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### **COLLUSION IMPROVES EXTRUSION FOR RAUTOMEAD'S NEW DIVISION**

Continuous casting technology specialist Rautomead Limited of Dundee, Scotland has revealed details of an innovative 5 year collaboration with Brunel University.

As part of its 'Advancing Metals Technology' initiative, the company has been working in partnership with the university's 'Brunel Centre for Advanced Solidification Technology' department (BCAST) to develop an entirely new process for extruding aluminium alloys in the semi-solid state that will significantly reduce energy consumption and improve grain structure.

### **THE RHEO EXTRUSION PROCESS**

The Rheo Extrusion (RE) process is a patented technology developed at BCAST for the production of high quality, low cost magnesium wrought products. The process innovatively adapts the established high shear dispersive mixing action of the twin-screw extruder to in situ production of SSM slurry with fine, spherical solid particles followed by direct extrusion of the semi-solid slurry into rods, tube or complex extruded profiles.

Harnessing Rautomead's wealth of experience in dealing with molten metals and using special materials and techniques, the BCAST team designed and built from scratch a more "heavy duty" trials machine than previous models, one designed to process a range of aluminium alloys in a more production-scale level. This prototype machine is currently undergoing trials to establish the viability of commercial production. While currently focussed on aluminium alloys, a long term objective for the team is to ultimately use the technology in the higher-temperature environment of copper and copper alloys.

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## **ADVANCING METALS TECHNOLOGY**

‘Advancing Metals Technology’ is a new and scientifically-based metals research and development division within Rautomead with a specific focus on the scientific exploration and development of non-ferrous metals and processes to drive improvements in metallurgical efficiency in a wide range of global production processes and end-user applications.

In addition to pursuing in-house research projects, the new division’s mandate also covers involvement in a wide range of individual projects with universities and research groups in the UK and overseas of which the ongoing collaboration with BCAST is a high profile example. Further collaborations will be sought with both existing and prospective customers, with the goal of providing new and innovative processes and products within the non-ferrous metals technology market.

Through harnessing its market-leading expertise in the field of graphite technology and transferring the skills it has developed in continuous casting as the basis for these collaborations, the division’s objectives consist of developing imaginative and economical technological solutions with operating systems that will offer the end user significant application improvements in the next generation of Rautomead machines. Specific objectives consist of innovating technologies which are clean, safe and environmentally-friendly, shorten the manufacturing process, provide economies on the small to medium scale, recycle materials, reduce operating costs and enhance product quality.

## **CASTING AROUND FOR THE RIGHT PARTNERS**

The selection of BCAST as a suitable partner represents, for Rautomead, the result of a long and exhaustive search for a research partner whose vision and innovative thinking in the field of academic research would prove to be the perfect complement for Rautomead’s practical experience and expertise in the commercial world of molten metal technology. But the ‘Rheo Extrusion’ project merely represents the first collaboration between the university and Rautomead, with a number of other spin-off projects also currently in the pipeline. While the ‘Advancing Metals Technology’ division’s search for further suitable partners, both in academia and industry, continues. As Rautomead Managing Director Brian Frame remarks: ‘We have believed for some time that the wide range of skills we have developed over the years provides the potential for applications that go way beyond our core business of continuous casting. And this new initiative, with input from the relevant research partners, is providing us with a unique opportunity to demonstrate just that’.

## **CONTINUOUS IMPROVEMENT IN CONTINUOUS CASTING TECHNOLOGY**

For over 30 years, Rautomead Limited has established a reputation as a global innovator and specialist in the design, manufacture and provision of continuous casting equipment for copper, copper alloys and precious metals and as a valued partner on turnkey projects for specialist upstream and downstream product manufacturers. There are currently over 330 Rautomead machines in operation in over 48 different countries all around the world.

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