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Automatization of Pilot Unit for Research of Pipe Shell Centrifugal Casting Processes

Melting pipe shells at industrial enterprises and plants is carried out with the help of automatic control machines (machines of centrifugal casting) for pipe shell casting.

Nowadays we have a wide range of problems connected with the melting of qualitative pipe shells. The actuality of research topic is stipulated by its peculiarity.

Particularly, the problem of finished qualitative pipe shell melting is not fully solved at present times since such pipe shells would not be necessary used for being treated several time at rolling shops.

Herewith, the agreed controlling system is necessary to be provided with such rotation modes of centrifugal machine`s foundry mold, so that molten metal would evenly spreads over all sides of foundry mold, thus getting a cylindrical form (form of pipe) to be created.

Raised problems have a practical interest and should be solved by means of developing and introducing effective modes of centrifugal machine`s foundry mold rotation.

The purpose of the research is to get most effective centrifugal machine`s foundry mold rotation due to the study of nature of molten metal motion in rotating foundry mold based on the simplified digital hydrodynamic model.

The task of the research is developing digital hydrodynamic model to control alternating current drive of centrifugal machine.

The subject of the research, as it was mentioned in this work, is creating a control system of centrifugal machine`s foundry rotation modes.

To support this research of pipe shells centrifugal casting processes with proved results the pilot unit located directly in a casting shop has been used.

After developing digital hydrodynamic model as well as making analysis and synthesis, we need to develop the software, which eventually will provide the control of centrifugal machine`s foundry rotation modes.

Speaking about scientific result of this research we should mention that controlling system of centrifugal machine`s foundry rotation modes will be improved due to developing digital hydrodynamic model and further introducing obtained results to control alternating current drive of centrifugal machine.

Correspondingly, it will give the possibility to improve the quality of existing pipe shells which will result in increasing their output and make them more competitive on the world market.