

KAWASAKI STEEL TECHNICAL REPORT

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Energy Saving Techniques of Kawasaki Steel

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Synopsis :

Among some remarkable progresses made in energy saving techniques in Japan since the Oil Crisis, Kawasaki Steel has achieved more than 14% energy saving in the last five years. This noticeable result was achieved mainly by reduced energy input which itself was attained by a more efficient use of energy combined with a recovery and recycling of exhaust energy in the form of the heating of air, gas, solid materials, supported by the accumulation of some small yet significant energy-saving operational improvements and recovery of exhaust energy in the form of electric power and steam. Major energy saving techniques developed by Kawasaki relate to BF top gas pressure recovery turbine generator, coke dry quenching (CDQ), increased BOF gas energy recovery ratio, higher continuous casting ratio, a slab cooling boiler, and reduced specific-fuel consumption cost in the reheating furnace operation. At present, Kawasaki

Development of New Techniques of Manufacturing Steel

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accounts for 11%.

Table 1 Energy saving measures

Input energy reduction		Exhaust energy recovery	
Operation	Equipment	Steam	Elect.

creased efficiency in energy use in the equipment and energy saving education are performed by the company staff from time to time

equipment because of the continuation of two processes into one or the omission of one process or in

3.3 Target Control on Energy Saving

the case of a drastic drop of availability of equipment. Energy saving is generally based on the foregoing concept, but actually, some measures have been taken

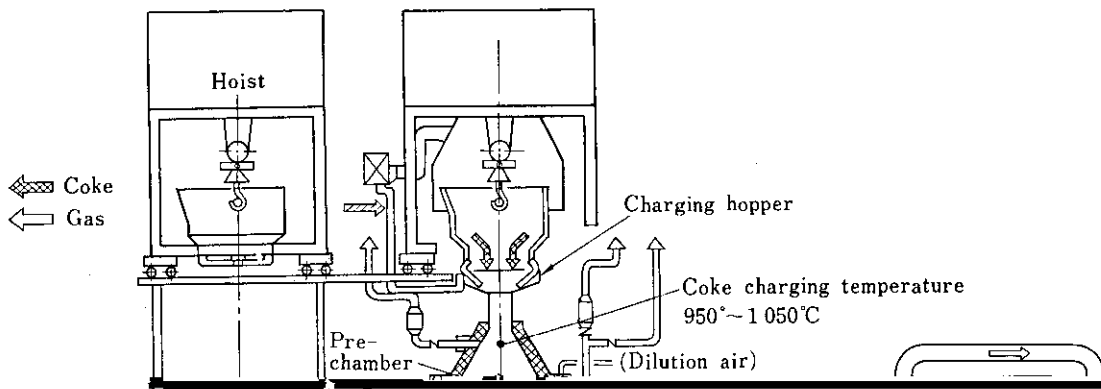
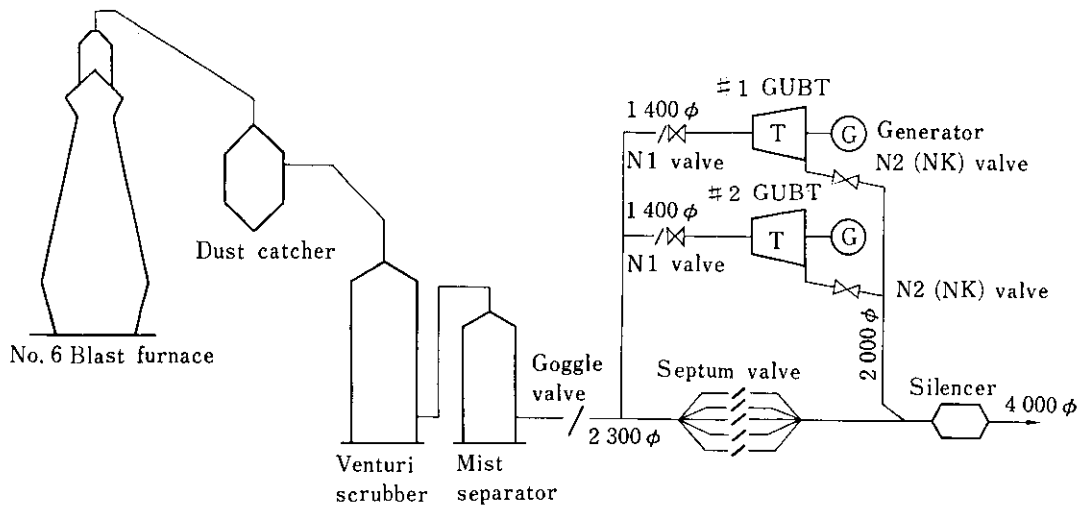
Target control on energy saving in the steelworks is performed with cooperation by energy saving staff in the steelworks to identify and develop themes in

by TRTs of Kawasaki. The quantity of energy recovered by this method for fiscal 1979 amounted to about 290×10^3 MWh, which accounted for about 5% of the total power consumption by Kawasaki.

The schematic diagram of the gas flow route for the GUBT (output: 12 000 kW \times 2 units) of BF No. 6 of

4.2 Coke Dry Quenching (CDQ)

The CDQ equipment of Kawasaki commenced operation at the coke oven of Chiba Works in January, 1977. This equipment is of the U.S.S.R. type and consists of 3 cooling towers each having a coke pro-



tower. While descending inside the tower, the coke the most outstanding of them all is the installation of

as transportation equipment, measures against thermal



... of insect making and clabbing or blooming

160 x 103 kcal/t even after it is sheared. Devising...

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saving in boiler fuel. The quantity of steam recovered accounts for about 50% of the sensible heat of the entire slab.

Since the start of its operation, the SCB has been

charged steel materials by means of recovered exhaust heat

- ④ Measures for saving energy from the reheating furnace itself (measures such as furnace-length

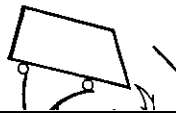
⇒ Hot gas flow direction

⇐ Exhaust gas flow direction

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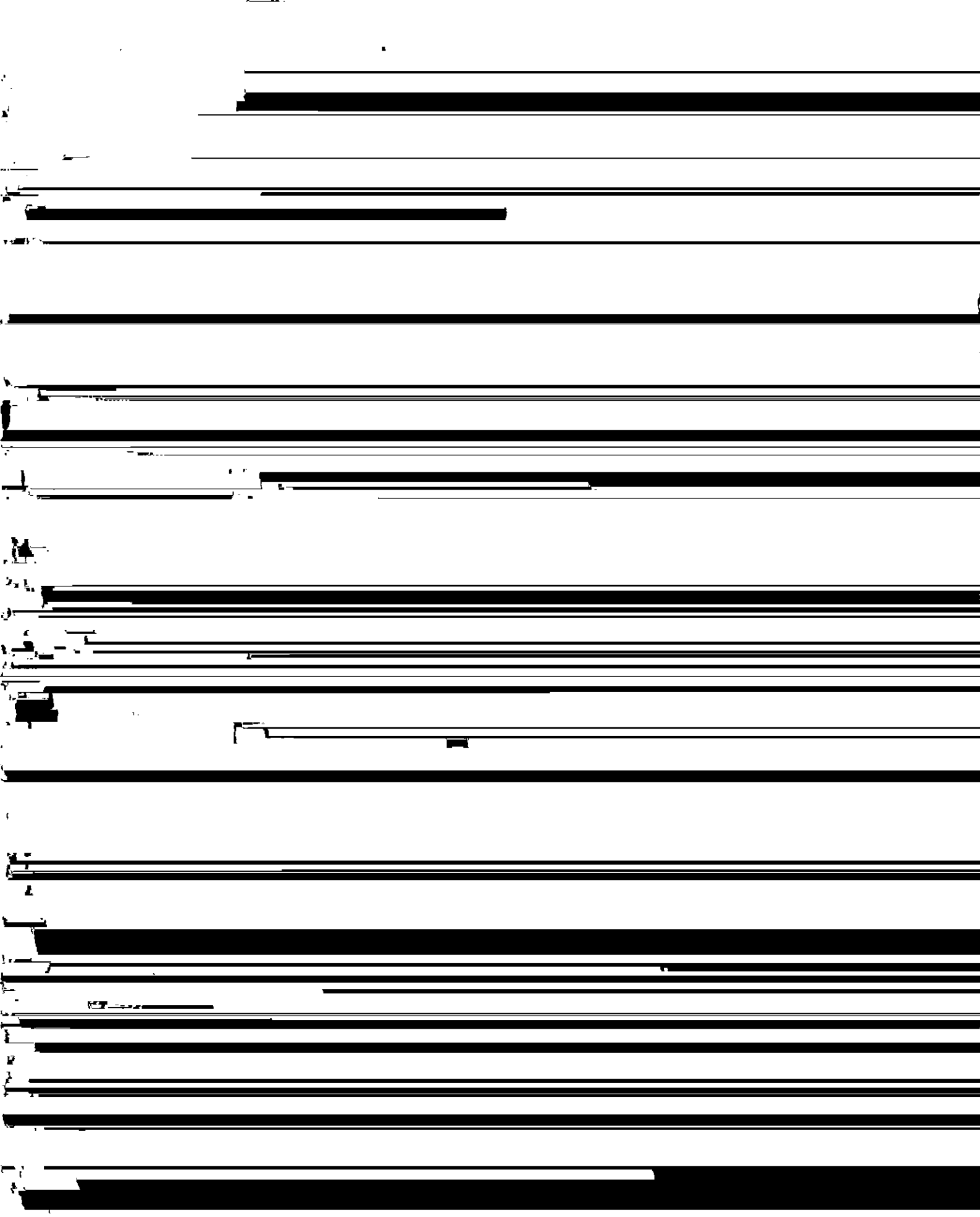
Radiant heat transfer pipe

Steam



Steam

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References

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- 4) Y. Shinohara et al.: *Tetsu-to-Hagané*, 64(1978) 13, pp. 1959-1967