



rautomead®

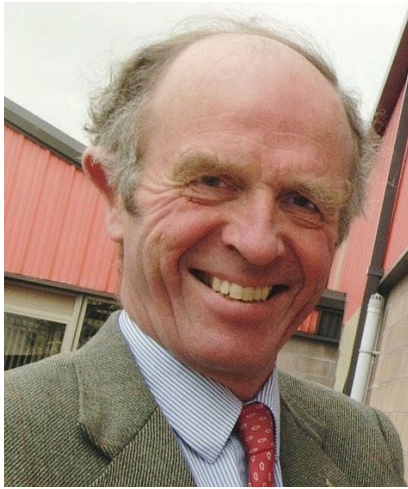
Advancing Metals Technology

Continuous Casting Technology

www.rautomead.com



Welcome



Ours is a remarkable story of over thirty years' commitment by a dedicated team to development of proprietary technology in the non-ferrous metals industry, balanced by world-wide scope of our trading activities, with Rautomead installations now in over forty countries.

Rautomead is driven by continuous technical innovation wherever we can find applications and processes which improve performance or reduce costs and by a life-long commitment to serve our customers everywhere.

Sir Michael Nairn
Chairman, Rautomead Limited



Chronology

1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995

Rautomead established.

First machine sale:
RC 650, forging
brass, UK.

First export contract:
RC 500, forging
brass, Malaysia.

New factory and
offices, Nobel Road,
Dundee.

First precious metals
machine sale:
Royal Mint, UK.

10th anniversary
of company
formation.

First machines for
CuMg contact wire,
Germany.

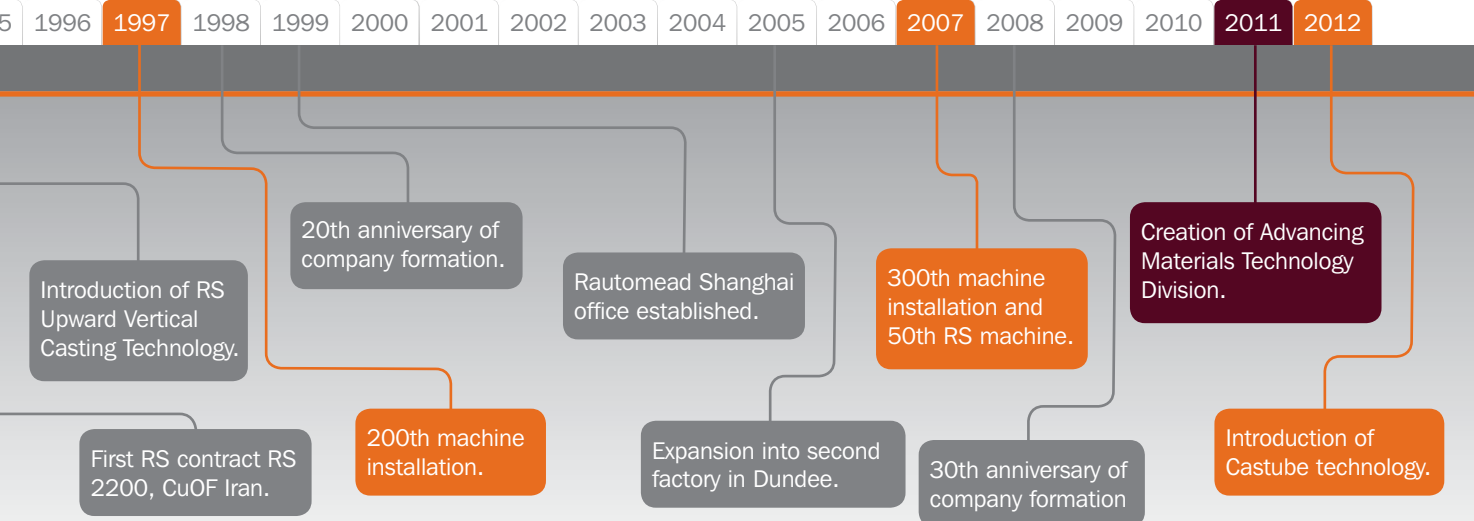
100th machine
installation.



About us

Rautomead Ltd are UK-based specialists in continuous casting of non-ferrous metals and in construction of equipment for processing of copper, gold, silver, zinc and a host of alloys.

Major industries served include wire and cable, foundry, engineering, electronics, mints, jewellery and dental. There are now more than 300 Rautomead installations around the world. Research and development plays an important part in the company's affairs, where work is conducted jointly with universities and with customers in development of new processes. As the scope of Rautomead's technology now extends also outside the field of continuous casting, we have recently formed a second division, Advancing Metals Technology, as an umbrella for a broadening scope of activities in the future.





Copper Wire and Cable

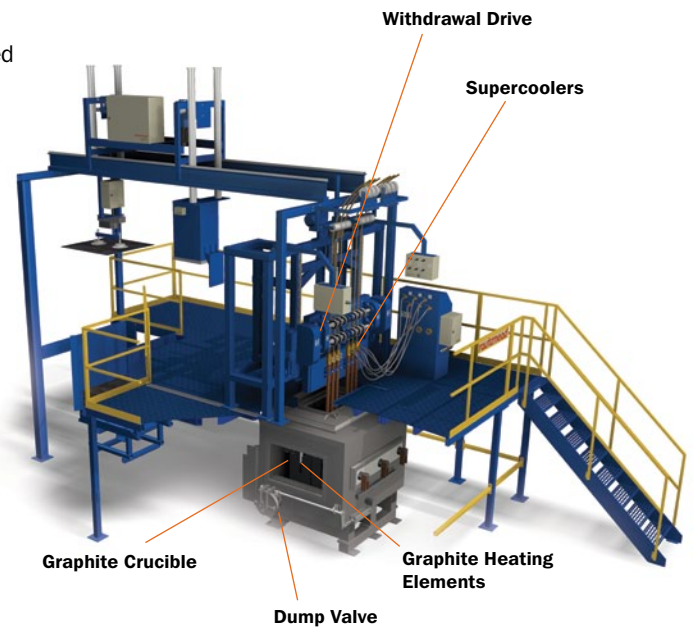
Rautomead machines are designed for processing electro-refined copper cathode to produce high quality oxygen free copper wire rod (CuOF) and conductor alloy rods (eg; CuAg, CuSn).

Machines are available for the production of 1,000 – 30,000 tonnes per year.

And with the capability of casting rods from 8.0mm – 30mm diameter.

RS machines (1,000 – 6,000 tpyr) feature graphite furnace technology, integrated melting and casting with graphite electric resistance heating.

RDG machines (6,000 – 30,000 tpyr) feature induction furnace technology and are either single furnace or dual furnace with a separate cathode melter depending on the production output.





Alloy Wire

These machines are designed for the production of copper-based alloy semi-finished wire rods and are available configured for 8mm – 12.5mm diameter or 8mm to 30mm diameter. The Rautomead machines for brass wire rod production are holding and casting furnaces.

A separate melting furnace and launder system is required to feed pre-alloyed molten metal to the Rautomead equipment. Customers may contract separately with their preferred melting furnace supplier or invite Rautomead to supply a complete line including a primary melting furnace.

The Rautomead furnace features solid graphite crucible, protected in an inert gas atmosphere, with high intensity graphite resistance heating. Brass wire (60% Cu 40% Zn) rod manufacture for the production EDM wires is an example of the application of this technology. Uninterrupted 24 hr/day production in excess of 48 months is achievable between periods of furnace maintenance.



Copper Magnesium Rod

Rautomead have been supplying graphite furnace continuous casting technology for producing copper magnesium wire rods since 1991.

The graphite crucible helps to remove oxygen from the copper which minimises losses of the magnesium alloying element and permits accurate and stable control of the material composition, e.g. either 0.4 – 0.6% Mg for use in the manufacture of overhead contact wires and cable for high speed trains, or 0.1 – 0.2% Mg for use in the manufacture of small diameter automotive and data communication wires.

Most of the CuMg contact wire for the European and Chinese high speed train networks is being manufactured from rod produced on Rautomead technology.





Engineering Alloys

Machines designed for the production of a wide range of copper based alloys (brasses, bronzes, aluminium bronzes).

Rautomead machines may be used either as single furnace integrated melting and casting machines or as holding and casting machines fed with pre-alloyed liquid metal from a primary melting furnace. The choice will be influenced by the alloy, section size and desired output.

Machines may be configured with tooling to produce:

- Billet up to 200mm dia.
- Strip up to 400mm wide
- Rods/bars 16 – 50mm
- Hollow tube shell 50 – 200mm OD

QDC (Quick Die Change) technology is available for round billet production up to 90mm dia.





Precious Metals

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Rautomead graphite furnace technology with nitrogen gas protection is an ideal system for continuous casting of the highest quality gold and silver alloy rods and strips.

A wide range of machine models are available and can be specified to suit particular production requirements.

Machines may be supplied together with a variety of ancillary equipment :

- Cutting shears
- Cutting saws
- Water cooling systems
- Coiling units
- Primary melting furnaces
- Ingot feed conveyors



Examples of finished final products include:

- Gold and silver coins & medals
- Gold bonding wire, 99.999% purity
- Jewellery, silver picture frames, silver cutlery
- Dental alloys
- Electronic lead frame material
- Sputtering targets for glass coating
- Silver flutes



Turnkey Projects



Rautomead can supply complete packages of equipment and technology to provide process route capability for the manufacture of specific end products. The common denominator for these turnkey projects is that the first process in the manufacturing sequence is melting and continuous casting using Rautomead technology.

PROJECT FINANCE for investment in turnkey projects may be available on request with the co-operation of our partner companies.



Brass Bar for forging and machining applications 1,000 – 5,000 tpyr



Copper Strip for transformer and electrical busbar 5,000 – 15,000 tpyr



Contact Wire CuMg for high speed train systems 3,000 – 9,000 tpyr



The SMS Meer Group copper tube mill for 4,000 – 12,000 tpyr plumbing and ACR tube includes Rautomead castube™ technology

Customer Service



Rautomead recognise the importance of continuous casting technology to the business of each of their customers. Customer service provision commences during the period of equipment manufacture with the issue of detailed information to assist the customer to prepare the factory site and services in advance of delivery of the equipment. Rautomead customer service then strives to assist the customer to maximise the production efficiency of their continuous casting system.

Rautomead Engineers supervise the erection, installation, start up and commissioning of the equipment at customers' factories and provide training for the operators.

A dedicated Customer Service Department is based at the Rautomead Offices in UK. From here Rautomead engineers provide first level technical support and can supply spare parts and tooling as and when requested by the customers. Many items are available for next day dispatch. Supplementary engineering site visits and refresher training courses can be available at customers' factories on request.

Services include:

- Customer training
- Technical service support
- Supply of spare parts, tooling and consumable items
- Customer seminars
- Technology updates and upgrades



Advancing Metals Technology

Since 2011 Rautomead has been engaged in the formation of a new and scientifically-based metals research and development division within the company.

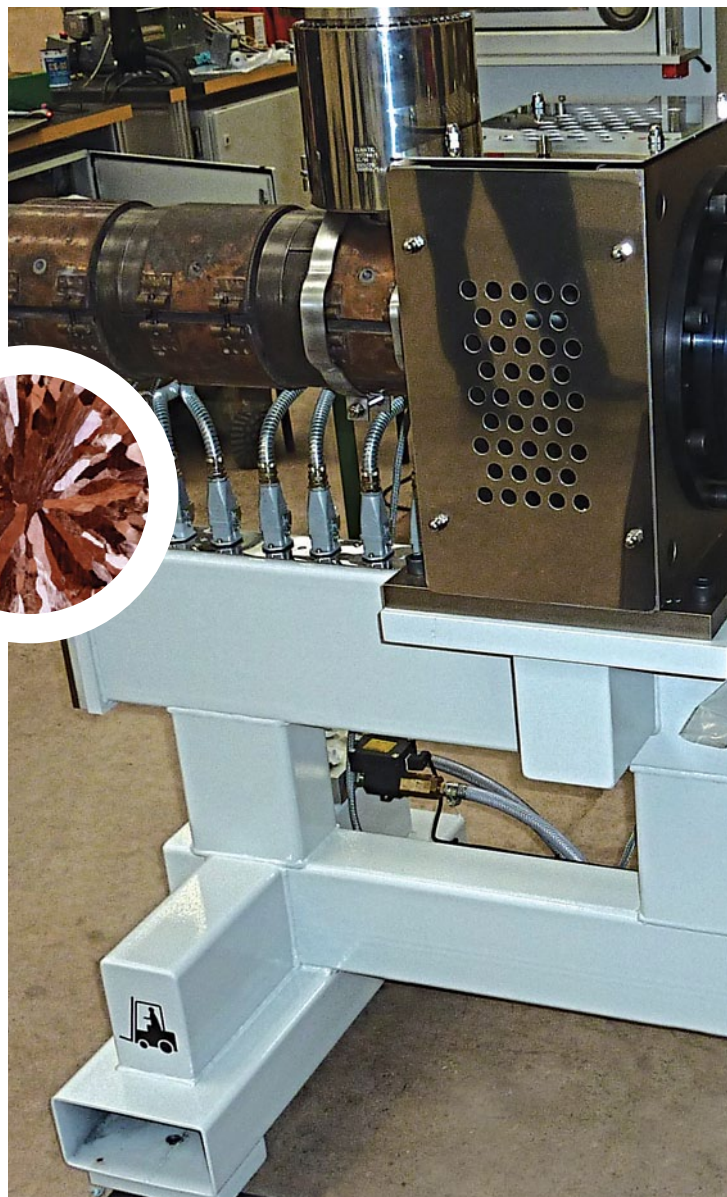
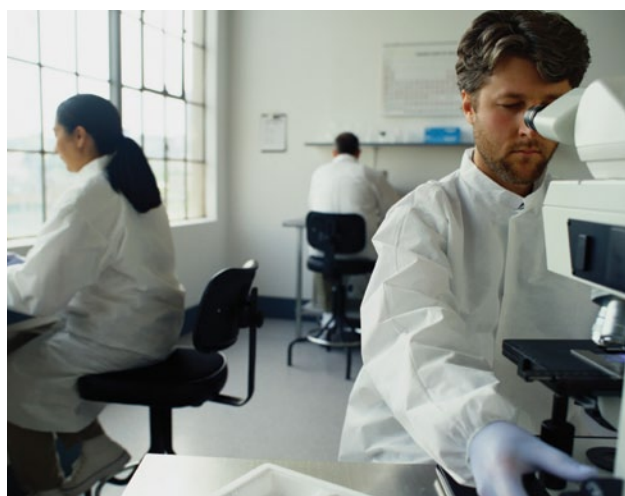
Rautomead Advancing Metals Technology

The Rautomead Advancing Metals Technology division will focus on design and development of new, innovative technologies for processing non-ferrous metals.

Using Rautomead's extensive knowledge and expertise in graphite technology as a basis, and by collaboration with an extensive network of the most relevant laboratories and research facilities at several universities in the UK, the resultant new technologies are intended to provide the capability to manufacture either completely new products or to manufacture existing products by new process routes with significant cost savings.

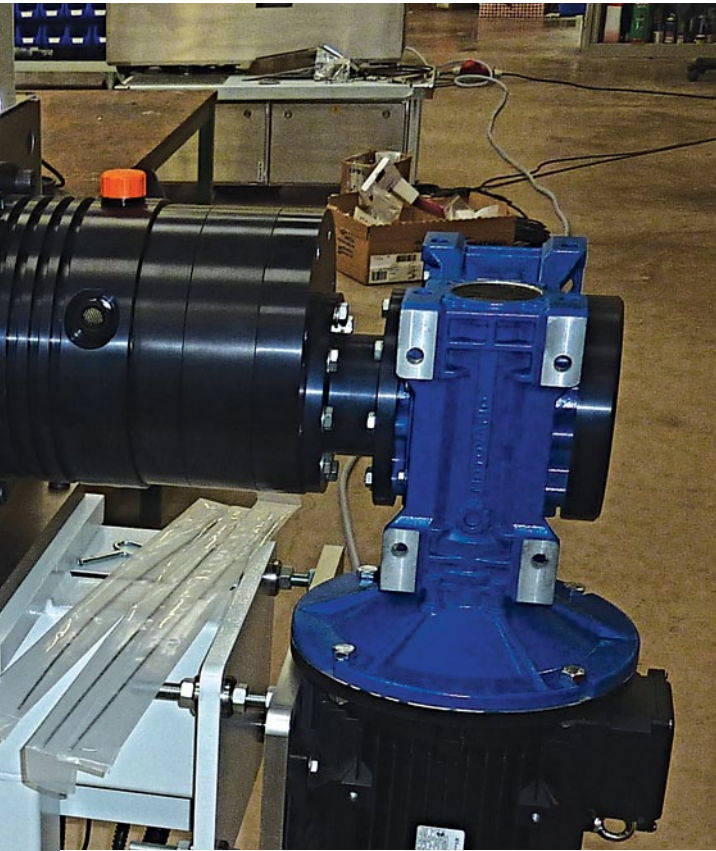
Rautomead Advancing Metals Technology seeks to develop imaginative, innovative and economic designs of new technology with operating systems that offer application improvements to the end user for processing non-ferrous metals.

Rautomead Advancing Metals Technology will select projects for development from enquiries and suggestions submitted by both existing and prospective clients and customers. The application areas of recycling and renewable energies are considered to be of special interest.



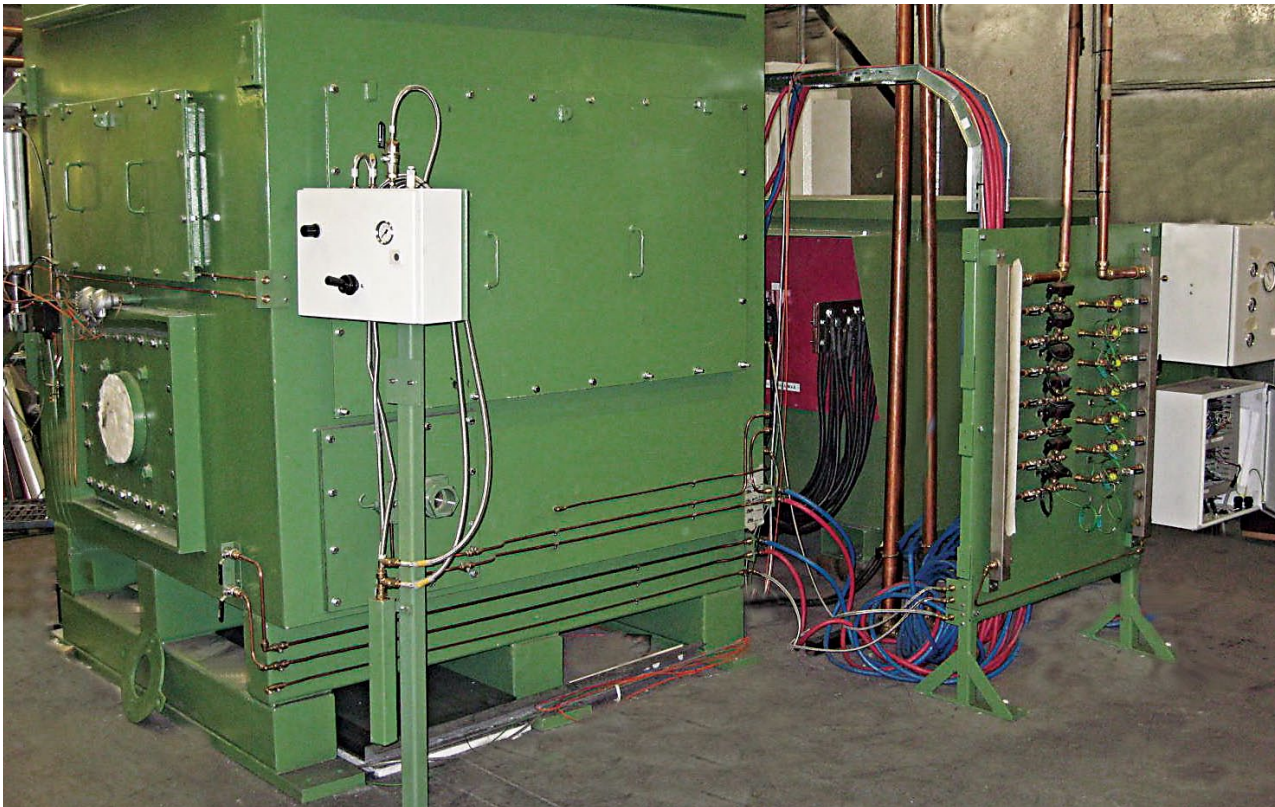
The Advancing Metals Technology will encourage development of new technologies which:

- Shorten the manufacturing process route
- Are economic on small to medium scale
- Are involved with recycling of materials
- Offer lower operating cost
- Offer higher product quality
- Are clean, safe and environmentally friendly



Examples of two completely separate and different projects currently in progress are:

- Creation and development of a new processing technology for the manufacture of small diameter aluminium alloy rod
- Development of resistance furnace technology for the processing of metal oxides



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