Melt Surface Temperature Monitoring In Tiltable Induction Furnace

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Abstract : The supervision of the induction furnace is the subject of increasing development because of the rising demand on reliability and safety. An essential aspect of the pyrometers of induction furnace is the determination of the exact temperature on the melt surface related to the current and frequency flow resulting from optimum coil position depending on the applied actual power. With the aid of the mathematical model that describes the appearance and development of the temperature change in the area of inductive cold wall crucible melting, with the use of the automatic control methods it is possible to determine the change of temperature variation corresponding to direct visualization of a meniscus forms on the melt surface under the energy created by the induction coil, the latter can fully or partly influence the meniscus. To solve the problem of pyrometer temperature variation we propose the determination and the study of the total interaction force related to the operating current of the induction generator. This contribution presents an application for melt temperature change detection through a case study of the tiltable induction furnace with induction generator MFG-20. The study indicates that the pyrometer of the measurement temperature is powerful device related to the development of a new control method.

Keywords : Tiltable induction Furnace, cold wall crucible melting, pyrometer measurements, Infrared thermography measurement.