KAWASAKI STEEL TECHNICAL REPORT
No.8 (September 1983)

Improvement in Off-Gas Recovery from Q-BOP

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Synopsis :
No.3 Steelmaking Shop at Chiba Works has two 230t Q-BOPs for the first time in Japan, which are equipped with OG system as off-gas cleaning equipment, and consequently off-gas energy from Q-BOPs is recovered effectively as fuel for power plant. To increase energy recovery, it is effective to reduce combustion ratio of off-gas from Q-BOPs. Chiba's Q-BOPs have decreased the combustion ratio from 5% to 2 or 3% by means of improvement of sealing between furnace and skirt hood. Then, the recovery time of off-gas from Q-BOPs has been extended and the reliability of gas sampler and gas analyzer has been improved. Consequently, the amount of energy recovered from off-gas has increased to about 270 x 10 3 kcal/t. Q-BOP has shown additional advantage of CO gas recovery by injecting limestone powder through the bottom tuyeres.

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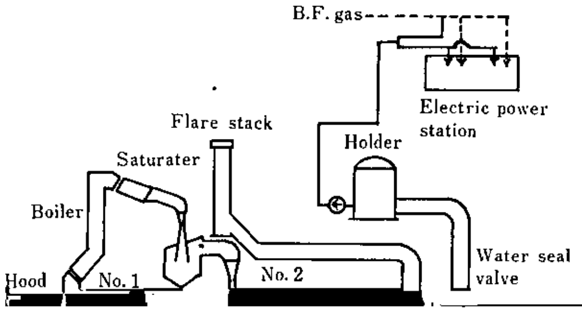
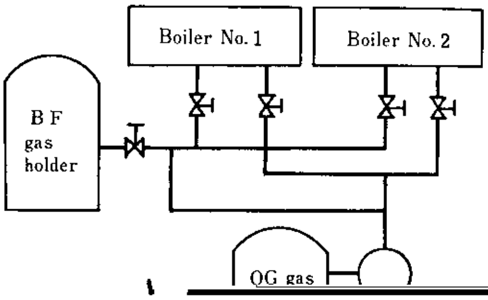

B.F. gas
Electric power station
Flare stack
Holder
Saturater
Boiler
Hood
No. 1
No. 2
Water seal valve


Boiler No. 1
Boiler No. 2
B F gas holder
OG gas

the off-gas and BF gas at the power plant. After the initiation of the prediction and control system,

variation in gas consumption has become smaller, thus demonstrating the favorable effects of the present

system. The system has completely eliminated gas [illegible]

filter would lower the pump capacity, and therefore, the pump capacity was expanded and the pipe diameter

corresponding to the increased capacity was selected. As a result, the gas recovery time was extended by

about 30 sec (8 400 kcal/t).

decrease the gap between skirt and furnace3). The control [illegible]

O-DOP permits max suppression of clogging and [illegible]

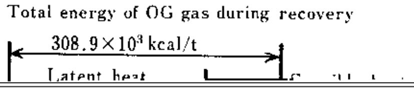


Table 2 Composition of burnt lime and limestone

(wt. %)

Table 4 Advantage and disadvantage of limestone injection (10 kg-limestone/t-steel) in Q-BOP

	Calculated	Observed
OG gas recovery	+6.78×10^3 kcal/t	+6.50×10^3 kcal/t