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## Moving Grate Sinter Strand Fired with Lump Coal

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The gas fired hood of moving grate sinter strand used for sintering fly ash, iron ore, etc. has been replaced by a coal fired hood. The performance of the coal fired strand is comparable to that of the gas fired one.

The moving grate sinter strand used for sintering fly ash, iron ore, etc. is provided with an oil or gas fired ignition hood. When the bed of material passes below this hood, the top of the material bed containing integral fuel starts burning. The fire is sucked downwards as the material bed moves forward and by the time the material bed reaches the discharge end it gets sintered through its entire depth.

This institute has a pilot moving grate sinter strand which was initially provided with a gas fired hood and was used for sintering fly ash<sup>1</sup> (Fig. 1). In view of the increase in cost and scarcity of oil and gas fuels, it was considered necessary to convert the existing gas fired system to a coal fired system. This has been done and the new system is described in this communication.

### Description of coal fired sinter strand

The ignition hood comprising a fire box with an inclined grate for burning lump coal was designed and constructed close to the moving grate sinter strand (Figs 2 and 3).

The moving grate loaded with the material passes through the new firing system. The lump coal (size 5-10 cm) burns on the inclined grate. The hot gases move upwards and are reflected over the bed of material. The hot gases in the

space above the material bed attain a temperature of 900-1000°C and ignite the top layer of the bed.

The system was successfully used for sintering fly ash for producing light weight aggregate. In the space above the material bed, a uniform temperature of  $950 \pm 50^\circ\text{C}$  was maintained for 2-4 hr. The material remained below the hood for a period of 8-15 min, depending on speed of the grate (5-10 cm/min). Sintering of fly ash was done at a grate speed of 10 cm/min. Coal consumption was 12-17 kg/hr. The optimum grate speed with the gas fired hood was also 10 cm/min. The characteristics of sintered fly ash aggregate produced on the sinter strand using gas fired

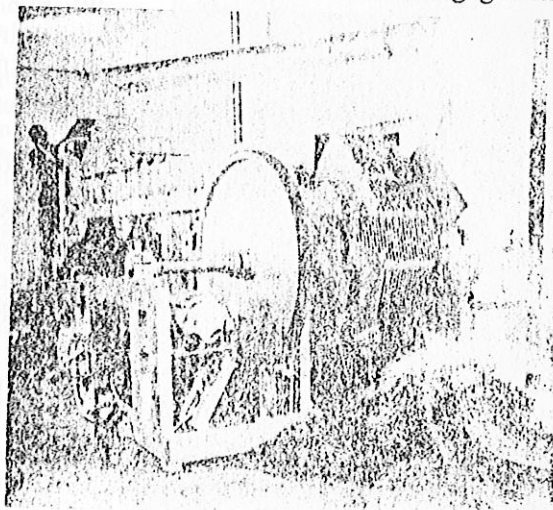


Fig. 1—Moving grate sinter strand with gas fired ignition hood

\*Present address: M/s Asbestos Cement Ltd.

## MOVING GRATE SINTER STRAND FIRED WITH LUMP COAL

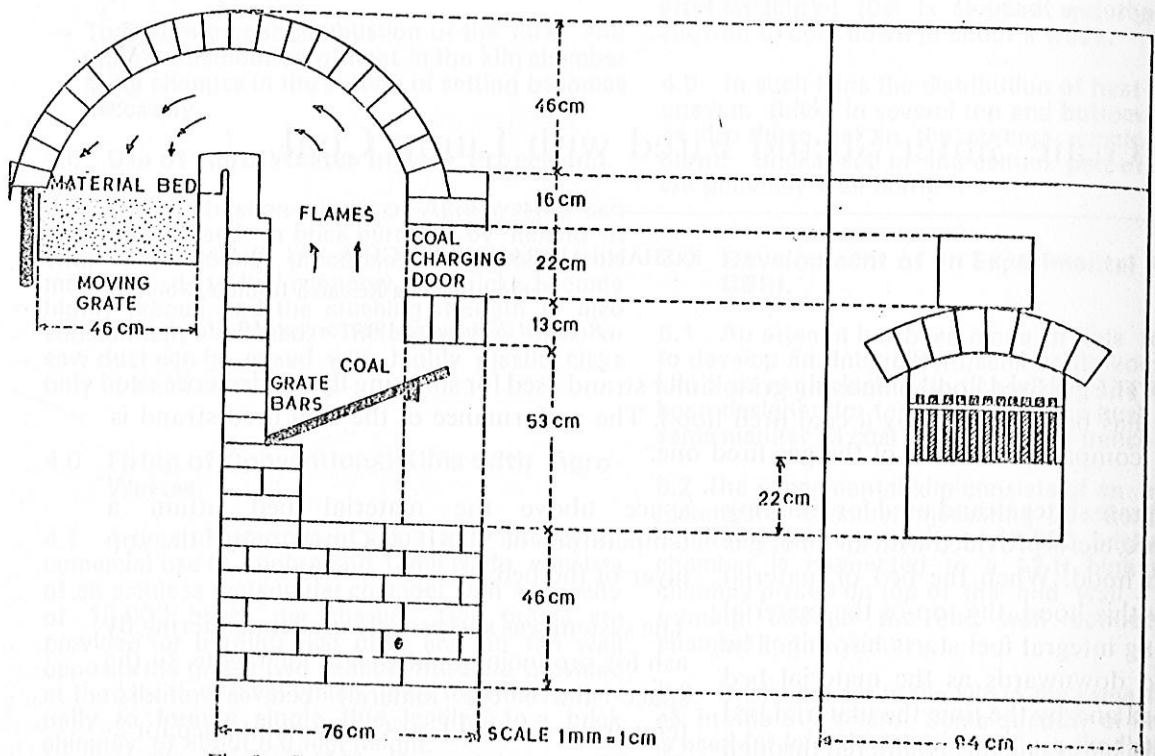


Fig. 2—Coal fired fire box—Ignition hood for moving grate sinter strand

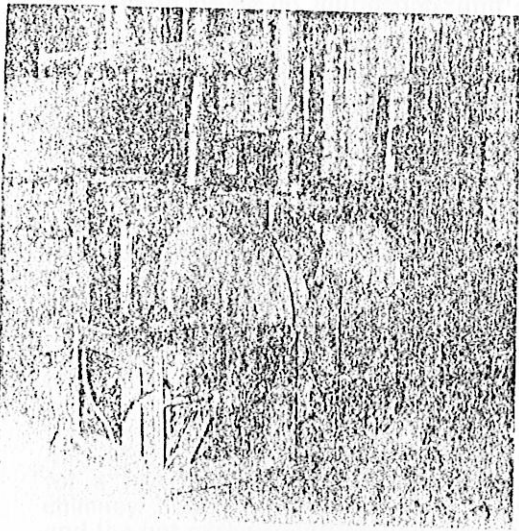


Fig. 3—Moving grate sinter strand with coal fired ignition hood seen from the discharge end

hood and coal fired fire box were similar. The bulk densities were  $683$  and  $690 \text{ kg/m}^3$  and water absorption  $28$  and  $25.5\%$  by weight respectively.

The aggregate crushing value (10% of fines value) for the light weight aggregate produced by the old and new systems was  $4.2$  and  $4.0$  tonnes respectively.

The existing sinter strand being small, only one fire box was found sufficient. For commercial sinter strands, more than one fire boxes of larger size shall have to be suitably positioned to meet the functional requirement.

### Acknowledgement

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### References

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