Superconducting high gradient magnetic separation for magnetic substance at sludge powder of hot rolled coolant

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Abstract : It is an important task to construct a recycling society with a low damage on the environment in our century. Magnetic separation is expected to be applied for the industrial waste treatment as an important supporting technology. In the magnetic separation of dry condition, the cohesive force between particles is strong compared with that in the wet condition's magnetic separation. The use of high magnetic field by the superconducting magnet enhances the powder's magnetic substance capture ability of the magnetic separation.

In this study, the POSCO's coolant sludge of hot rolled steel was used for the superconducting magnetic separation of dry condition. Cryo-cooled NB-Ti superconducting magnet with 100 mm room temperature bore and 600 mm of height was used for magnetic separator.

Key Words : Magnetic separation, dry condition, powder, superconducting magnet

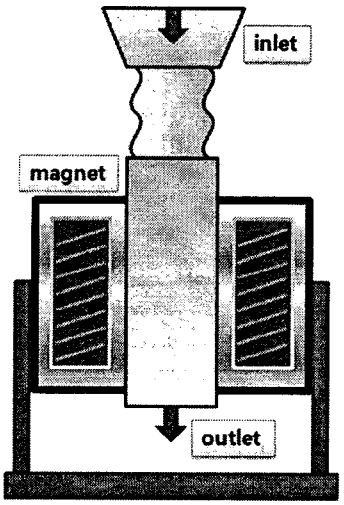

Fig. 1. Schematic diagram of the superconducting magnetic separation system.

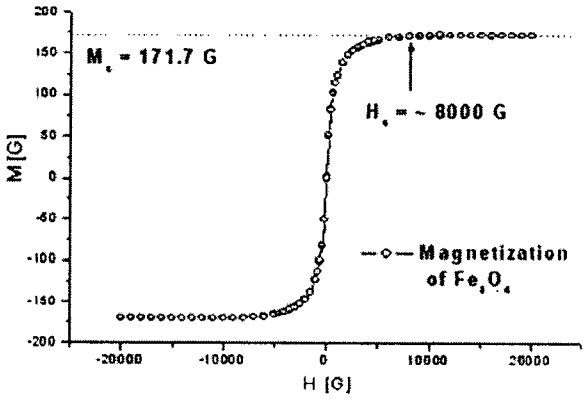

Fig. 2. Magnetic susceptibility of powder.