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Equipment and Products

NEW LIFTING AND OVERHEAD MAGNETIC SEPARATORS

A range of self–cleaning overhead magnetic separators capable of processing over 100 tonnes of scrap per hour have been introduced by O.S. Walker Co. Supplied as a complete system (including rectifiers, controls, guarding, suspension apparatus and installation) the company claims the 3 metre wide by 7 metre long separators to be the largest ever built. Applications for these custom–made units include recycling, tramp iron removal and iron reclamation from car shredders, slag and foundry sand.

Eriez Magnetics Inc. announced a new square bipolar lifting magnet for deep–field lifting applications such as rebar bundles and other irregularly shaped loads. The magnet is available in six sizes with breakaway capacities on thick iron plates of up to 20 tonnes with a 2:1 safety factor.

A GRAVITATIONAL UNIT FROM UKRAINE

Investigation into the possibility of using inclined vibrating surfaces for separation of finely ground ores has been carried out at the Mekhanobrchermet Institute (Krivoy Rog, Ukraine). Two basic types of gravitational unit with the magnetic deck orbital vibrations are being manufactured. The number of effective surfaces (decks) varies from 1 to 30 while the capacity of a unit ranges from 3 to 60 t/h. Benefits of a gravitational unit with orbital vibrations, as compared to shaking tables and other processing equipment are particularly apparent in beneficiation of slimes. Test results on tungsten and tin–bearing raw material (– 44 μm, grade of 0.05%) showed the possibility of producing concentrates with the grade ofl to 1.5 %, at the recovery of up to 70%. When separating baddeleyite from the apatite flotation slimes (0.25 to 0.35% baddeleyite), the target was a concentrate of 1 % at 80% recovery. In practice, the concentrate of 1.2 to 1.3 % grade was produced at 80% recovery.
When separating hematite–magnetite slimes (98% – 44 μm, 26% Fe) the concentrate with 64% Fe was obtained. Separation of the chromite slimes (– 150 μm, 32% Cr) resulted in the concentrate containing 54% Cr. At a gold– processing plant the gravitational middlings (24.3 g/t Au, – 5 mm) yielded a concentrate containing 400 to 800 g/t.

NEW MAGNETIC INSTRUMENTS FROM LAKE SHORE

Lake Shore's new 400 Series Gaussmeters which feature measurement stability and ease of use are offered with a broad range of Hall probes, in varying degrees of probe sensitivity, style and orientation. A hand–held gaussmeter model 410 is designed for magnetic field measurements to 0.002, 0.02, 0.2 and 2 Tesla. Most

operating functions can be selected via the front panel keypad and the instrument displays, in Gauss or Tesla, ac and dc magnetic field values with a 10 mG resolution. The model 420 is capable of measuring ac and dc fields within 0.02 μT to 30 T in either Gauss or Tesla, with a 3–3/4 digit resolution. The model 450 can measure magnetic field within the range of 0.002 μT to 30 T with a 4–3/4 digit resolution. Series 7000 ac susceptometers/dc magnetometers were developed to measure dc magnetic moments.

MAGNETIC MATERIALS: PERMENDER AND HIGH Si STEEL

Hitachi Metals Ltd. obtained a patent for the Permender (iron–cobalt alloy) having magnetic and vibration resistance characteristics, and for high Si silicon steel having low coercive force, which were developed as magnetic materials for printer parts. Hitachi Metal Precision used Permender for printer parts, such as yoke and armature, leading to a development of small and lightweight print heads. The high Si steel is used for a yoke of printers to reduce the heat generation of an impact dot printer.

ENERGY–SAVING MAGNETIC MATERIAL

New Technology Development Laboratory Ltd. (Japan) has developed a magnetic material with energy efficiency for electron noise filters. This material considerably reduces the energy consumption if it is used for a magnetic core of the inductor choke coil. This new material is an alloy based on several types of iron materials and it dose not include rare earths.

MAGNETIC FIELD OF 20.5 T AT 1.8 K

The National Research Institute for Metals (Japan) has developed a superconducting magnet of 50 mm internal diameter which can generate 20.5 T at 1.8 K. U.K. has achieved 20.7 T in a superconducting magnet of 33 mm internal bore while germany achieved 20.4 T with a magnet of 40 mm internal bore. Because NIRIM's magnet has an internal bore of 50 mm, it is the largest superconducting magnet that can generate magnetic field exceeding 20 Tesla.

MAGNETICALLY SUPPORTED TABLE FOR FINE MACHINING

T. Higuchi developed a magnetically supported table for fine machining. The table is supported by six electromagnet pairs. Vertical, cross and longitudinal positions, as well as three inclinations of the table can be precisely controlled by balancing the magnetic forces of the six electromagnets. The table position can be controlled to an accuracy of several μm.