Chairman's Summary — Section 2

by A. GRANT*

The production of ferrosilicon powder for heavy-medium separation is a very specialized application of ferro-alloy production, in that the product has to be accurately controlled not only chemically but also physically from a size and shape point of view. This is a somewhat unusual requirement for a ferro-alloy producer. Obviously a lot of time and effort have gone into experimentation to produce the correct size and shape of ferrosilicon powder.

Ore-dressing techniques, such as heavy-medium separation, are becoming more and more important as lower and lower grades of ores, coals, etc., need to be beneficiated. Extensive use of beneficiation processes can be expected in the future because high-quality ore and mineral bodies are rapidly being exhausted.

For this reason, I feel that the effort expended in solving many of the problems associated with the production of ferrosilicon powder for heavy-medium separation will be more than justified in the years to come.

I should like to congratulate Mr Sciarone, and obviously the many co-workers, for their efforts, especially for the imaginative yet highly successful approaches they used in solving the particle-shape problem, as can clearly be seen from the two photographs presented.

Although the need for superior-quality ferrosilicon powder producing a pulp density of up to 4 kg/l has for the time being disappeared, this product may well help to serve the increasing demands on ore-dressing techniques that will come about.

The paper presented by Dr Bleloch is somewhat controversial in suggesting that the industry should revert to older methods — metallurgically speaking — of stainless-steel production. A molten bath is to be refined by removing carbon in the presence of only 10 per cent (max.) chromium, and thereafter the chromium content is made up by the addition of low-carbon ferrochromium.

The principle of producing extra-low-carbon ferrochromium from Transvaal chromite in a single-stage process by utilizing ferrosilicon as a reducing agent is an interesting one, particularly as it is claimed to be more economical than the more conventional modified two-stage Perrin process, in which chromium silicide is used as a reducing agent.

The economic viability of a process is the key to its acceptance in industry, and further investigations and development work on the process described are indicated.

Production volumes are always very important with respect to economics, and it must be remembered that the use of ferrosilicon as a reducing agent will always produce less chromium units compared with the use of chromium silicide as a reducing agent.

Secondly, the chromium units as derived from chromium silicide form a cheap source of chromium, and assist substantially in reducing the cost of the final chromium unit produced, whereas ferrosilicon only adds iron to the product, for which, to date at any rate, no value is attached.

I should like to thank Dr Bleloch, on behalf of all the delegates, for his thought-provoking paper, and I am sure that the ferrochromium producers represented here will be interested in the future developments of the process described.

As to Mr Naruse's paper, Nippon Denko is to be congratulated on the success they have achieved in their application of sintered manganese fines to their production processes at their Tokushima Works. Not only have many production advantages been obtained through the use of 45 to 55 per cent sinter in the furnace burden, but the economic significance of the use of fine ores is to be regarded as a breakthrough for ferromanganese production.

The operations of the seaboard manganese ferro-alloy plant at Tokushima must be considered as one of the most successful ferro-alloy operations of today. A combination of furnace design and process design that produces a pollution-free, trouble-free operation with a 99 per cent running time is to be highly commended.

It is interesting to note the fact that, with sintering, it no longer becomes necessary to operate with exceptionally deep crucibles to obtain higher degrees of indirect reduction, since reduction does take place during sintering. Hence shorter electrode lengths can be used (by comparison), which does, to some extent, clear the way for the successful use of yet larger furnaces.

Mr Naruse has done an excellent job in clearly and convincingly stating the advantages of the 55 per cent sinter process for ferromanganese production, and, as he indicates, this is especially true at the present time when larger and larger furnaces are being developed.

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