

Magnetic Field Analysis around Stainless Steel Matrix for HGMS

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A HGMS(High Gradient Magnetic Separator)uses matrix to make high magnetic field gradient so that ferro- or para- magnetic particles can be attracted to them by high magnetic force. These matrix are usually composed of stainless wires having high magnetization characteristics. This paper deals with superconducting HGMS which is aimed for purifying waste water by using stainless steel matrix. Background magnetic field upto 6 T is generated by a superconducting solenoid and the stainless steel matrix are arranged inside of the solenoid. In order to calculate magnetic forces exerting on magnetic particles in waste water, it is important to calculate magnetic field and magnetic field gradient those are proportional to the magnetic force acting on the particle. So we presents magnetic field distribution analysis result and estimates how many times of magnetic force will act on a particle when the matrix are arranged or not.

Keywords : High Gradient Magnetic Separator, matrix, magnetic field distribution, magnetic force