



mqp

*'The new dimension
in Grain Refinement'*

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MQP brochure 2019

Innovative casthouse solutions for the worldwide aluminium industry

Welcome. In this MQP supplement we would like to tell you about the products and services we provide to the aluminium casthouse industry worldwide. We'd also like to tell you something about our company, our people, our philosophy and the way we work with the aluminium casthouse industry.

The current Chairman, John Courtenay, formed the company in the year 2000. He chose the name Melt Quality Partnership, to express how he wanted the business to operate, and registered the company name as MQP.

His vision was for the new company was:

- To develop and introduce innovative technology for casthouses worldwide with the overall aim of improving quality and reducing production costs.
- To operate on a global basis through a network of consultants and distributors
- To form close partnerships with suppliers and key customers in a fundamental pursuit of this strategy.

Our People

The management team at MQP consists of individuals who are industry experienced, and professionally qualified in aluminium technology and complementary disciplines. Several team members, like John Courtenay who spent 25 years in a number of senior roles in the UK, Japan and Italy with Foseco, were previously employed in management roles within the Foseco International organisation. Consequently they are all well versed in the demands and opportunities associated within MQP's innovative company culture.

- **Richard Courtenay** is MQP's Managing Director & CEO, responsible for day to day running of the business.
- **Richard Dean** is International Sales & Marketing Director and Barry Lightfoot is the UK Sales Manager.
- **Alvin Guan** is MQP China Deputy General Manager.
- **Michael Bryant** is Marketing Manager with a brief to produce technical articles for publication and news items and product updates for the MQP website.
- **Dr Rein Vainik**, the MQP Technical Manager, based in Sweden, obtained his PhD at Stockholm University under the guidance of the eminent aluminium solidification guru, Professor Lennart Backerud. Within MQP Rein has been responsible for the development of the Opticast technology for characterisation and control of grain refinement and Optifine, MQP's world leading premium high efficiency grain refiner. In particular Rein is responsible for quality control for Optifine and providing technical support to customers on Optifine applications around the world.

Team members operate their areas of responsibility with a great deal of individual



John Courtenay, Chairman, (right) with Richard Courtenay, Managing Director & CEO (left) and Richard Dean, International Sales and Marketing Director (centre).

freedom. This means they can decide how best to fully focus on their objectives and successfully manage their key relationships with customers, agents and suppliers.

Our Philosophy

The MQP business concept is to develop and introduce innovative technology for casthouses with the overall aim of improving quality and reducing operating costs.

Based, and managed in the UK, we operate on a global basis through a network of consultants and distributors and agents. Our international consultants have typically had more than 30 years' experience in the aluminium casthouse industry in technical and management roles. (Australia, USA, South Africa, Brasil).

MQP is certified to ISO 9001:2015, the world's most widely adopted, internationally recognised, Quality Management System. This system will help us to continually monitor, manage and improve quality across our whole business.



ISO graphic



The MQP exhibition Stand at Aluminium Düsseldorf exhibition in 2016.

Our work with the casthouse industry

- We work with casthouse industry customers to introduce new products and practices, such as Optifine/Opticast grain refinement, into their manufacturing processes. This often involves MQP personnel spending significant time on the shop floor working alongside the casthouse management and technical team followed by sample and results evaluations at an MQP laboratory in the UK or Sweden.
- We frequently sponsor research programmes, at Universities and academic centres, focused on development and improvement of our products and processes.
- We share information with the aluminium industry at technical conferences, such as TMS, by regularly presenting technical papers on casthouse technology and practice. John Courtenay has presented papers at TMS Conferences for the last fifteen years often in conjunction with our casthouse industry partners. At the 2017 TMS conference the paper presented was concerned with Optifilter prototype trials and co-authored with Trimet Aluminium, Essen.

- We frequently produce articles for publications in International Journals in the UK, Germany and USA including Aluminium Times, Aluminium International Today and Aluminium Journal. All these articles can be read in full on the MQP website at www.mqpltd.com under publications.
- We exhibit regularly at the major industry shows such as Aluminium Düsseldorf and in partnership with our agents/distributors at other European exhibitions. For instance, we were present with our Turkish distributor, AKM Metalurji sanayi temsilcilik ve tic ltd sti, at ALUEXPO International Aluminium Technologies, Machinery and Products Trade Fair, in Istanbul, and expect to be there again in September 2019.

Our Products and Services

The theme running through all technical development programmes at MQP is 'advancing melt quality'. Our focus is on products, techniques, instrumentation and equipment intended to enhance melt quality in aluminium casthouses as well as reducing production costs.

- Optimum and powerful grain refinement is a huge asset in advancing melt quality. Optifine grain refiner in conjunction with the Opticast technology is achieving exceptional results in the routine production of demanding high quality alloys in casthouses worldwide.

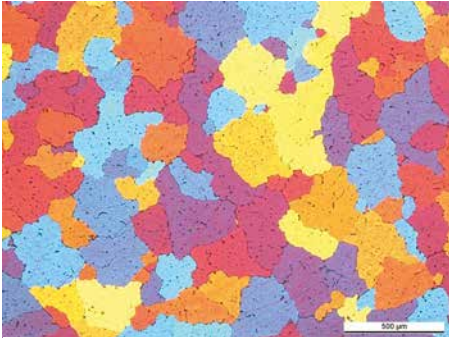
Optifine

MQP, supplies an exceptionally powerful TiBAl grain refining rod known as Optifine.

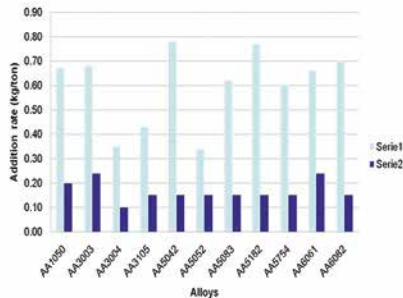
Optifine is a highly effective grain refiner and can achieve the level of refinement needed to avoid ingot cracking at up to 80% lower addition rates than standard TiBAl grain refiners. This results in improved quality and reduced operating costs over a wide range of aluminium alloy compositions. Optifine is now in routine usage in major casthouses worldwide in the production of over five million tonnes of aluminium alloys with outstanding results.



Coils of Optifine Grain refiner



Structure of AA 6060 alloy treated with Optifine grain refiner. Addition rate 0.16kg/t. ASTM = 2.4



Amount of Optifine (dark blue) vs commercial TiBAl (light blue) needed to achieve satisfactory grain refinement for a range of AA alloy

Opticast

The Opticast System is a unique technology and methodology for the in-line control and optimisation of grain refinement. In conjunction with Optifine it has been successfully adopted into routine production at many aluminium plants worldwide where it is reducing costs and increasing quality.

In the Opticast system calibration is an important step to determine how a specific alloy responds to addition of fresh nuclei via the grain refining rod. This involves establishing the equations for grain refinement curves of Optifine and commercial TiBAl grain refiners and establishing data such as in the graph shown for an AA 6060 alloy.

MQP Testing Laboratories

The qualification of Optifine grain refiners supplied to casthouse customers worldwide has until recently always carried out in the MQP Testing Laboratory in Sweden managed by

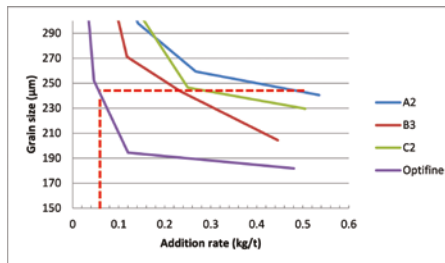


Instrumentation used in the Opticast system

Grain refinement in an AA 6060 alloy showing the much lower amount of Optifine needed to obtain a 245 µm grain size than the amount needed by commercial grain refiners



Rein Vainik explaining the Opticast methodology at the MQP Oxford laboratory



Rein Vainik the MQP Technical Manager. Now MQP through its association with N-Tec Ltd has a second testing laboratory at the University of Oxford Begbroke, Science Park, Oxford. The laboratory, operated by N - Tec, has the full capability to qualify MQP Optifine grain refiners before release to customers and is now acting as an alternative qualifying facility. There will also be an early opportunity at the UK laboratory, as it develops its microstructural capabilities, to conduct investigations into important topics such as second phase distribution in 6xxx alloys.

The MQP Technical Manager, Rein Vainik, will oversee the work of the Oxford laboratory. Ian Hughes from the N-Tec management team is in charge of the day to day operations and provides metallographic expertise. Simon Pepperell is the Project Manager for the MQP laboratory.

The Oxford laboratory is equipped with the same equipment and instrumentation as the MQP Swedish testing facility and includes Opticast equipment, electro polishing and anodising, polarising microscopy and a video camera. If required there is also access to a wide range of other instrumentation in the adjacent N-Tec metallurgical laboratory.

Contact Us

If you wish to discuss any of the above, or you have any casthouse issues where you would like our technical input and help, please contact the MQP team at: MQP Ltd, 6 Hallcroft Way, Knowle, Solihull, West Midlands, B93 9EW, UK

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