

## NEW OSCILLATING PLATE VISCOMETER FOR INSTANTANEOUS MEASUREMENT OF VISCOSITY OF MOLTEN SLAG

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An oscillating plate viscometer has been studied thoroughly by Morita and Iida et al [1~2] in recent years, who showed its ability for instantaneous and accurate measurement by using equipment made on an experimental basis. With reference to their study, the authors developed a new oscillating plate viscometer for molten slag from metallurgical processes, which enabled automatic measurement with more accuracy with respect to viscosity. Figure 1 shows the measuring system. The viscometer has the following features.

- 1) Automatic measurement and its data analysis by computer system.
- 2) More precise measurement of a wider viscosity range by adopting the original vibrating system of an industrial vibrator with a leaf spring.

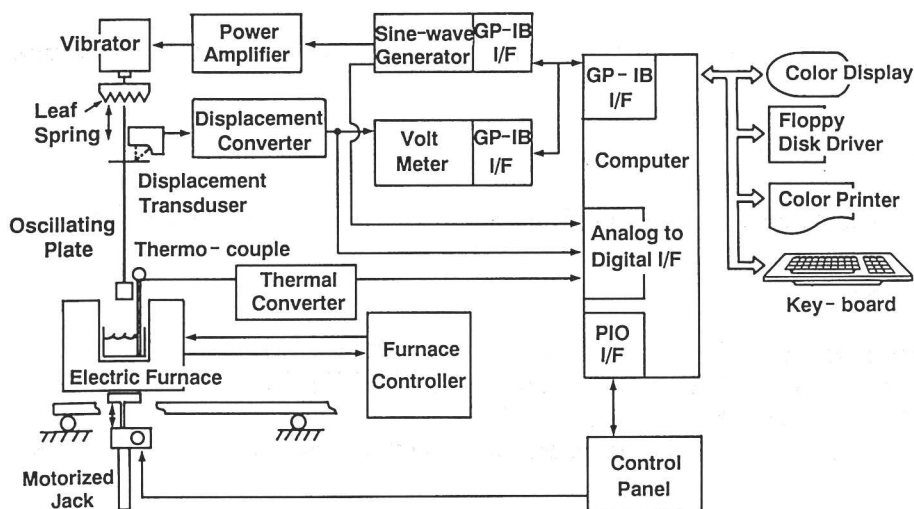


Fig. 1 Schematic diagram of measuring system.

The fluidity of molten slag of a CaO-SiO<sub>2</sub>-FeO system with flux was investigated by using the new viscometer for a simultaneous desilicization and dephosphorization process at the blast furnace runner. In this process, deslagging from the runner is considered to be the most difficult problem because of an increase in slag basicity for dephosphorization. The results are summarized as follows.

- 1) CaF<sub>2</sub> and CaCl<sub>2</sub> addition are effective to reduce viscosity of slag, and their effects are similar.
- 2) It is important to control slag temperature because of increase in the temperature dependency of slag viscosity with basicity of more than 1.5.

### Reference

- 1) Z. Morita, T. Iida and M. Kawamoto: Tetsu-to-Hagane, 70 (1984), 1242.
- 2) T. Iida, M. Kawamoto, S. Fujimoto and Z. Morita: Tetsu-to-Hagane, 71 (1985), 1490.