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Tue-Af-Po2.24-11 [110]: Operation parameter and economic effect study of the 1 MW HTS DC induction heater

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In previous studies, the advantages of high temperature superconductor (HTS) DC induction heater (HIH) in energy saving and better heating quality had been provided. Compared with the conventional AC induction heater, the initial capital investment for HIH is high. The energy cost saved in the future is applied to pay the cost of HIH project. The key issue of the industrial application is to determine whether there is economic feasibility. In this paper, an economic analysis method on operation parameter of 1 MW HIH is proposed. The economic indexes to evaluate the economic performance include net present value (NPV), internal rate of return (IRR) and payback period (PBP). And the economic effect of different operation parameters of the HIH is also discussed, including four different system capacities, three solutions to solve peak torque issue and different aluminum billet parameters. The results show the PBP of 1 MW HIH investment is 2-3 years. The analysis results provide a reference to make the final decision for the industrial application and energy-saving renovation project of the HIH.

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