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The Newsletter of Innoval Technology Ltd

CONSULTANCY AND TECHNICAL SUPPORT TO THE ALUMINIUM INDUSTRY ISSUE 14 2018

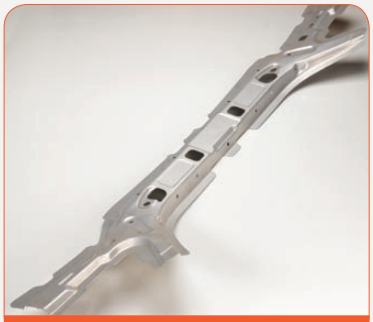
Picture credit: SNTO

The Future's Bright!

It's certainly an exciting time to be leading Innoval Technology and to be working in the aluminium downstream business.

Last summer I became Managing Director of Innoval Technology after Tom Farley chose to retire after 10 successful years in this position. Thank you to all my colleagues who have supported me through this transition period and to all clients and friends in the industry who have sent their best wishes.

The lightweighting of automobiles through the use of aluminium sheet and extrusions continues to grow across a broad range of automotive OEMs. Also, as more vehicle manufacturers commit to battery powered vehicles, the drive for weight reduction becomes even stronger in order to offset the additional cost and weight of batteries compared with conventional powertrain technologies. We believe there is a strong and compelling case for aluminium extrusions in battery enclosures, and we are excited by the opportunities this is creating for the installation of new capacity.

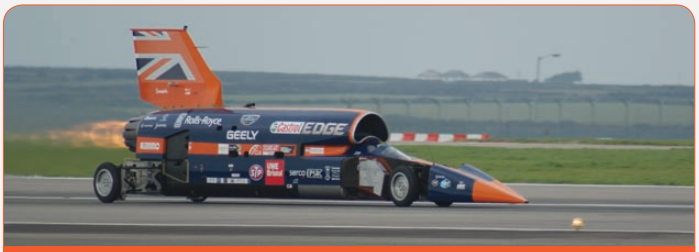


Aluminium Automotive Sheet training course new for 2018

Automotive applications are also driving change in aluminium rolling companies where some of the existing hot and cold rolling capacity is being redirected to making automotive products. We continue to provide technical support to many of these companies, including training and mentoring. This year we will be holding our first open training course on Aluminium Automotive Sheet. It's aimed at anyone wanting to understand the requirements necessary to supply this growing market.

The product mix switch to automotive by some suppliers means we are also seeing new opportunities for the rolling companies willing and able to supply the traditional markets such as, for example, beverage can sheet. Some of this will come from new suppliers in countries like China, where the best companies are able to meet the highest quality demanded by these applications. However, we watch with interest the consequences of both Brexit and President Trump's import tariffs on what is currently a global supply chain for many aluminium products.

Innoval is also active in meeting the challenges of Industry 4.0. We are working with our parent company Danieli, who are committed to establishing a leadership position in the digitalisation of metal processing plants. To this end, Danieli has invested in an impressive new facility near their Headquarters in Buttrio, Italy, specifically to develop the innovative technologies needed to achieve these aims.



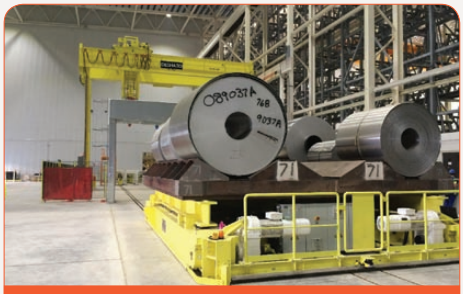
BLOODHOUND SSC reaches 200mph at Newquay Airport

Finally, a few words about the current status of the BLOODHOUND SSC project as it endeavours to set a new land speed record of 1000mph (1609 km/h). The first runway tests were successfully completed at Newquay Airport, UK, in October last year. To date, everything is on track to break the existing record in South Africa later this year. This is when the car's aluminium wheels will really be put to the test!

Dr Gary Mahon
Managing Director
Innoval Technology Ltd

Rolling Course; an Executive Overview

Innoval's Aluminium Rolling Technology Course is known throughout the industry. It's a detailed week-long course which is perfect for engineers. However, after being approached by Aleris Rolled Products North America, we realised there was scope for a shorter, less technical version of the course.



Aluminium coil at Aleris

Inside an Aleris plant

Aleris is a global leader in the manufacture and sale of aluminium rolled products. The company has approximately 13 facilities across business units in North America, Europe and China. It serves a variety of end-use industries, including aerospace, automotive, building and construction, transportation, packaging, and consumer goods.

The Senior Management team at Aleris Rolled Products North America wanted a course for their Executive Managers that would explain the fundamentals of aluminium rolling, but which did not go into the same amount of technical detail as our week-long course. The reasoning behind this was that several members of their Senior Team, and consistent with many companies of similar size, had come from industries other than aluminium. Furthermore, many had finance and management rather than technical backgrounds, but they still needed to understand the basics of aluminium rolling, as well as know what we were teaching their engineers on our week-long courses.

In response to their request, we developed a two-day version of our Aluminium Rolling Technology Course and delivered it to the Executive Team at Aleris. It covered the fundamentals of rolling, such as the mechanics and thermal aspects, but without the detailed mathematical calculations and workshops.

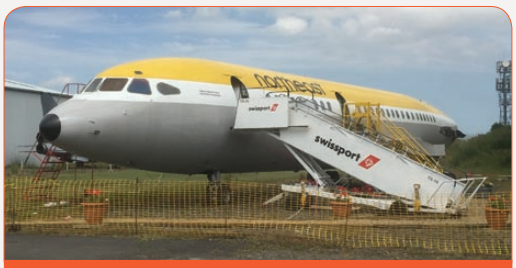
"This was the single best day of training I've received in my career at Aleris. I knew maybe 60-70% of the content going in so this just filled in a lot of the knowledge gaps. For me personally, the presentation was the right amount of detail at the right pace. Those guys are pros."

Travis Debes, Vice President Supply Chain, Aleris Rolled Products North America

Corrosion advice helps Save The Trident

Sometimes we are asked to help out with some really unusual, but interesting, projects involving aluminium. Last year a group of people working to restore a Trident 1C aircraft contacted us for advice on corrosion issues.

The Hawker Siddeley HS.121 Trident IC aircraft, G-ARPO



The G-ARPO at London Heathrow airport

The 'Save The Trident' group was formed in 2009 to save the last complete Hawker Siddeley HS.121 Trident 1C aircraft, G-ARPO. It entered service in 1965 and flew for the last time on 16 March 1983. The aircraft served on the routes of British European Airways and British Airways for 18 years before it was retired at London Heathrow airport. After a period of dismantling G-ARPO into transportable parts, it was moved to the North East Land, Sea and Air Museum in Sunderland for preservation.

During part of the restoration project the team at 'Save The Trident' uncovered some corrosion issues and they turned to us for advice. After looking at the current state of various parts of the aircraft, we gave the team advice which helped tackle their corrosion issues and protect the aircraft in the future. This included information on which products to use to stabilise the corrosion. We also gave advice on the alternatives to welding for areas of the aircraft where the corrosion had to be cut out and the part rebuilt.

"Corrosion is a fact of life for an aircraft of the age of our Trident, which has been out of service for three decades. However, having the advice from Innoval on how to deal with this and prevent it getting any worse is invaluable"

Tony Jarret, Save The Trident Project Leader

Restoration work underway

You can read more about this project on the Save The Trident web site: www.savethetrident.co.uk

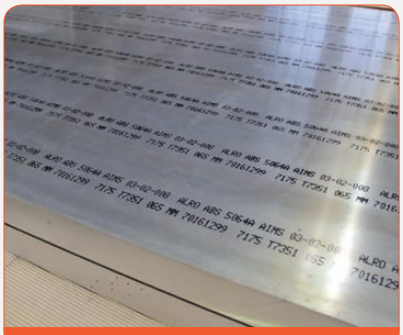
Working towards qualification

vimetco alro

Because of the combination of product and process expertise at Innoval, we often support companies working towards qualification as suppliers to the automotive or aerospace industries. As anyone who's experienced this knows, it can be a very long and difficult process. However, by involving Innoval's experts, it's possible to fast-track the learning process to qualify sooner. Alro, a leading supplier of aerospace plate, is testament to this.

Alro's headquarters in Slatina, Romania

Alro is the largest aluminium producer in Continental Europe (excluding Russia and Scandinavia) and a subsidiary of Vimetco N.V., a global, vertically-integrated primary and processed aluminium producer. Several years ago Alro decided to enter the aerospace market, and they asked us to help make the qualification process as quick and efficient as possible.



Alro's aerospace plate

Gary Mahon, a metallurgist, and Kyle Smith, one of our aluminium rolling experts, worked with the team at Alro over three visits. Before they arrived in Slatina, Gary and Kyle examined Alro's Standard Operating Practices (SOPs) from casting composition through to final testing. From this they were able to give advice on what to do to obtain specific properties compatible with a standard aerospace plate process route. Once on site, Gary and Kyle collected process data, made observations and talked to the operators to compare actual practice with the SOPs. In addition to this, they explored contingency practices.

On the practical side, Kyle provided recommendations to optimise the rolling equipment in order to achieve the required product properties. He studied gauge control as well as surface and temperature control. Gary focused on microstructural analysis throughout the entire process, including where the samples were taken from, how they were measured and what they looked like.

Stacked aerospace slab

At the solution heat treatment and quench stage, Gary and Kyle made recommendations to modify the standard practices which would enable Alro to produce a range of thicknesses. For this they used the Innoval Quench Model. Approximately one year after our work with Alro, they received approval to supply a leading aerospace manufacturer and have been doing so ever since. We're also pleased to report that our relationship with this successful company is as strong as ever with an on-going programme of work.

"Gary and Kyle made sure we started off right with the optimum composition for our processes. Also, they gave us the expectations for each stage from a metallurgical point of view. Involving the Innoval team definitely short cut our road to aerospace qualification."

Gheorghe Dobra, General Manager Alro S.A.

Award for an Aluminium Pioneer

Prof. Geoff Scamans was presented with the prestigious Aluminium Industry Award by The Aluminium Federation (ALFED) at their annual dinner last September. The award honours Geoff's contribution to the industry, most notably his work on automotive lightweighting for which he is a world authority.

Geoff Scamans receives his award from ALFED President Giles Ashmead

Geoff is our Chief Scientific Officer and also a Professor of Metallurgy at Brunel University's BCAST metals research facility. He started his research career in 1974 at Alcan International, initially as a research scientist and later as Principal Scientist.

Over the last 30 years Geoff has initiated and managed a number of R&D programmes on both materials development and technological innovation, making substantial scientific and technological contributions to the light metals sector. His work has featured in over 130 publications.

Geoff will write and deliver several sessions on our inaugural Aluminium Automotive Sheet training course on 19th and 20th April 2018. If you'd like to register, please send an email to enquiries@innovaltec.com

Celebrating 5 years working together

Innoval's successful collaboration with Hunan Suntown Technology Group Co. Ltd (SNTO) reaches its 5 year milestone this year. The company has grown significantly over recent years to become one of the biggest foil manufacturers in the world. We have supported them along this path through mentoring, training and problem solving.

SNTO is located in Changsha, China, in the heart of Hunan province. Their large facility produces a huge range of quality products from cast billet through to sheet, extrusions and foil. They even manufacture their own trucks and tankers!

The SNTO facility in Changsha, Hunan province, China

SNTO has achieved significant quality milestones in the manufacture of thin aseptic foil, and it's this product that we've been focussed on recently.

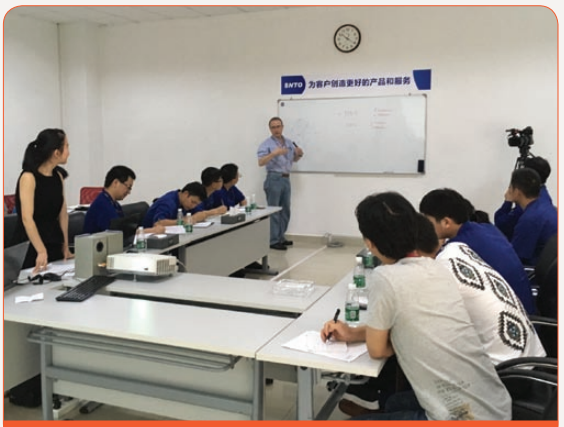
Last year Vicente Martin and Dan Miller held two bespoke training courses on Roll Grinding and Foil Rolling Technology at SNTO. The team at SNTO wanted to develop a deep understanding of the underlying physics behind their key rolling processes. This would allow them to optimise the operation of their existing and new rolling mills.

Vicente Martin gave a session from Innoval's Roll Grinding Course. In it he introduced the technology of roll grinding and the interactions of the ground roll surface and the aluminium in the roll gap. He explained how understanding these key topics contributes to maximum productivity of the mills and an optimised product surface.

Both Vicente and Dan presented modules from Innoval's Foil Rolling Course. During these sessions there were extensive discussions about flatness and gauge control, lubrication, surface and foil manufacturing.

"Innoval consultants do not provide us with a recipe to follow. Instead, they give us a deep understanding of why things happen in a particular way. This gives our engineers and operators the background to solve our daily problems by themselves once Innoval leaves."

Mr Ande Li, R&D Institute Group Deputy General Engineer



Vincente Martin giving a lecture

More News... More News... More News...

Mike Clinch

New Materials Group Leader

We're very pleased to welcome Dr Mike Clinch to Innoval as Materials Development Group Leader. Mike will oversee our InnovateUK collaborative R&D projects, as well as development work with existing clients. Mike joins Innoval following a 20-year career at Luxfer Gas Cylinders where he held several Senior Management positions, including Director of Innovation at Luxfer Europe, and VP of Technology & Innovation at Luxfer North America.

Robert Janica

New addition to our Materials Testing Group

Another recent addition to our growing team is Robert Janica who joins us as a Materials Technologist. Robert carries out material characterisation and failure analysis as part of our Materials Testing group. He recently graduated from the University of Science and Technology in Cracow with a Master's degree in Metallurgical Engineering.

Talk to us at ALUMINIUM 2018

This year ALUMINIUM 2018 will take place on 9-11th October at Messe Düsseldorf in Germany. As with the previous show, Innoval will be a co-exhibitor with Danieli. Please make time to stop by the Danieli booth to say hello!

Danieli booth at ALUMINIUM 2016