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Equipment and Products

"MAGNETIC TRAP" FOR CERAMICS

Eriez Magnetics Europe announced the launch of a magnetic separator for the ceramics industry. The "glaze magnetic trap" uses rare earth tube magnets to remove very fine particles of tramp iron, fine iron and stainless steel from the ceramics glaze. Material is pumped up through the centre of the trap which them filters past the tubes due to gravity. The glaze trap is portable and is said to offer a low–cost, highly effective solution to the problem.

COEXISTENCE OF MAGNETISM AND SUPERCONDUCTIVITY

Magnetism and superconductivity represent two different ordered states into which metals can condense at low temperatures. In general, these states are mutually exclusive. A newly discovered class of compounds with the formula RNi_2B_2C, where R is a rare–earth element, exhibits both antiferromagnetic ordering and superconductivity. The states co–exist right down to the atomic level in at least one of these compounds, $ErNi_2B_2C$.

MAGNETIC SHIELD IN BIOMAGNETISM

Kyushu University (Japan) developed a cylindrical magnetic shield which is effective for the measurement of very weak biomagnetism in brain. It is also said to be lighter and cheaper than conventional permalloy shields. The system has i.d. of 920 mm and weighs 250 kg. It provides the shield ratio of 4000 at the central part for external field of 1 Hz.

ELECTROSTATIC FLOATING SYSTEM

Kanagawa Academy of Scientific Technology (Japan) developed an electrostatic floating transport system that is capable of carrying an 8–inch silicon wafer weighing 51 g in a non–contact mode. The system uses static electric force to make wafer levitate, and moves the levitated body with a change in the voltage applied to the electrodes arranged in a fancy paper–strip fashion. The wafer moved smoothly at a height of 0.25 mm over a distance of 300 mm.

NEW GRAVITY SEPARATION TECHNIQUE

Mineral Technologies Intl. (USA) has been granted a patent for a jig that is claimed to work effectively down to particles sizes of 1 μm. Looking similar to a packed column flotation machine, this jig is said to make sharp gravity separation. In finely ground iron ores, the jig is reported to yield significantly higher grades and recoveries than do conventional flotation or magnetic separation techniques. With the feed entering the column near the centre and the water near the bottom, light particles exit from the top and dense particles from the bottom.

FINE PARTICLE ELECTROSTATIC SEPARATION

Separation Technologies Inc. (USA) developed an electrostatic separator for fine particles. The separator has self–cleaning electrodes and separates fine powders in a particle size range from 0 to 600 μm. The process is available with nominal throughputs of 10, 20 and 30 t/h.

SUPERCONDUCTING MAGNET WITHOUT LHe

Japan Magnet Technology Co., Ltd. has, in cooperation with Kobe Steel Co., Ltd., developed a mechanical refrigerator which can generate 5 T magnetic field in a bore 300 mm in diameter. The refrigerator was delivered to the University of Tokyo.

70 MW SUPERCONDUCTING GENERATOR

The installation of a 70 MW prototype test superconducting generator was completed at the Osaka Power Station of Kansai Electric Co., Ltd. The generator has been tested in order to obtain load testing and other data necessary for designing a 200 MW pilot generator. Its generation capacity is 83 MVA, the world's largest superconducting generator. The power generation loss is reduced to 2/3 of a conventional resistive power generator, and the mass of the plant was reduced by 30%. The superconducting coils generated 4 T, the rotor is a multi–layer cylinder in which liquid helium is stored. The tests will continue till March 1999 when the design of the 200 MW generator will commence.