

Knowledge Mapping leads to impressive bottom-line benefits

H.J. Enthoven & Sons is the largest single site producer of recycled lead in Europe and part of the world's largest lead group, Quexco Inc. with operations in 7 countries. At the site in Matlock, Derbyshire, lead from vehicle batteries is recycled into ingots.



A K-Map Session at H.J. Enthoven & Sons

Recently H.J. Enthoven & Sons undertook a knowledge mapping project, supported by the Non-Ferrous Alliance. They wanted to use Innoval's K-Map process to define a set of accurate standard operating procedures for the refinery process and to transfer valuable tacit knowledge from

their experienced team leaders to refinery operators.

Engineers from Innoval Technology spent five days working with the Shift Coordinators, Team Leaders, and Operators from all shifts in several workshop sessions. Each group described their current operating practices, and discussed the effect their process had on each product attribute.

The K-Map gave H.J. Enthoven & Sons a rigorous way of examining their process, and enabled the team to uncover new ways to improve it. In three subsequent follow-up visits, the Innoval Engineers helped them use their K-Map to design improvement trials, and to appreciate how any changes to the process could affect the final product.

The improvements generated by the K-Map activity are expected to result in substantial direct savings annually, as well as giving a 14%

increase in output and a 3% reduction in fuel usage. In addition to this, the company have observed more open communication between their Site Coordinators, Team Leaders and Operators, together with enhanced team working across shifts.

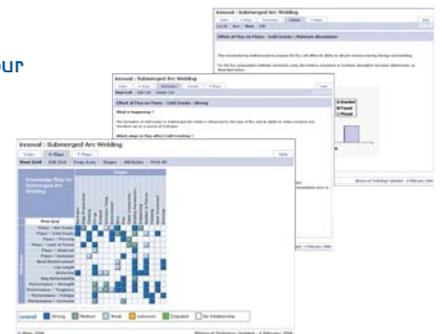
David Wheeler, Operations Director at H.J. Enthoven & Sons, remarks:

"K-Mapping provides an efficient process for the identification and standardisation of operating practices. This is achieved by breaking the process down into manageable stages whilst retaining a focus on the end product. The approach allows for the operating procedures to be verified and the standard practice agreed, or it can provide the opportunity for operators and management to question and challenge the way things are done.

The K-Mapping process has been well received by both management and operators, leading to measurable benefits in the refinery. We think Innoval's K-Maps are excellent tools in the drive for continuous improvement, and we will now use them to focus in more depth on the smelting process in order to improve the efficiency of the furnaces."

For information on all of our knowledge mapping tools, please contact Gary Mahon on +44 (0) 1295 702 818

A K-Map breaks information down into three levels



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Aluminium Training Courses prove a success!



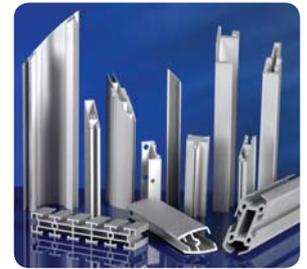
Innoval Technology recently launched a portfolio of training courses aimed at the aluminium industry. We recognised that, although there are plenty of training providers offering courses to the general metals industry, no-one offers a complete set of training specifically for companies in the aluminium sector.

Our courses cover a range of topics from metallurgy, surface treatment and analytical techniques to rolling and process control. We also provide product specific courses, such as for beverage cans or foil packaging.

The team here at Innoval have a very high level of industry experience. Having previously been part of Alcan's Research Centre in Banbury, we now work with companies in all sectors all over the world as an independent consultancy. Each tutor is familiar with the issues encountered on a daily basis, and

we have written the courses with practical applications in mind.

Chris George, Quality Manager at Capalex, approached Innoval for some company-specific training. Capalex is an aluminium extruder based in West Cumbria, UK, which has been operating successfully for 27 years. Increasing customer demands are giving rise to more challenging sections in a variety of alloys, and higher standards of finish are expected from all customers. Chris asked Innoval to design a course to explain the principles of aluminium metallurgy to the production teams, in order to help them better understand how they can ensure their products continue to meet customer expectations. He remarks:



Sections produced by Capalex

"Innoval helped to introduce a complex subject such as metallurgy to our extrusion, die shop & inspection teams - people with no academic experience since schooldays. The course preparation and comprehensive notes were well tailored to our abilities, and explanations were given with clarity and at an appropriate level. Our teams can now understand the relevant issues much better than before, and we expect to significantly improve our overall performance as a result of this introductory course."

For a complete list of our training courses please contact Helen Forrest on +44 (0) 1295 702 844



A Training Course at Innoval Technology

New Alloy Development at Langley Alloys



Langley Alloys was originally founded in 1938. Starting with some key alloy developments during the Second World War (including engine bearing materials for Spitfire aircraft) it has developed a global reputation for design, development and supply of alloys for high integrity applications. Originally the company was based at Langley, near Heathrow, but now operates from an integrated manufacturing and distribution site in Stoke on Trent.

The latest alloy developments at Langley Alloys have been the leading superduplex stainless steel, FERRALIUM 255-SD50 and the high strength copper-nickel alloys MARINEL 220 and MARINEL 230. Both of these materials offer high corrosion resistance for seawater applications coupled with advantageous mechanical properties.

Clive Tuck, Technical Director of Langley Alloys Ltd, comments:

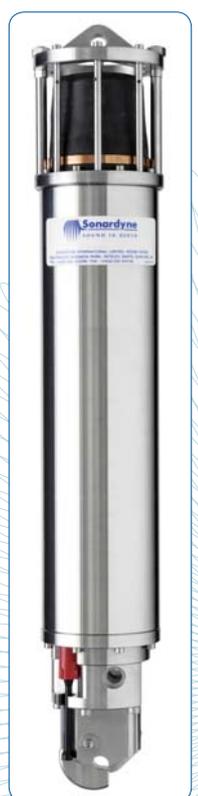
"Materials development demands the input of expertise in all aspects of the manufacturing process and the requirement for high class

metallurgical analysis. Innoval Technology has staff and facilities which satisfy both of these aspects of alloy advancement. Thus, Innoval's services have proved to be invaluable to Langley Alloys as a means to developing and improving its products."

Innoval Technology offers a complete materials characterisation and analysis service. By supplementing our in-house expertise, interpretative skills and facilities with an extensive outsourcing network, we provide a unique, cost-effective approach to materials development.

If you would like more information, please contact Alan Gray on +44 (0) 1295 702813

A deep sea transponder unit by Sonardyne Ltd which is made from FERRALIUM 255-SD50



Rotomac chooses Innoval for New Product Evaluation



Rotomac International Ltd, based in New Delhi, India, produces coatings for ferrous and non-ferrous metal sheet to be used in industries as diverse as automotive, construction and packaging. Rotomac contacted Innoval Technology firstly to test the performance of a range of ground-breaking new paint systems and then, if successful, to develop a technology-based marketing strategy for the paint.

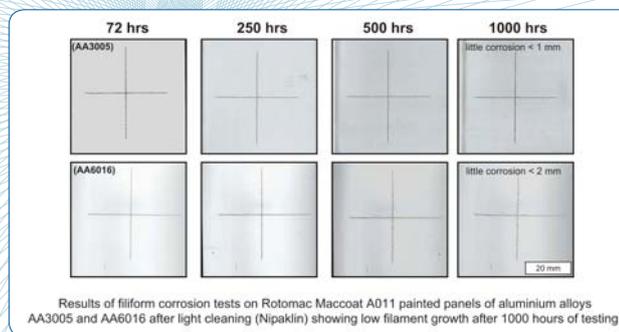
The MAC Coat Series of paint formulations, which are based on the use of a polyvinyl terpolymer and an alkyd resin, were found to have outstanding adhesion on a wide range of substrates. Although this is true of many paint systems available to the coil coating industry today, the MAC Coat Series is different in that these coatings potentially offer durability and corrosion protection without the use of a pre-treatment. They were even shown to be effective on pre-corroded steel surfaces. Furthermore, as well as removing the pre-treatment stage, these paints cure at low peak metal temperatures, so significant environmental benefits and energy savings can be achieved.

Innoval is ISO 17025 accredited for the testing of painted sheet systems. We tested the performance of the MAC Coat Series of paints from Rotomac on AA 6016 automotive closure sheet and on AA3005 architectural sheet.

"Rotomac approached Innoval to carry out the evaluation of our MAC Coat Series because they have world-class surface expertise, coupled with extensive experience of coil coating. Furthermore, because Innoval is an independent company, we were assured of an impartial assessment of our products. Innoval's knowledge of the European coil coating industry puts them in an ideal position to develop a marketing strategy for us, and we are now looking forward to working with Innoval to exploit this exciting new technology in Europe."

Says Dr D. Bhattacharya, Technical Director of Rotomac International Ltd.

For information on Innoval's surface coating services, please contact Geoff Scamans on +44 (0) 1295 702 826



Filiform corrosion test results

Every Plant Manager's Dream – Low Cost Line Trials!



- Have you ever wondered how altering the speed of your line, or changing any other parameter, could affect your process outputs?
- Do you have ideas about improving the efficiency of your processes, but production pressures and process constraints prevent you from trying them out?
- Are you considering installing a new line, and do you want to know the likely operating costs, material and energy consumptions and effluent discharges?

ECCA, the European Coil Coating Association, recognised these situations within their membership and approached Innoval to design and build a computer model of a coil coating line to provide answers to all these questions, and more besides.



Coated coils

The model, developed by Innoval's Andy Darby, runs from 'uncoil' to 'recoil', and incorporates a total of 30 main and ancillary processes, including cleaning, pretreatment, coating, curing and waste treatment. The processes

to be included in the model are chosen from a list by the user, who also selects equipment options and inputs the operating conditions of the line. The model then calculates the usage and associated costs of all the materials, water, energy and effluent. The results can be viewed across the whole line, as well as for each individual stage, thereby revealing critical processes.

Andy has designed the software to be very simple to use. It uses the Microsoft Excel™ spreadsheet platform – a widely available and familiar office tool. With this as the basis, it is easy (and inexpensive) to experiment with different parameters, sequences and materials to establish the optimum set-up for a process. This particular model is only available to ECCA members. However, Andy is able to generate similar models for any manufacturing process, not just coil coating.

"Innoval's model represents a significant technological advancement for the coil coating industry. ECCA is delighted to provide this tool to its members, which we hope will greatly reduce process improvement costs and ultimately lead to serious competitive advantage."

Says Peter Mitchell, Chairman, TC12, ECCA.

For more information on cost modelling please contact Andy Darby on +44 (0) 1295 702 810

Innoval Celebrates its 3rd Birthday

May 2006 heralded the third birthday of Innoval Technology, and it was marked by a celebratory lunch at our offices in Banbury, Oxfordshire.

Dr Nigel Davies, Innoval Technology's Managing Director, comments:

"Getting through the early years of a start-up company is recognised as one of the most difficult periods in a company's evolution. Our success is a testament to both business and management expertise, but it is also based on the global reputation of the technical skills that we have within Innoval."

For more information on heat exchanger development please contact Alan Gray on +44 (0) 1295 702813



Nigel Davies cuts the birthday cake

Since our formation back in 2003 following the closure of Alcan's Banbury Research centre, the company has gone from strength to strength. We now boast a multinational client base with customers in seventeen countries throughout the world, and we service a diverse range of markets including packaging, coil coating and extrusion.

Innoval's aluminium rolling expertise has always been well-known, and we continue to provide significant support to a major rolling company. However, recently our expertise in the field of heat exchanger development has come to equal this, and we now count most of the tier 1 heat exchanger manufacturers as our clients.

Achieving Profile and Flatness in Flat Products, 24th - 25th January 2006, Birmingham, UK

Dr Chris Davenport, a senior consultant at Innoval Technology, chaired the committee that organised this highly successful IOM3 event at the start of the year. Innoval also played a significant role during the conference with Dan Miller and Dr Rade Ognjanovic presenting technical papers entitled "Profile and Flatness - Origins and Issues" and "Finite Element Modelling of Profile Generation during Hot Rolling of Aluminium", respectively. Kyle Smith chaired the session on measurement.

If you would like copies of these papers please contact Chris Davenport on +44 (0) 1295 702809

More News ... More News ...

Aluminium 2006 – come and meet us!

Following a very successful show in 2004, we have decided to return to Essen again this year. The 6th World Trade Fair and Conference, a premier event for the aluminium industry, takes place from 20th to 22nd September 2006. Innoval will be located in Hall 7 on stand 7A35, which is opposite the snack point. Please come along and meet Nigel Davies, our Managing Director, as well as representatives from all our service areas. You can find out more about the show at www.aluminium2006.com



Disruptive Technologies for Light Metals Symposium – Materials Congress, 5th - 7th April 2006, London, UK

Dr Geoff Scamans, Innoval's Principal Scientist, chaired the two-day symposium at the annual Materials Congress of the Institute of Materials, Minerals & Mining. The sessions, which were co-organised and sponsored by Innoval Technology, covered areas such as new processes for titanium production, new magnesium developments and the influence of disruptive innovation on today's aluminium products. As well as chairing the sessions, Geoff gave a presentation entitled 'Aluminium from Cans to Cars', and his colleague Douglas Boomer explained some novel joining processes for automotive applications.

The presentations from this event are available on our website at www.innovaltec.com



Legal, Insurance & Expert Witness Services

We've recently added this service to our portfolio – have a look at our web site under Materials Consultancy. Our consultants are able to provide a valuable support service to the legal and insurance professions by assisting in arbitration and in disputes relating to the production, fabrication and use of aluminium in all its major applications.

For more information contact Dr Geoff Scamans on +44 (0) 1295 702826.



Forthcoming Publications & Events

Title	Author/Presenter	Publication/Event	Location	Date
The Role of Near-surface Microstructure on Corrosion Behavior of Wrought Aluminium Alloys	Geoff Scamans (co-author)	ISE & Corrosion Science Symposium	Edinburgh, UK	28th August – 1st September 2006
Experimental investigation of roughening of the matt surface in pack rolling	Dan Miller (co-author)	Journal of Materials Processing Technology 177 (2006) 501-504. To be presented at Metal Forming 2006	University of Birmingham, UK	11 – 13th September 2006
The Diffusion Behaviour of Nocolok® Zn Flux in CAB Systems	Alan Gray (co-author)	AFC-Holcroft 11th International Invitational Aluminum Brazing Seminar	Livonia, Michigan, USA	24th – 26th October 2006
Understanding Mill Vibration Phenomena, Identification & Solution of 5th Octave Mode Mill Chatter Problems	Tom Farley (co-author)	Vibration in Rolling Mills	London, UK	9th November 2006
Aluminium Rolling Technology Course	Organiser: Chris Davenport	Training & Workshop	Innoval Technology, Banbury, UK	13th – 17th November 2006

For more information on all our past and forthcoming conferences and papers, please visit our website at www.innovaltec.com