



Celsius

ISSUE 2

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Heat Treatments Limited
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Heat Treatments

QUALITY • SERVICE • EXPERTISE

Innovation – the way forward



Innovating is something that most Kiwi companies do instinctively and I believe it stems primarily from two things; our geographical isolation and the pioneering spirit inherited from our forefathers. Certainly if it hadn't been for the 'can do' attitude and innovative spirit of Heat Treatments founder, W.D. McGregor, the company wouldn't be where it is today. Innovation is a part of our culture and we integrate it into everything we do.

By being innovative we continue to grow despite being caught between rising labour and energy costs and the demand for lower pricing. By being innovative we can offer a diverse range of services even though the market we operate in gives us few economies of scale.

Our theme for this issue of Celsius (if you haven't guessed already) is 'Innovation' and specifically how Heat Treatment's commitment to this philosophy benefits you - our customer. We'd like to tell you about some of our current innovations, some of which are on the drawing board, and also endeavour to broaden your understanding of the heat treatment process so that you have the opportunity to benefit from these initiatives too.

It's not all heavy metals though, so I'd encourage you to read on and feel free to contact us to discuss further any of the topics mentioned.

Fergus Thomson
General Manager

A Recipe for Success



Most customers are clear on what their product should look like and how it needs to work, however many are unaware of what they need to consider in terms of it's metallurgical make-up. So what's the first step to ensuring your latest product / project is successful – choose the right ingredients and the most appropriate heat-treating process! It could well be the difference between success or failure.

Probably the easiest and most efficient way of doing this is to contact a member of the Heat Treatments Metallurgical team and discuss with them the various factors influencing your decision over steel type and heat treatment process including: -

- Wear/friction properties
- Toughness/strength/impact requirements
- Thermal requirements
- Corrosion properties
- Fatigue resistance
- Suitability to post heat treating processes. i.e. electroplating, PVD, etc.

- Distortion during heat treatment

As a kick-start however we'd like to present you with a series of tables in this and subsequent issues of Celsius showing common applications, suggested materials and the heat treatment process that we'd recommend. Obviously the information contained in the tables is a guide only and in many cases compromises can be made in order to accommodate material availability and / or time constraints. Also in many cases there may be other materials and processes that will perform just as well. In order to make a fully informed decision we would recommend speaking with a member of the Heat Treatments Lab team. (Call 621 0020, follow the prompts and press 2 for 'Heat Treatment Services' and then 4 for 'Technical enquiries'.)

In this issue we will look at common Coldwork tooling – Coldwork is defined as a cutting or forming operation where the surface temperature of the tool does not exceed 150°C.

COLDWORK TOOLING

Application	Main Properties Required	Suggested Material & Heat Treatment
Shear blades (sheet metal <4mm)	Wear resistance	D2 H&T* to 58/60HRc
Shear blades (heavy steel <15mm)	Compressive strength, wear resistance and toughness	2767 H&T* to 48/54HRc
Blanking tools (sheet metal)	Wear resistance, edge retention	D2 H&T* to 58/60HRc
Punches and dies	Impact resistance and compressive strength	S1 H&T* to 55/58HRc
Form rolls (sheet metal)	Wear resistance	4140 nitrided or D2 H&T* 60/62 HRc
Press forming tools	Wear resistance and compressive strength	A2 or D2 H&T* to 56/58HRc

* H&T = harden and temper

Innovations in the Pipeline



Nitriding Oven – Mark 3 on the drawing board. Benefit : Reduction in cycle times with no compromise in performance of the nitride layer.

Shaker Hearth Furnace – Mark 2 under construction. Benefit : More flexibility and increased capacity for our bulk component customers.

Carburising/Neutral Hardening Furnace – Our fourth Sealed Quench furnace now under construction. Benefit : Greater load capacity with more automation for improved flexibility, control and efficiency.

Cryogenic Chamber – presently being commissioned. Enhancing our one-stop-shop reputation. Benefit : Increasing our capacity to provide low temperature treatments (to -190 deg C) for high performance parts.

Did you know...



- Heat Treatments has a Wenzel Co-ordinate Measuring Machine (CMM) that can measure components down to less than 3 micron accuracy, and is used for accurate and efficient measurement of parts produced. To find out more call John Baird in the Machine Shop.
- Each year Heat Treatments Ltd is certified by the Civil Aviation Authority, Lockheed Martin, and International Certifications Ltd to ensure that we meet our quality assurance standards.

Congratulations to:

Dave Clapson from Gloster Engineering, Hamilton; winner of our last draw for the case of Adam's quench media. Thanks to all who entered the draw.

Out with the Old, In with the New



Being able to maintain the cost of our products and services in the face of rising energy and labour costs means we've had to get pretty innovative in the way we do things at Heat Treatments. One of the most significant steps we've taken in recent times has been the replacement of our old Leeds & Northrup Micromax 2 Management Station with a new Wonderware Intouch System.

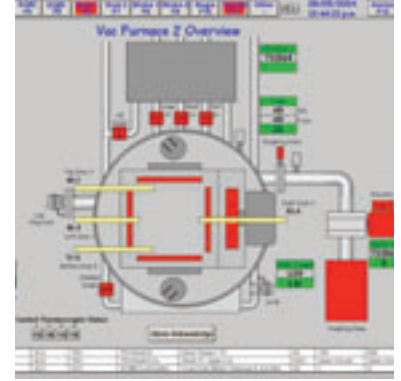
Like the old system, Intouch is in effect a control centre which allows the heat treaters to control and monitor individual furnaces from a PC. Individuals use the system to download operating instructions to each furnace process controller, giving it a series of instructions in relation to temperature, timing, carbon levels and the quenching process. In addition the system collects data from the furnaces and processes it into real-time graphs, storing vital information from each batch for future reference.

Intouch has enabled us to progress our

strategy of automating plant throughout the factory and, as it can be accessed remotely, we can continue to offer a 24 / 7 operation and at the same time minimise the cost of doing so. The benefit of this to customers is obvious – you get the products and services you want, when you want them, and we are able to assure you of our processing integrity!

The system also allows us to improve control over various processes, retrieve customer job data more quickly and, when it links into the job tracking system, increase our ability to respond more effectively and efficiently to customer queries.

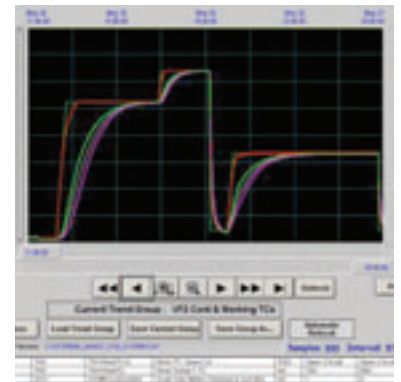
The Wonderware Intouch system is certainly not unique to Heat Treatments, however as part of our on-going strategy to innovate and improve, it is helping us to continuously improve our 'edge' and offer our customers more.



Intouch System - representation of a vacuum furnace



John Reynolds viewing the Intouch System



Intouch System - graph showing realtime information

Celebrating our Greatest Asset – Our People



John McGregor – “Retired”

In this day and age it is something of an achievement to have worked for a company for 48 years and in this issue of Celsius we would like to profile John McGregor who 'officially' retired last year.

John left school at 15 and joined his father in the family business to work as an apprentice Fitter and Turner. Although eventually 'joint owner' of the business with his brother Keith, John was always a shop floor man. Working alongside employees, John, like his father before him, was an 'innovator', always looking to the future, considering new and improved ways of doing things and finding workable solutions for customers.

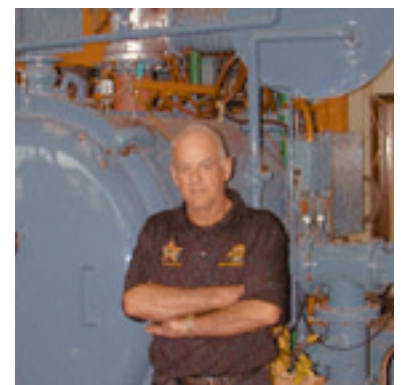
“Being a small family owned business you had to be a jack-of-all-trades,” says John.

“My brother and I had to get to grips with

everything from sheet metal work and welding, to sales and costing, which was both an opportunity and a challenge. We never talked of being innovative we just saw opportunities, asked questions and looked for answers just as our father, W.D. McGregor, had done before us.”

“Of course it is my belief that Heat Treatments has succeeded over the years because of the people who have worked with us. It is through their commitment, and the support of our valued customers, over the years, that the Company has grown to where it is today.”

“In terms of the future I believe Heat Treatment's continued success lies in its ability to find new ways of meeting the needs of customers, and this means identifying opportunities and reinvesting money, time, and resources back into the business.”



John McGregor

John supposedly 'retired' in March of last year, however as a committed 'worker' he has since been building a home near Queenstown. He does take time out from 'work' to go tramping, fishing and even do a little prospecting for gold – he's obviously just looking for his next 'opportunity'.

Machine Shop Increases Capacity



Although heat-treating will always be our core business, we are well aware that some customers don't have their own in-house Machine Shop facility and, in some situations, customers ask us to complete the job following the heat treatment process. As a result we are acutely aware of the need to follow our 'innovation' strategy through to this part of the business.

To this end we recently installed a new Daewoo Minx 540 machining centre in order to decrease turnaround times on jobs and enable us to offer more competitive pricing.

According to John Baird, Operations Manager of the Machine Shop, there are a number of advantages over and above the existing machining centre that has provided 10 years of excellent service. Increased

spindle speeds, rapid tool changes and the ability to mill simultaneously on a fourth axis, all combine for more productive machining. The higher speeds and through spindle coolant also make it easier to machine hard steels and non-ferrous products.

"Customers are already experiencing the benefits of the new machining centre. For example in one situation, we were able to machine completely around the edge of 400mm square plates mounted on the fourth axis including 20 mm tapped holes, 75 mm deep. Previously we would have had to square the plates on a large manual mill and go through the ordeal of drilling and tapping around the edge on a radial arm drill. In this case, when the machine cycled once, two complete operations were eliminated. This saved us time and gave the



Eric Feeley (Fitter Turner,) at the Machining Centre



The Daewoo Machining Centre

customer a much more professional product. Naturally the customer was ecstatic with the quality and the reduced price," comments John.

The Goal – Continuous Improvement



Success for most businesses hinges on their ability to get repeat custom. The old adage that it costs twice as much to get a new customer as it does to keep an existing one is very true for us. That's why we made the move to introduce Q-Pulse, a market-leading Quality Management System software program at the end of last year.

Q-Pulse transforms the bureaucracy of a record management system as required by our ISO: 9000 and Civil Aviation Authority certifications, into valuable management information, with the added benefit of minimising excessive paperwork.

The system enables us to manage a number of our business activities across the company and ultimately ensures we deliver the very best quality of service to our customers on a consistent basis. We can readily identify areas where improvements can be made, and highlight potential problems before they occur.

Although it's a 'behind the scenes' innovation, Q-Pulse is having a huge impact at the front end of our business. It's all about quality of service and products and we're committed to improving this in any way we can through both compliance and continuous improvement.



Rene Theart (Specialist Grinder) checking component size on the cylindrical grinder



Terry Sassman (Quality Controller) checking the bore diameter of a component



Heat Treatments

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