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(57) EXPERIENCES WITH THE USE OF STEELMAKING SLAG AS AN IRONMAKING FLUX MATERIAL

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Summary

A preliminary trial on the replacement of raw limestone with BOF slag in the burden of Port Kembla No.2 blast furnace (1,152 m^3) was made during Dec.75 and Jan.76. 100% replacement of limestone was achieved. BOF slag was then added to the burden of No.4 furnace (1,883 m^3) in Jan. and in Mar. to No.5 furnace (2,670 m^3).

On Nos. 4 & 5 furnaces quartzite is charged to dilute the Al_2O_3 content in the slag by increasing slag volume. Therefore BOF slag may replace both limestone and quartzite in the furnace burden with resultant cost savings.

The charging of CaO in a precalcined form with possible coke saving and the recovery of Fe from the slag as well as the above cost savings were expected advantages. Disadvantages expected were the increase in phosphorous and sulphur to the burden and a possible increase in slag volume.

Results

1) There was no deteriotation in B.F. operation with the use of BOF slag.
2) BOF slag can be used as a suitable replacement for raw limestone.
3) The expected cost savings from the replacement of limestone and quartzite were achieved.
4) The use of BOF slag is limited by the resultant phosphorous content of the hot metal.

Table I summarises the results obtained on No.5 blast furnace.

No.5 Blast Furnace Consumption of BOF Slag, Limestone, Quartzite and Coke

Month	Burden - Sinter/Mt. Newman Ore					
(1975-76)	% Sinter	BOF Slag kg/t	Limestone kg/t	Quartzite kg/t	Coke kg/t Actural	Corrected*
Dec.	40.0	0	105	6	564	564
Jan.	40.0	0	73	14	547	557
Feb.	47.6	0	97	7	563	573
Mar.	28.0	55	107	12	532	566
Apr.	41.3	26	67	12	532	558
May	44.6	33	55	19	522	563

* Corrected to Dec. levels of % Sinter, Blast Temperature, Oil, Hot Metal Silicon Content, Slag Volume.