

BOOK REVIEW

A PRACTICAL APPROACH TO CONTINUOUS CASTING OF COPPER-BASED ALLOYS AND PRECIOUS METALS

By Robert Wilson, IOM Communications Ltd, 2000, 288 pages, ISBN 1-86125-099-1, Price £80 (EU)/\$120 (non-EU)*

This is a fascinating book, which will appeal to a wide audience from students to practitioners of continuous casting of gold and its alloys, and written in an eminently readable form. The contents and index are especially well laid out.

The first chapter highlights the major names in the world of non-ferrous metal continuous casting while discussing the basic principles of the process. Furnace construction, casting dies and cooler assembly and withdrawal mechanisms are dealt with together with safety issues and typical problems that can occur. The second chapter is a short review of heat transfer and solidification behaviour within the casting die with some worked examples of thermal efficiency of casting – the only real occasion when the author ventures into the realms of the academic.

In Chapter 3 details of some of the available equipment are presented though, unfortunately from the point of view of the gold manufacturers, these refer almost entirely to equipment used for copper alloys on a scale far in excess of the usual casting units for gold. A chapter on graphite and refractory ceramics follows and, in

addition to giving details of the various grades and suppliers of graphite, the importance of using high qualities is stressed.

Chapter 5 deals with the practical aspects of casting copper and its alloys while Chapter 6, the longest chapter, covers precious metals, particularly gold. In this latter chapter there is a wealth of data on gold alloy compositions and mechanical properties and some useful casting data, though to refer to units with a capacity of 1000 kg per day as small-capacity production plant will surprise the jewellery industry. Because of the necessity of complying with caratage requirements for jewellery applications, dealing with issues such as resistance-heated or induction-heated units, the need for gas stirring of the melt and the use of pre-alloyed (grained) material for melting is to be welcomed. In fact graining and graining furnaces are given a separate section as is the need to balance the risks of undercaratage and having to remake the alloy with overcaratage and thereby giving gold away.

There is also a useful section on producing solder-cored gold rod for

chain making by continuous casting, and on casting of carat gold tube, especially on dealing with tube breaks during casting. Finally, casting of a number of industrial alloys (gold-tin, gold-germanium, gold-silicon and gold-beryllium) is described.

The book has a final chapter on other non-ferrous metal alloy systems.

All in all the book is a valuable, handily-sized and very well presented publication which is obviously written by an expert in the field. It is particularly useful in the way it makes recommendations and deals with many of the problems likely to be faced during continuous casting. However it is a pity that, although it makes extensive use of schematic diagrams, there are no photographs of casting machines in operation.

Peter Raw

Bookham, Surrey

* Shelton House, Stoke Road, Shelton, Stoke-on-Trent ST4 2DR, UK. Fax: +44 1782 221722; E-mail: Orders@materials.org.uk

Technical Publications available from World Gold Council

- 1 *Technical Manual for Gold Jewellery* – A practical guide to gold jewellery manufacturing technology. Published 1997. Cost £65 sterling (about US \$110), including postage.
- 2 *Investment Casting* – a technical advisory manual for goldsmiths. Published 1995. Cost £8 sterling (about US \$14).
- 3 *The Assaying and Refining of Gold* – a guide for the gold jewellery producer. Published 1997. Cost £5.
- 4 *Handbook on Casting and Other Defects in Gold Jewellery Manufacture*. Published March 1998. Cost £12 sterling (about US \$20), including postage.
- 5 *Finishing Handbook*. Published March 1999. (English & Italian editions available.) Cost £16 sterling (about US\$27), including postage.
Note: These are available in English only (and Italian for *Finishing Handbook*) from WGC, London. Some publications may be available in other languages – contact your local WGC office.
- 6 *Gold Technology*: Complete set of back issues: Cost £27 (about \$45) for postage and packing. Some Italian editions also available.

All publications are available from:

International Technology,
World Gold Council,
45 Pall Mall,
London SW1Y 5JG, England
Tel + 44 20 7930 5171;
Fax + 44 20 7839 6561
E-mail: chris.corti@wgclon.gold.org

Payment in £ sterling by cheque or money order (no credit cards) or into our bank account:

Barclays Bank plc,
PO Box 15165,
50 Pall Mall,
London SW1A 1QF, England
Bank Sort Code: 20 67 59
Account No: 70964271

All charges to your account. (Please send a copy of proof of payment with your order.)

