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Characteristic Analysis of Lab Scale Magnetohydrodynamic Generator with Bi-plant Method GEUNHYEONG LEE, HEE REYOUNG KIM, Ulsan National Institute of Science and Technology — A magnetohydrodynamic (MHD) generator with an electric output of 10 kW was analyzed for the application of bi-plant method electricity generation. The MHD generator was considered to increase total efficiency of fossil power plant by adopting bi-plant method which generates electricity by both turbine and MHD generation. The flue gas with the high temperature of around 2000 K from the fossil power plant was used for the generation of electricity from its flow in the magnetic field, where electricity is produced directly without turbine facility from such an MHD generator. The magnetic flux density of a magnet, conductivity of plasma state of flue gas and velocity of gas were considered to analyze MHD generator with electric output of 10 kW. The velocity profile of fluid on the change of geometrical variables of the generator was analyzed by using finite element method. The magnetic flux density and velocity profile in the MHD generator calculated solving MHD equations by finite element method code simulation were used for calculation of electrical output.

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