High Intensity (HI) Magnetic Filters

Above: HI 1000-65 Procssing sand
Right: HI 50-50 Ceramic body processing, Italy

A high intensity, high gradient magnetic separator to capture fine ferrous and paramagnetic particles in liquids and slurries.

Applications

- **Ceramics** - High Intensity (HI) Filters are proven to offer higher separation performances in ceramics plants than traditional magnetic separators, such as electromagnetic bowl filters
- **Mineral Processing** - results have shown the HI Filter provides better magnetic separation on mineral slurries, such as silica and feldspathic sands, than traditional carousel wet magnetic separators, such as the WHIMS - up to 30% separation improvement
- **Food** - including successful installation for chocolate producers
- **Chemicals**

Features

- A unique, technologically advanced electromagnetic coil design
- Background fields of 2500, 5000, 6500 and 10,000 Gauss
- Direction of magnetic field into a central core to induce a special, magnetically susceptible matrix which amplifies background fields
- Controlled feed velocity ensuring maximum residence time in magnetic zone
- Direction of feed ensures no matrix blockage (often associated with WHIMS)
- Portability (small units only)
- Low running costs
- Minimal maintenance
- Availability of automatic self-cleaning models for continuous operation without any need for supervision
- User-friendly control panel as stand-alone unit or linked to central computer system (PLC)
- Fully encapsulated magnetic system, thus preventing external contamination (sometimes encountered with bowl fed filters)

Benefits

Ceramics:

- Purification of glaze and body
- Substantial (over 90%) reduction in product defects attributable to iron contamination when installed on glaze and slip lines
- Lower product rejects and improved productivity
- Brighter and whiter end product

Mineral processing:

- Purification of industrial minerals with resulting commercial gains

All industries:

- Improved quality
- Environmentally friendly alternative to traditional separation methods, such as flotation
- Economically viable upgrading of previously unsaleable product

ERIEZ®

Manual Cleaning Systems

All models can be supplied without associated valve assemblies and automatic controls for manual operation. Alternatively, customers can retro-fit their own cleaning system in consultation with Eriez.

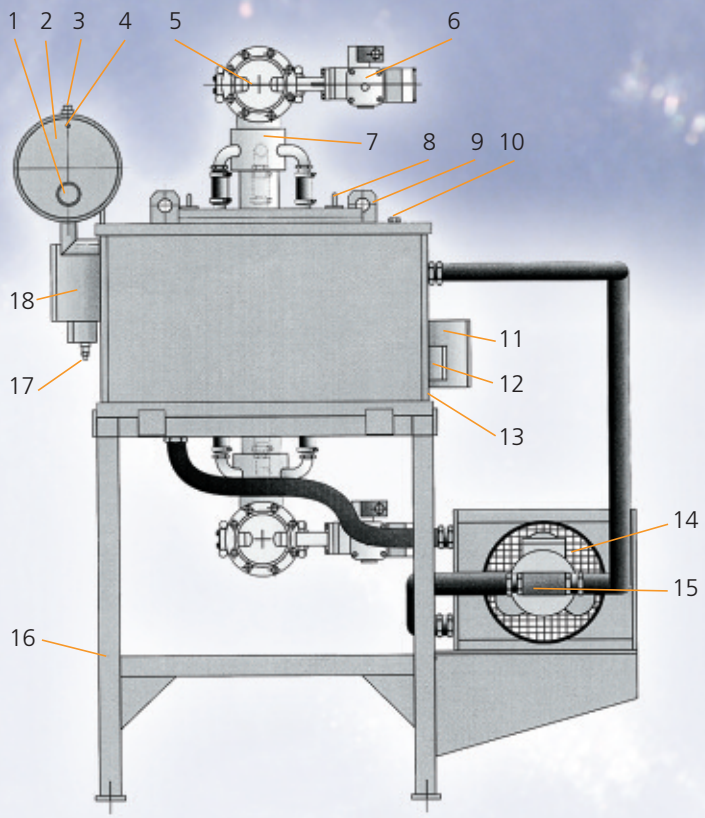
Automated Cleaning Systems

Fully automated HI Filters ensure maximum efficiency of operation. Continuous processing can be achieved by operating multiple filters in the "flip-flop" configuration.

The automated system includes:

- Fully sequenced valve operation
- Customised control panel which can be adjusted to optimise process and cleaning times and maximise separation performance

Diagram of HI Filter



1 Oil level sight glass (hot)
2 Oil exansion tank
3 Oil fill (hot)
4 Pressure release valve
5 Butterfly valve
6 Pneumatic actuator
7 Product/wash distributor
8 Top plate and valve assembly lift eyelets
9 Lift lugs for complete assembly
10 Oil fill (cold)
11 Butterfly valve connection box
12 Air supply manifold (6 Bar pressure)
13 Oil drain (on far side)
14 Heat exchanger
15 Pump/fan motor
16 Frame assembly
17 Thermostat probe
18 DC supply junction box

Below left: Typical control panels for flip-flop arrangement, automated system.

Below right: Typical valve assembly for an automated system

Models and Field Strengths

Model	Capabilities
2500 Gauss	For the separation of fine ferro-magnetic iron of abrasion or scale. Suited to low viscosity materials.
5000 or 6500 Gauss	For very fine ferromagnetic iron of abrasion or scale, or paramagnetic contaminants such as iron bearing minerals, stainless steel or nickel and cobalt compounds. Ceramic glaze and other materials with higher viscosities also require the use of this model.
10,000 Gauss	For ultra fine paramagnetic contaminants. Used to increase product brightness or where product specifications call for extremely high purity.

Note: Gauss figures relate to background field only.

To achieve fields in excess of 1 Tesla (10,000 Gauss), Eriez also manufactures the **POWERFLUX HGMS** - an advanced, cryogen-free superconducting magnet.

Laboratory tests are recommended on all mineral and ceramic slurries to verify equipment selection.

Above: HI 200-50 Slip/body processing, UK
Below left and right: HI 800-65 processing quartzite, Italy

HI Filter Dimensions and Weights

Model	Background Field (Tesla)	Height (m) A	Height with Valves (m) B	Maximum Width (m) C	Diameter for Pipework (mm)	Weight (kg)	Watts
HI 25-25	0.25	1.15	1.85	0.70	50.8	800	1850
HI 50-25	0.25	1.25	1.95	0.90	50.8	1360	2050
HI 100-25	0.25	1.35	2.05	1.00	63.5	1680	2600
HI 200-25	0.25	1.4	2.1	1.6	101.6	1950	2600
HI 400-25	0.25	1.70	2.50	1.30	152.4	4000	4800
HI 800-25	0.25	1.70	2.50	2.00	203.2	5000	5000
HI 25-50	0.50	1.15	1.88	1.00	50.8	1100	4300
HI 50-50	0.50	1.25	1.90	1.10	50.8	1150	5500
HI 100-50	0.50	1.55	2.25	1.70	63.5	5800	5800
HI 200-50	0.50	1.70	2.90	1.80	101.6	5900	7200
HI 400-50	0.50	1.80	2.90	1.80	152.4	11000	15000
HI 600-50	0.50	2.00	3.00	1.95	168.3	16000	18000
HI 800-50	0.50	2.10	3.10	2.30	203.2	20000	20000
HI 1000-65	0.65	2.50	3.60	2.50	203.2	20500	32500

Note: Dimensions given are for general guidance only. They can vary considerably depending upon application. Larger units than those quoted above are available - further information provided on request.

Typical HI Filter Capacities for Ceramics Applications m^3/hr

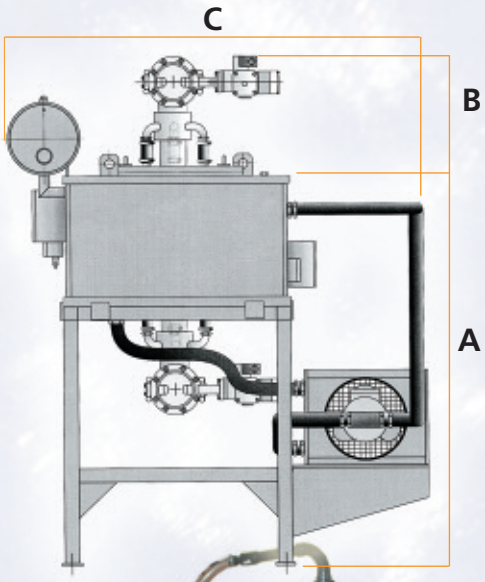
Series	Glaze	Glaze with glue	Slip/ Body
HI 25	3.0	1.5	3.0
HI 50	6.0	4.0	6.0
HI 100	10.0	7.5	10.0
HI 200	16.0	-	16.0
HI 400	-	-	24.0
HI 600	-	-	32.0
HI 800	-	-	48.0

Eriez Laboratory Facilities

The Eriez laboratory in the UK is equipped with the latest magnetic separation technology.

The range of laboratory magnetic separators for the testing of customer samples is the most extensive available anywhere in the world.

Eriez recommends sample testing to ensure the optimal separation solution is found for a given application. Expert, professional advice is provided by experienced process engineers.



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