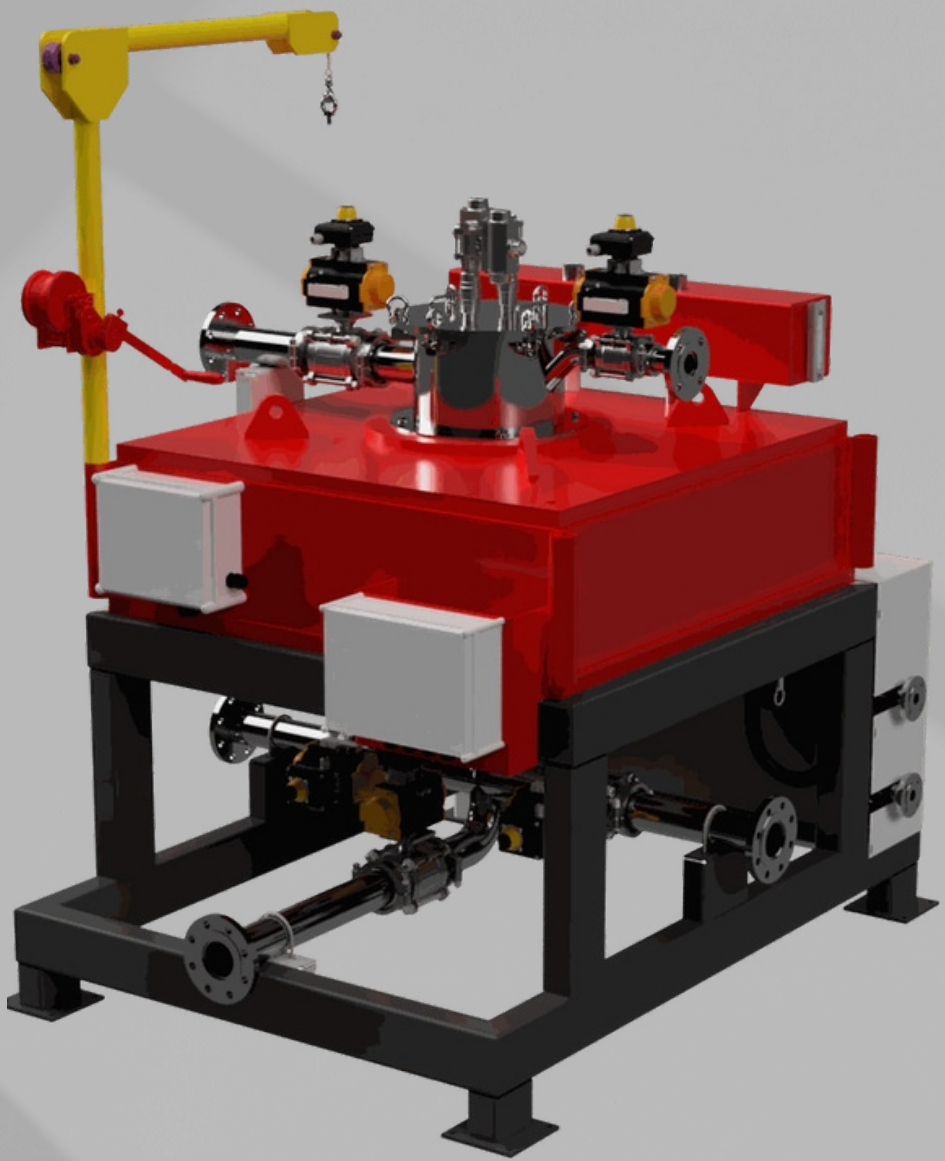
Precision Global Konex Ltd

Wet Electromagnetic Filter



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WET ELECTROMAGNETIC FILTER

PRODUCT SUMMARY

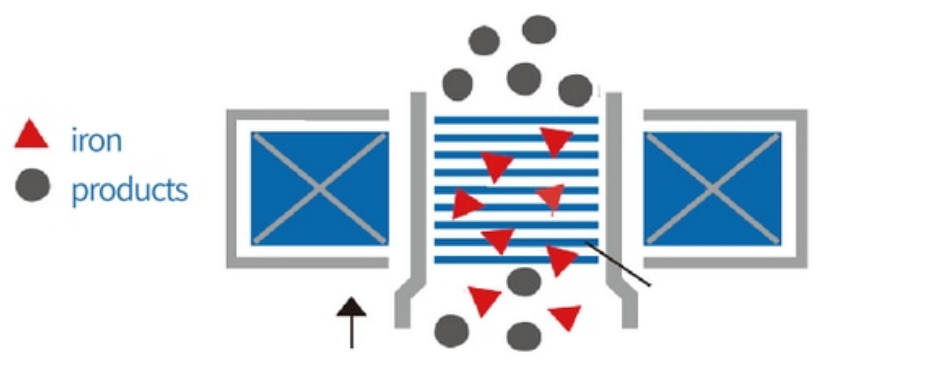
Designed to deliver superior filtration performance by effectively removing fine magnetic and paramagnetic contaminants from liquids and slurries.

The electromagnetic coil generates a uniform extremely high intensity magnetic field in the product zone.
When your product passes through the magnetic medium, paramagnetic particles are captured and removed from the product stream.

Controlled by custom designed PLC logic and hardware, the system automatically flushes out captured magnetics and continues to ensure your product meets the highest grades 24/7.

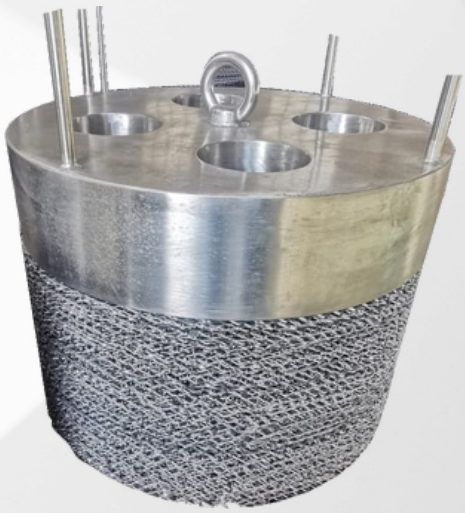
APPLICATIONS

- Ceramic glazes and slips
- Ball clay, calcium carbonate, talc
- Silica sand
- Quartz
- Feldspar
- Kaolin



The equipment comprises of an oil filled electro-magnetic coil, an air-cooled transformer/rectifier in the control panel, automatically operated valves for slurry/water flush, air injection valve(s), and an oil cooling heat exchanger for the magnetic coil.

The main body of electromagnetic filter is composed of an electromagnetic coil placed in a steel casing, and the stack magnetic medium (the ‘Matrix’) is installed in the centre of the coil.



Magnetic Pole

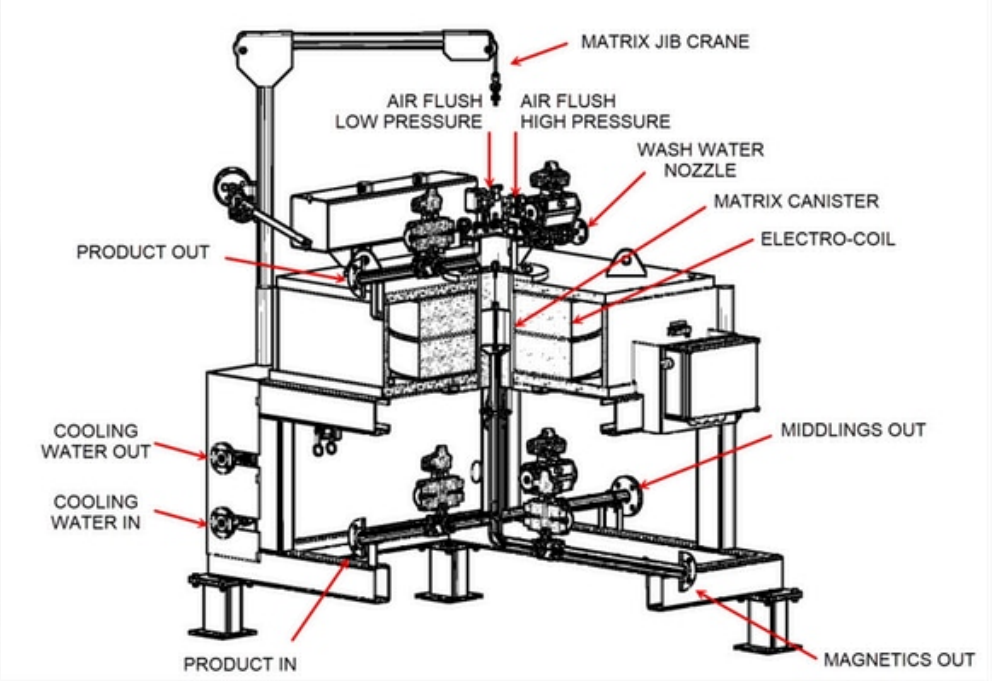
WET ELECTROMAGNETIC FILTER

OVERVIEW

Product is pumped upwards through the magnetic field in the canister containing the magnetic Matrix. Paramagnetic particles are effectively captured on the Matrix as non-magnetic material passes through. This process ensures efficient extraction of weakly magnetic impurities.

As the Matrix becomes loaded with magnetic material and reaches saturation point, the feed valve is closed, Matrix demagnetised and the system flushes clean, effectively discharging the accumulated magnetic materials and restoring the Matrix capturing capacity.

Using FEA and for simulation and physical testing methods the electromagnetic coil design generates a uniform magnetic field in the canister.



Thus all areas of the canister are of the same high magnetic forces and eliminates any 'dead' spots.

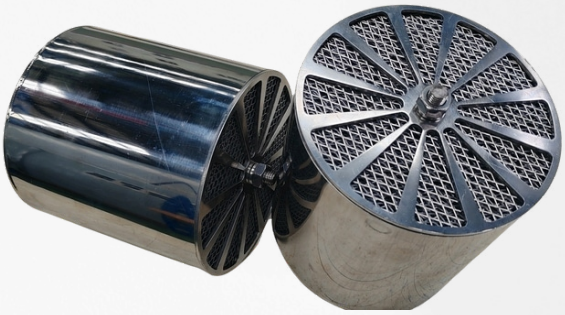
To enable removal of the matrix for manual cleaning and/or replacement a Jib Crane is supplied to easily raise, swivel away from the machine and lower to ground level.

WET ELECTROMAGNETIC FILTER

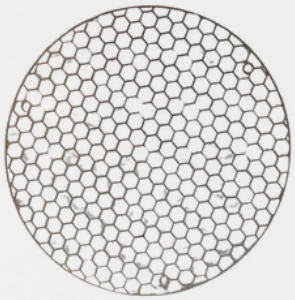
MATRIX

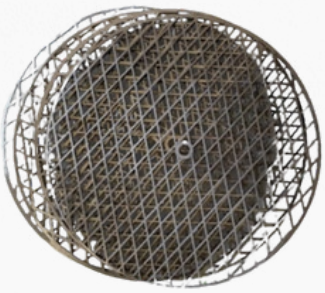
The Matrix have many different configurations, specifically designed and selected for the customers product and recovery/grades required. Manufactured from corrosion resistant materials, it provides long service life and excellent magnetic permeability. The form of design provides very high magnetic gradients and amplifies the background magnetic Gauss.

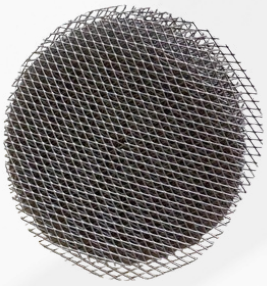
Diamond mesh matrix



Wire mesh matrix





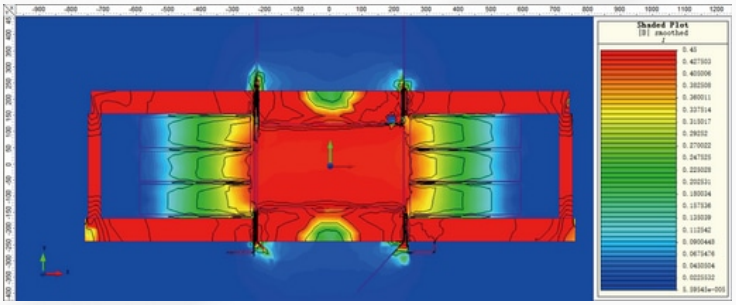


Diamond mesh matrix

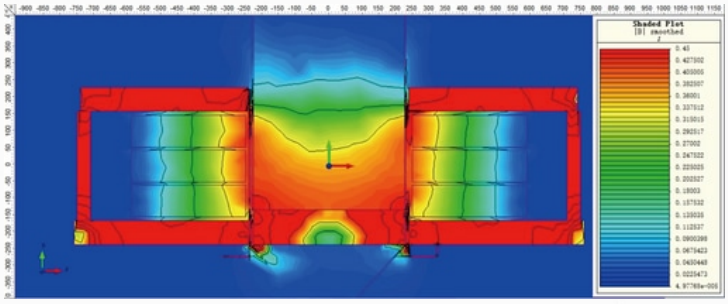
Cellular matrix

OPTIMISED MAGNETIC FIELD DESIGN

FEA analysis helps in optimizing the design, ensuring durability, and predicting operational efficiency before physical testing.



Mag-Field with Top Pole



Mag-Field without Top Pole

Featuring an ultra-high core field strength design, the system delivers a core magnetic intensity of 10,000 Gauss and an operational working field strength of up to 40,000 Gauss. This advanced capability ensures superior separation performance and enhanced efficiency.

The integrated Human-Machine Interface (HMI) provides real-time monitoring of equipment status. In the event of a malfunction, detailed alarm notifications are immediately displayed, ensuring prompt feedback to the operator for rapid diagnosis and response.

WET ELECTROMAGNETIC FILTER

KEY FEATURES AND BENEFITS:

High-Efficiency Filtration
- Captures ultra-fine particles for optimal material purity using high field strength and focused magnetic designs

Advanced Electromagnetic Technology
- Ensures precise separation with minimal energy consumption

Constant Digital Control Magnetic Strength
- Consistent and reliable automatic control of the magnetic force.
- (Many other alternatives can vary significantly through temperature variations, resulting in large inconsistencies)

Low Maintenance & Durable Design
- Built for continuous operation
- Designed by Engineers and Operators to ensure maintenance, spares, servicing and use is streamlined in all aspects

Advanced (yet Simple) Operation
- HMI Control Panel
- Plant control available
- Multiple user programable 'configurations' for quick recall and use
- Self cleaning continuous operation

Customizable Solutions
- Available in various sizes and configurations to suit specific process
- requirements

Factory Acceptance Testing
- (FAT) before releasing from production on 100% of our products.

DATA SHEET

Typical slurry Requirements:
- Solid Content: 20-55%
- Magnetic Content: Less than 1%
- Custom designs available

Typical working Cycle:
- Flush every 10 to 30 minutes when the magnetic content reaches 1%.
- At the PPM level, washing may be required only once every 8 hours.
- Customers should adjust the working cycle based on actual usage data to optimize performance

TYPE	WITH/WITHOUT MATRIX GAUSS DATA	MATRIX DIA (mm)	SQ mm mm2	Reference Capacity L/M	Reference Capacity m3/h	WEIGHT (kg)	POWER (kW)
DN 150	3500/14000 Gauss 5000/20000 Gauss 10000/40000 Gauss	150	17663	100	6	1860-2850	4.8/8.5/14.5
DN 250		250	49063	250	15	2600-3450	7.5/14.5/26
DN 300		300	70650	350	21	2850-4250	8.5/16.5/23
DN 350		350	96163	475	28.5	3250-4350	8.9/15.8/24
DN 400		400	125600	625	37.5	3550-4850	11/18/27
DN 450		450	158963	800	48	3550-4850	11/18/27
DN 500		500	196250	950	57	4250-6450	14/21/34
DN 600		600	282600	1200	72	5350-10950	19/35/85
DN 850		850	567163	2400	144	6750-13500	TBA
DN 950		950	708463	3000	180	7120-14800	TBA
DN 1100		1100	949850	3800	228	8500-17300	TBA

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