historically high levels – over double the level they were in 2004. Recent supply problems in Australia have created shortages in the market, with at least one miner declaring force majeure, and spot prices have been reported as being up to 50% higher than the contract price. Analysts are predicting significant contract price rises in 2008 of between 60% and 100%.

Coke

In contrast, prices for internationally-traded coke have started soaring again in the past year. The EU steel industry is not self-sufficient in coke, and relies on imports to meet shortfalls in domestic production.

Scrap

Scrap prices have always been volatile, but the surge in recent weeks has been exceptional. Prices in the UK rose by nearly 40% in the first few weeks of 2008. This has been driven by strong demand for scrap from third country steel-producing markets. Increases in other European markets have been less dramatic, but have still been around 20%.

Other feedstock

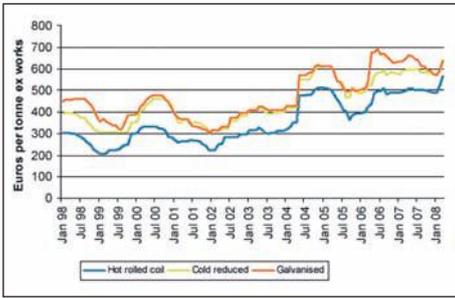
Unsurprisingly, these cost increases have also fed through to semi-processed feedstock. World billet prices for example have surged, impacting on UK rollers, regardless of whether they source from within the UK or from overseas.

Shipping

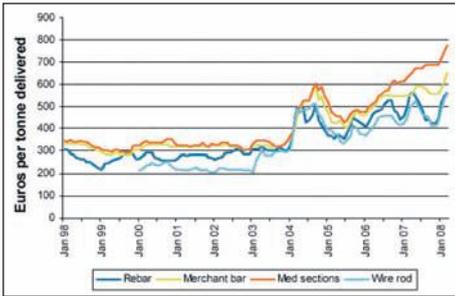
Driven by a shortage of vessels, shipping costs have escalated dramatically. By December 2007, one-year time charter rates were 250% higher than the 2006 average. Rates slipped back in the new year, but have recently started to rise again, and are forecast at least to return to December levels.

Energy costs

Like the rest of UK manufacturing, the steel industry has been experiencing high energy prices. Forward prices for both gas and electricity are showing worryingly high increases, with the UK electricity prices once again outstripping those of our main Continental competitors. Steel manufacture is of course highly energy-intensive.



Graph 2: North European flat product prices. (Source: Steel Business Briefing).



Graph 3: European long product prices. (Source: Steel Business Briefing).

IMPACT ON STEEL PRICES

In the light of these developments, steel-makers and re-rollers have had no choice but to seek to recoup their higher input costs through price increases. Graphs 2 and 3 show transaction prices as recorded by the independent steel industry journal, *Steel Business Briefing*.

After nearly two years of being more or less stable, prices for strip mill products started rising in February, and are already 13% up on average since the beginning of the year.

Long product prices in Europe have been more volatile, because of the strong link to scrap prices. On average, long product

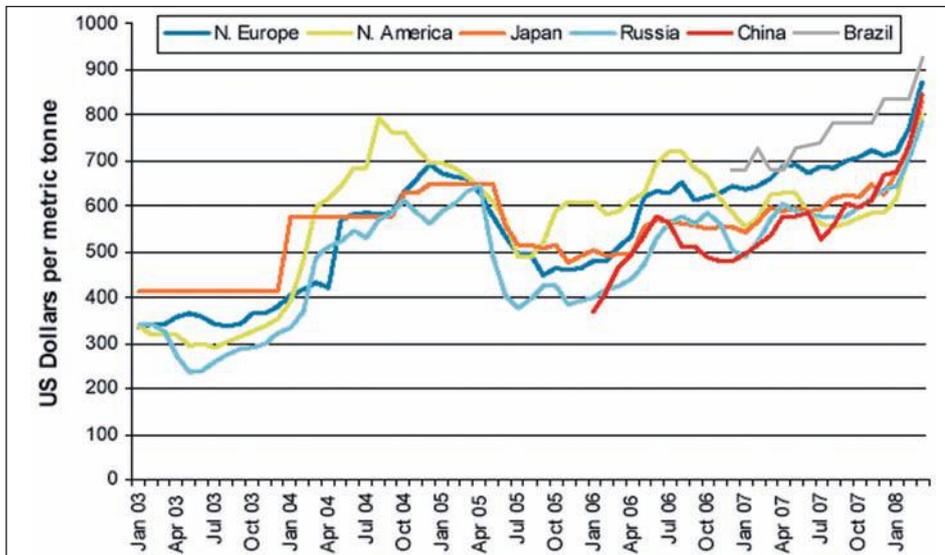
prices have risen by 20% since December, roughly the same as the 19% increase in scrap prices. Within this however, reinforcing bar and mesh quality wire rod prices have been rising consistently since November, and at a far faster rate – 32% and 35% respectively – reflecting tight market conditions. All four long products monitored have now reached record high levels – most notably for medium sections. Graphs 2 and 3 show prices as recorded in the market through to March 2008. The recent iron ore price settlement and concerns over surging coking coal prices have forced steel companies to announce a series of further price increases for the April to June quarter. Table 2 lists a selection of recent announcements by the three main EU producers.

INTERNATIONAL DIMENSION

As previously stressed, the upwards pressure on steel prices is part of a global phenomenon. It is driven by the global growth in demand; and the increases in iron ore, coking coal, shipping and energy prices affect all steel producers regardless of their location*. Thus steel prices are moving in parallel in all the main regional markets.

**The main exception to this statement relates to steel companies who are backwardly integrated, with their own ore or coal resources. Because the increases in world ore and coal prices are not related to cost increases, backwardly-integrated steel companies have been able to take advantage of the increases in steel product prices by greatly increasing their profit margins. This does not apply to Western European producers (although ArcelorMittal does have access to iron ore at several of its non-EU plants).*

Graph 4: International price comparison for hot-rolled coil. (Source: Steel Business Briefing).

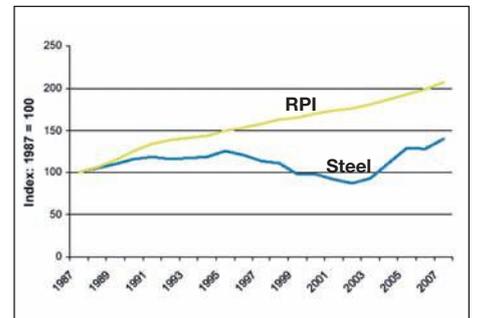


Notes: North European prices are the same as those used in Graph 2; i.e. ex works for domestic shipment, converted into US dollars. North America: Domestic price FOB mid-west mill. Japan: Domestic price FOT. Russia: Export price, FOB Black Sea port. China: Export price, FOB Shanghai. Brazil: Domestic price, delivered.

Table 2. Recent announcements of further price increases.

Date	Company	Product	Detail of increase
6 Feb.	Corus Tubes	Cold-formed hollow sections	£50 p.t. from end of Q1
7 Feb.	Corus Construction & Industrial	Structural sections	£60 p.t. from 30 March
13 Feb.	Corus Strip UK	Flat rolled	£80-106 p.t. from 1 April
18 Feb.	Corus Strip IJmuiden	Flat products	Up to €100 p.t. from 1 April
22 Feb.	Arcelor-Mittal	Flat products	€40 p.t. for Q2, following earlier €50 p.t. increase
3 Mar.	Corus Construction & Industrial	Wire rod	£70-90 p.t. from 31 March
7 Mar.	Thyssen-Krupp	Flat products	€100 p.t. increase for Q2 already successfully implemented

Graph 4 tracks price movements around the world for the benchmark product hot-rolled coil. It will be noted that, not only are the trends identical throughout the world, but, with the exception of the high domestic prices recorded for Brazil, hot-rolled coil prices in all markets are currently clustered in the \$800 to \$870 per tonne range.



Graph 5: Steel price movements compared with the Retail Price Index. (Source: ISSB).

STEEL IS STILL GOOD VALUE

Despite the price increases of recent years, steel remains far cheaper than many other products. Graph 5 plots the prices of a basket of steel products in the UK compared with the retail price index over the past two decades.

After eight successive years of absolute price reductions, steel prices only started picking up in 2003. While steel prices in 2007 were 53 points higher than in 2002 (compared with a 31 point increase in the RPI over the same period), steel remains 32% cheaper in real terms than it was in 1987.

This is an extensively-abridged version of the UK Steel briefing paper that can be found in full at: www.uksteel.org.uk/Download/Market%20survey_Mar08.pdf.

Member news

NEW DLC PROCESS COATS INTERNAL BORES

Tecvac Ltd of Swavesey, Cambridge, a member of the Wallwork Group, now offers a DLC (diamond-like carbon) coating process that coats internal bores, pipes, cylinders, tubes and pump parts to thicknesses of up to 50 microns. *InnerArmor™*, an enhanced plasma coating process, will coat internal surfaces up to 3m in length.

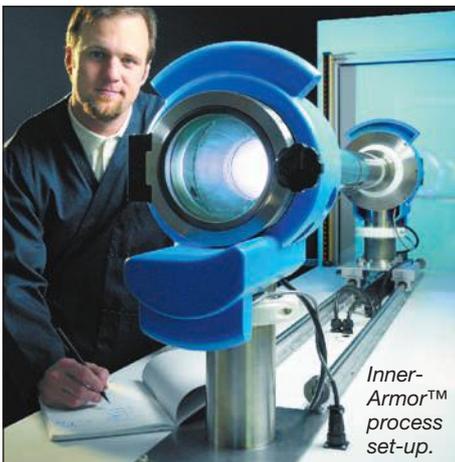
Developed by Sub-One Technology, the new process provides a very hard corrosion-resistant film which is inert, biocompatible and environmentally friendly, and can reduce friction losses to very low levels.

Tecvac has already identified applications in aerospace, fluid engineering, medical devices and powder processing. The company expects to find many other internal applications where DLC coating has previously proved difficult or impossible to apply.

The *InnerArmor™* process creates DLC surfaces with a 'glass-like' amorphous (non-crystalline) structure, free from pinhole defects, even in tube lengths exceeding 3m at aspect ratios of 1:45. This provides internal bores and tubes with very high levels of protection from erosion, scaling and fouling, and prevents adhesion from gases, liquids, powders and slurries.

InnerArmor™ DLC coatings can be conducting or insulating, and can withstand high loads at operating temperatures of 450°C. Coating application temperatures, for a variety of formulations, are below 200°C. This enables many hollow engine parts to be coated with DLC, and allows the replacement of expensive high-performance alloys with lower-specification steels.

Tests with the new *InnerArmor™* DLC process demonstrated superlative



Inner-Armor™ process set-up.

corrosion resistance and wear performance, and consistent film hardnesses of 3000HV. High performance was shown in salt-spray tests to meet US standards. Very high wear resistance in these tests was indicated by a very low attrition rate of less than 0.0005 microns per hour.

Tecvac can coat internal bores to thicknesses of between 5 and 50 microns. The *InnerArmor™* process provides superior film bonding compared with other deposition methods. It offers all interior bore coating applications a high-performance environmentally-friendly process that yields the highest levels of corrosion protection, wear resistance and energy efficiency.

FURTHER INVESTMENT AT THT

Tamworth Heat Treatment Ltd (THT) have recently acquired two new furnaces.

The most recent, installed in April, is a dual-based plasma nitriding furnace from Rubig of Austria. The environmentally-friendly and energy-efficient unit uses



three-zone heating of the work chamber, controlled via the *Windows*-based process control system. The equipment has two bases and the retort automatically transfers to the second base at cycle end and starts the pre-programmed process.

There is an integral video camera for viewing the load during process. This duo system has minimised downtime between processes, thereby improving productivity. The furnace can process items up to 1.2m long, including stainless steels, general engineering steels and low-alloy steels.

The second furnace, a vacuum tempering unit from TAV in Italy, came on stream in January. The specially-designed heating elements and graphite hot zone allow temperature control of $\pm 5^\circ\text{C}$ from 350 up to 750°C in vacuum, partial pressure of nitrogen or convection heating using nitrogen. The control system is by Eurotherm with a Siemens PLC. Items up

Spread the word by proclaiming your CHTA membership



For use on company letterheads, literature, websites and advertisements, members can download CHTA's logo from the Members Area of the Association's website.

to 1m in length and 600kg in weight can be accommodated.

There has always been regular investment in new equipment at THT. These latest furnaces allow the company to further its services to motorsport, oilfield, aerospace and other demanding niche markets.

Please send your news items for Hotline 113 to mail@chta.co.uk
Deadline: August 29th

SEA

SEA Awards 2008

Recognising and celebrating excellence in all branches of member operations, the 2008 SEA Awards ceremony will be held in the prestigious surroundings of the House of Lords on Friday 24th October.

The generosity of the award sponsors has enabled the SEA to run the event at no charge. As space is limited, attendance will be confined to award finalists, their guests and the sponsors. Members are therefore urged to propose award candidates as soon as possible.

Open to nominations from CHTA members, the award categories are: Marketing; Quality; Environmental; Outstanding Company Achievement; Ray Alford Award for Individual Achievement. The closing date for nomination submission is 5th September.

For full details, contact Diana Blair at SEA (e-mail: diana.blair@sea.org.uk; tel: 0121 237 1161).

HEAT TREATMENT: EVER CRUCIAL

Rarely does heat treatment get a mention on national television. However, the presenter waxed lyrical in the April BBC programme *Stephen Fry and the Gutenberg Press*. In describing the manufacture of the typeface punch, by 15th-century printing press inventor Johann Gutenberg, Mr Fry observed:

"It's hand-carved & grooved & shaved & emiered & rasped & shaped & hardened and tempered. And now that is the key that unlocks the technology that changes the world. The punch: beautiful!"

Diary

July 14-20 2008

FARNBOROUGH INTERNATIONAL AIRSHOW

Farnborough, England

www.farnborough.com

July 31 2008

CHTA PUBLICITY SUBCOMMITTEE*

Birmingham, England

August 7 2008

CHTA MANAGEMENT COMMITTEE*

Birmingham, England

September 17-19 2008

2ND INTERNATIONAL CONFERENCE ON

DISTORTION ENGINEERING

Bremen, Germany

English-language event:

www.distortion-engineering.de/IDE2008

September 23-24 2008

VACUUM CARBURISING SYMPOSIUM

Dearborn, Michigan, USA

www.ald-holcroft.com/VacuumCarburizingSymposium.aspx

September 23-25 2008

ALUMINIUM 2008

Essen, Germany

7th world trade fair and conference:

www.aluminium2008.com

September 29 - October 1 2008

EURO PM2008

Mannheim, Germany

International powder metallurgy exhibition and

congress: www.epma.com/pm2008

October 1 2008

BIFCA Technical Series:

BURNER TECHNOLOGY & SELECTION

West Bromwich, England

www.bifca.org.uk

October 1 2008

INTRODUCTION TO HEAT TREATMENT

Rotherham, England

www.namec.co.uk

October 1-2 2008

NORTHERN MANUFACTURING EXHIBITION

Sheffield, England

www.industry.co.uk

October 8-10 2008

64TH HÄRTEREI-KOLLOQUIUM

Wiesbaden, Germany

German-language heat treatment conference and

exhibition: www.awt-online.org

October 14-16 2008

UNDERSTANDING HEAT TREATMENT

Birmingham, England

73rd repeat of Wolfson's well-established course.

Details from Derek Close, Wolfson Heat Treatment

Centre, Federation House, 10 Vyse Street, Birmingham

B18 6LT (tel: 0121 237 1122; fax: 0121 237 1124;

e-mail: derek.close@sea.org.uk; www.sea.org.uk/whtc

October 20-21 2008

FURNACES NORTH AMERICA 2008

Nashville, Tennessee, USA

The Metal Treating Institute's conference and

exposition: www.heat treatonline.com/fna2008/

October 24 2008

SEA AWARDS

London, England

www.sea.org.uk

October 27-30 2008

17TH IFHTSE CONGRESS

Kobe, Japan

www.iffhtse2008.org

November 5-6 2008

MANUFACTURING TECHNOLOGY IRELAND

Dublin, Eire

www.industry.co.uk

November 6 2008

CHTA PUBLICITY SUBCOMMITTEE*

Birmingham, England

November 11-13 2008

HEAT TREATMENT 2008

Moscow, Russia

www.mirexpo.ru/eng/exhibitions/heat_treat08.shtml

November 13 2008

CHTA MANAGEMENT COMMITTEE*

Birmingham, England

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

ADVERTISEMENTS

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- **Project engineering and consultancy services**
- **Process development and optimisation**
- **Energy conservation**
- **Environmental control**
- **Thermal calculations**
- **Metallurgical investigations**
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E-mail: sales@thermetal.com Web: www.thermetal.com

Advertising in *Hotline*

Hotline is not just a vehicle for advertising from suppliers to the trade; advertisements from CHTA members are also welcome.

The 2008 single-insertion charges for black-and-white ads are:

- Quarter page (121mm high x 86mm wide): £173+VAT;
- Half page (121mm high x 178mm wide or 254mm high x 86mm wide): £305+VAT;
- Full page (254mm high x 178mm wide): £546+VAT.

For full-colour ads, add an extra £230+VAT to each of these charges.

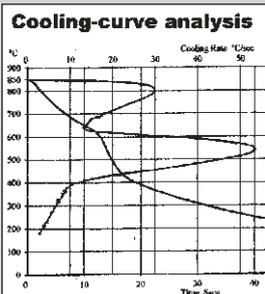
Advertisers in four consecutive quarterly editions of *Hotline* are entitled to a series rate where all of the above prices are discounted by 20% per insertion.

The deadline for booking ads in September's *Hotline* 113 is August 22nd. For further details, contact *Hotline* Editor Alan J. Hick (tel: 0121 329 2970; e-mail: mail@chta.co.uk).

Quench oil regeneration

COST-EFFECTIVE / ENVIRONMENTALLY SOUND

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- Negates disposal problems.
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- Accredited to ISO 9001/2000 and ISO 14001.



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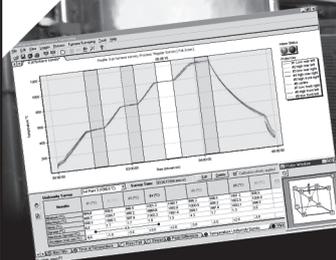
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Fax: +44 (0)1223 423306

Email: sales@datapaq.co.uk

Web: www.datapaq.com

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Over 300 installations worldwide!

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- Process Masters
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- Pricing & Invoicing
- Sales Reports
- Digitized Pictures
- Furnace Link
- And much more...

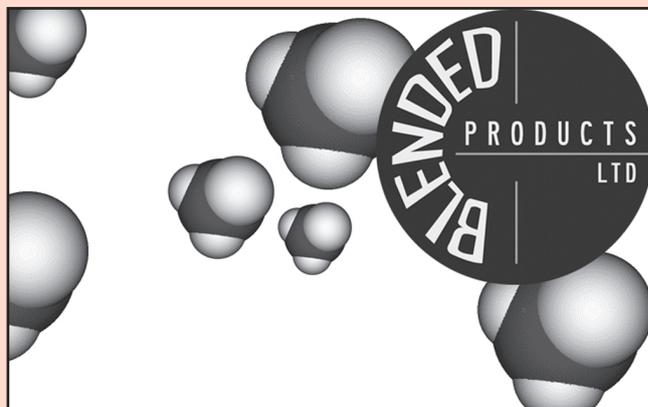
Cornerstone Systems Inc.

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Reducing costs with heat-resistant jiggging

Site Director Peter Carpenter describes the activities of long-time Hotline advertiser **Wallwork Cast Alloys**.

For heat treatment temperatures above 750°C, we must use some form of heat-resistant jiggging in order to achieve a reasonable life. Most heat-resistant alloys are based on various mixtures of Ni/Cr/Fe, all of which have increased significantly in price in the last two years, impacting on the profitability of contract heat treatment. Careful management of these jigs and fixtures has never been more important. Common practices which are reducing the heat treater's profit margin include:

- Use of the wrong alloy for a particular temperature – causing premature failure or excessive cost of jiggging.
- Use of old-fashioned heavy badly-designed jiggging – the jigs are more expensive and a greater amount of energy and time is required for a given cycle.
- Keeping excessive amounts of expensive jigs on site – this ties up cash, is an invitation to thieves, and should not be necessary if your supplier can offer prompt delivery and a buy-back scheme for scrap jigs.
- Using the wrong or badly-deformed jigs – poor furnace loading densities and failures causing furnace downtime and damaged components.

A subsidiary of the Wallwork Group, Wallwork Cast Alloys (WCA) manufactures a complete range of specialist castings for the heat treatment industry at its own foundry in Bury, Lancashire.

As a supplier to many heat treatment sites in the UK, including other members of the group, WCA is in an unprecedented position to develop lightweight, precision, bespoke heat-resistant castings. All castings that are returned to WCA are examined for the mode of failure and suitable modifications made to the next batch to extend the life.

With the rising cost of energy over the last



Precision at WCA.

Market Movements

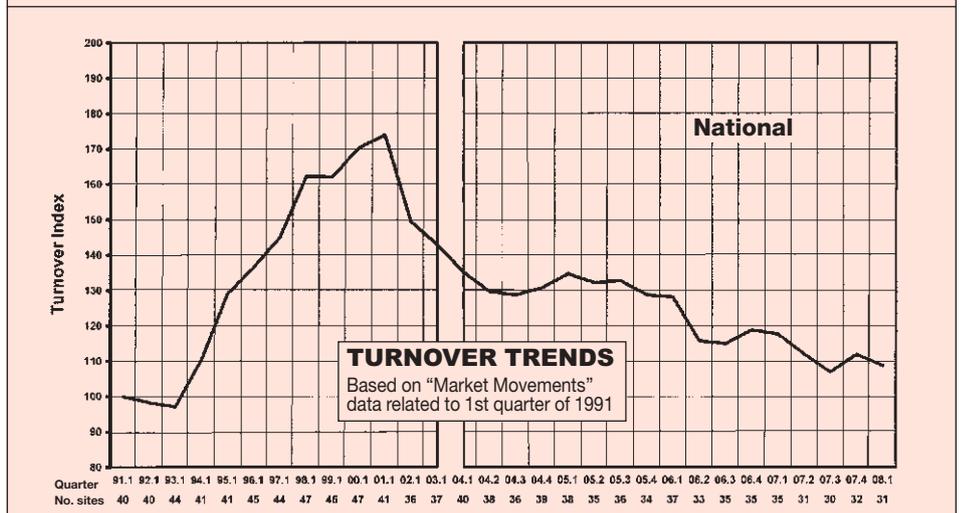
ANALYSIS OF QUESTIONNAIRE REPLIES RELATING TO 31 CHTA MEMBER SITES

“THIS QUARTER” =
1 JANUARY –
31 MARCH
2008
= TURNOVER INDEX 100

National

OVERALL ANALYSIS (31 SITES)

	Mean index
This quarter last year	104.5
Last quarter	102.9
Predicted next quarter	101.9



two years, an increasing amount of design work has been directed towards producing lighter-weight castings without compromising durability.

WCA manufactures heat-resistant jigs and fixtures (roller tracks etc.) using several different high-temperature Ni/Cr alloys, according to the working temperature. The facility includes on-site pattern design and production, enabling WCA to produce castings from drawings, modifications of existing castings, or simply from a good idea.

With efficient equipment and a highly-trained and flexible workforce, delivery is usually 3-6 weeks, with some standard parts available “off-the-shelf”. In emergencies, castings can be made in one week from existing patterns. If requested, WCA staff will carry out a site visit to advise on design for a particular application, using their knowledge not only of the casting technology, but also of heat treatment loadings and failure modes. Since WCA started producing castings in 1987, the capacity has increased to the

point where furnace grids, of 2500 x 2500mm and weights of up to 500kg, can now be produced in a variety of alloys to meet stringent dimensional standards.

WCA (www.wallworkcastalloys.com) offers a true recycling service by buying back scrap Ni/Cr castings which can, after suitable reprocessing, be used as the base metal for new castings. The Wallwork transport service can pick up and deliver in most areas, giving an easy-to-use complete service.

STATESIDE STATS

NORTH-AMERICAN HEAT TREAT SALES UP IN FIRST QUARTER

Participating members in the Metal Treating Institute's Monthly Sales Statistics Program reported sales of \$221.2million for the first quarter of 2008, a gain of 3.0% over the same period in 2007, when sales reached \$214.8million. March billings amounted to \$75.2million, down slightly (2.1%) from March 2007's \$76.8million.