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ISIJ International, Vol. 30 (1990), No. 1 (January) 掲載記事概要

Special Issue on Electromagnetic Processing
of Liquid Materials — Part IIElectromagnetic Processing of Liquid Materials in
Europe
(Review)

By Marcel GARNIER

Research works concerning electromagnetic processing of liquid materials began very early in Europe. Through active cooperative programs between industrial companies and universities original results were obtained which gave rise to new technologies and innovative processes. Some typical examples are given relating to electromagnetic flow control of liquid metals, manufacturing of materials in cold crucible, electromagnetic stirring in continuous casting and in ladle.

Electromagnetic Processing of Liquid Materials in
the USSR and East European Countries
(Review)

By Anatoliy Fedorovich KOLESNICHENKO

The influence of electromagnetic fields on electrically conducting liquid materials is a complex phenomenon attracting more and more interests of specialists in the

fields of metallurgy, technology, energetics, medicine, and geophysics. The major part of the phenomena concerning the movement of electrically conducting liquid media in electromagnetic fields is studied by magneto-hydrodynamics (MHD) which is comparatively a new branch of the science based on the principles of electrodynamics and mechanics of continuous media. In USSR, MHD has passed the full scale distance of the development practically covering all the known fields of the science. This discipline obliged notably, not only by its successes to the development of the MHD method for the generation of electric power, but also by the development of MHD theory and MHD technology in metallurgy and material science which have enriched MHD with new ideas and turned it into productive force helping it out of the sphere of abstractions.

The current review of basic Soviet publications obviously appears for the first time in the Western journals and demonstrates the uneasy way for MHD and the main achievements along the way of MHD developed. The extremely great value of information containing in Soviet publications on hydrodynamics of conducting media cannot be in essence concentrated in the style of a journal article. Nevertheless, it is possible to mark out the main fields, where the most significant results have been achieved.

1) Magneto-hydraulics and -hydromechanics including