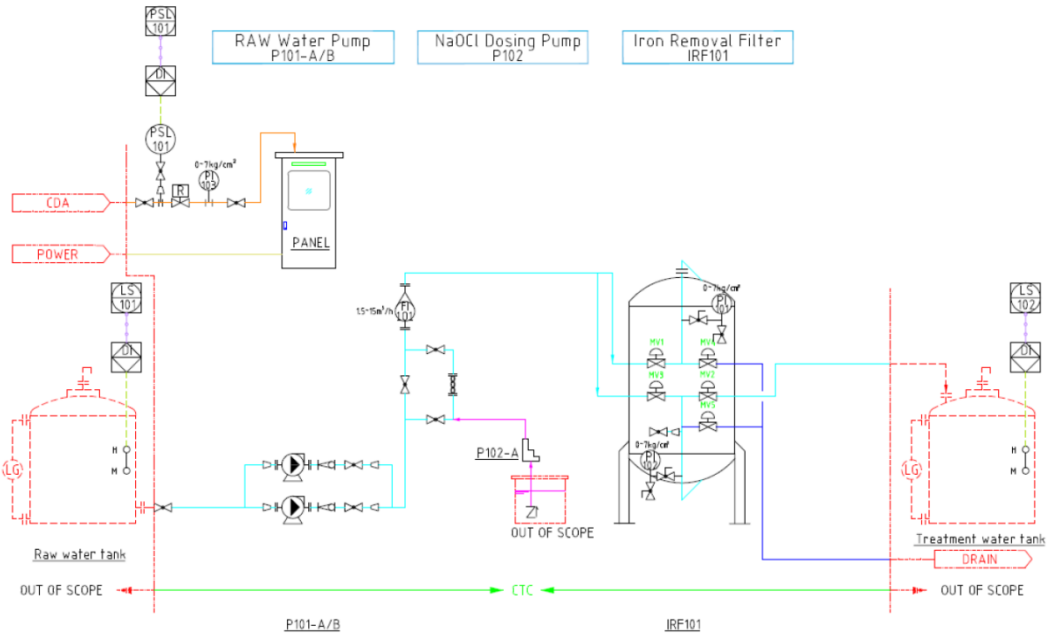
E.SHORE International Ltd
伊 秀 爾 國 際 有 限 公 司

Automatic Groundwater Iron Removal Equipment

I. Specifications

Model	IRON-5	IRON-10
Flow Rate	5 m^3/h	10 m^3/h
Tank Material	FRP	FRP
Tank Size	24"Φ× 72"H	36"Φ x 72"H
Dimension (L×W×H)	1420 ×1130 × 2240mm	1450 ×1670 × 2650mm
Power	220V × 60Hz × 2.2kW/h	
Pipe Scheme	1-1/2" ΦSCH80#PVC and Burkert pneumatic valves	2" ΦSCH80#PVC and Burkert pneumatic valves
Control System	PLC Control, Automatic Backwashing	
Filter	(1) Ironmax: 300L	(1) Ironmax: 600L
	(2) Quartz Sand(fine): 54L	(2) Quartz Sand(fine): 108L
	(3) Quartz Sand(coarse): 54L	(3) Quartz Sand(coarse): 108L
	(4) Garnet:36L	(4) Garnet:130L
Accessories	(1) NaOCl Storage Tank × 1	
	(2) Level Switch (Float Type) × 1	
	(3) Pressure Gauge × 2	
	(4) Sampling Valve × 2	
Optional	(1) Bag Filter × 1	
	(2) Air Compressor × 1	

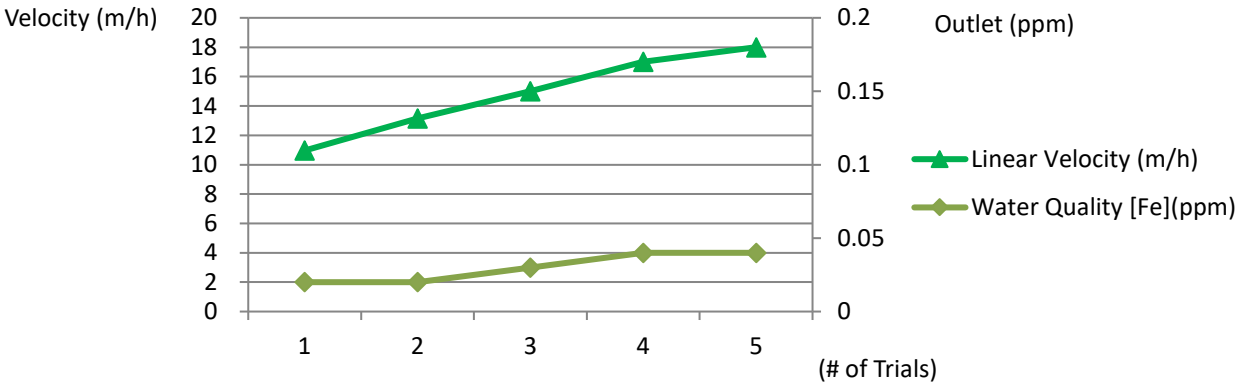
II. Process and Photos



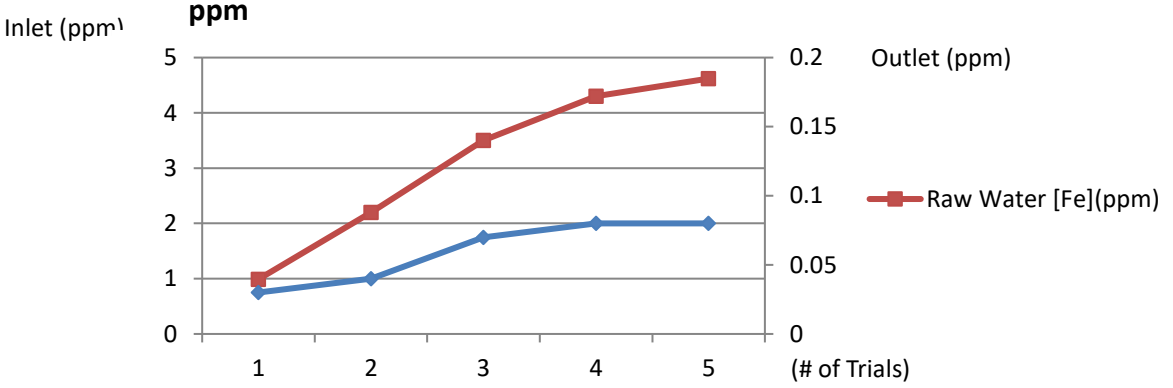
III. Iron Removal Efficiency

Description: Iron removal performance may vary in response to different circumstances, including linear velocity and inlet water quality.

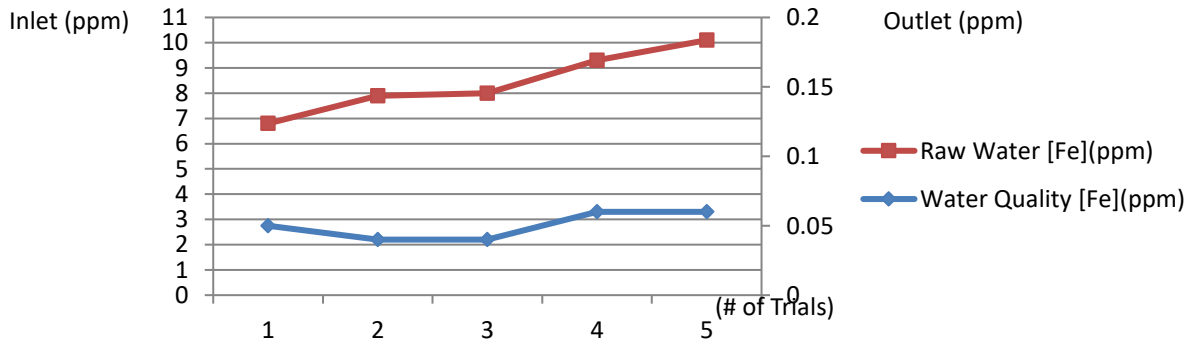
1. [Fe] < 3.5 ppm, Linear Velocity<18 m/H, Guaranteed Water Quality [Fe] <0.2 ppm



2. [Fe] < 5 ppm, Linear Velocity <11 m/H, Guaranteed Water Quality [Fe] <0.2 ppm



3. 5 ppm < [Fe] < 8 ppm, (Dual Modules) Linear Velocity <11 m/H, Guaranteed Water Quality [Fe] < 0.2 ppm



IV. IRONMAX (Iron Removal)

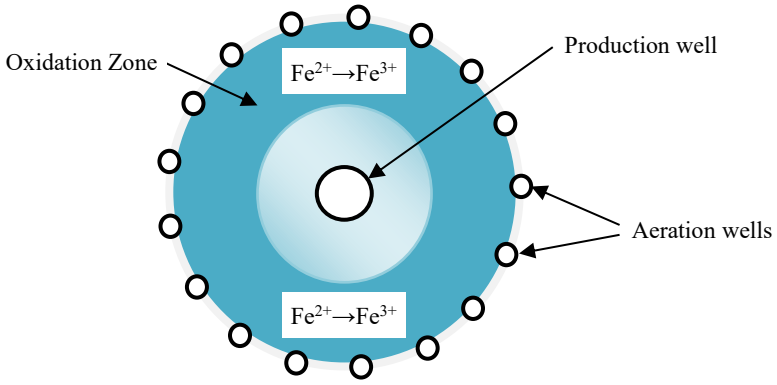
i. Introduction

The Fe^{2+} containing in raw water can be absorbed by sodium form cation exchange resin. However, the Na^{+} form cation exchange resins are regenerated by NaCl, but Na^{+} cannot help to replace Fe^{2+} which were absorbed in cation exchange resin then further causes a shortened resin service cycle. This condition is called Iron Fouling.

IRONMAX, produced by E. SHORE International, is made of durable and special materials with high-quality manganese which have gone through multi-time mixing and refining; it is capable to remove/ oxidize dissolved iron ions in underground water in an effective way. IRONMAX is also characterized by porosity and this leads to an additional benefit of removing suspended solids from water. Our unique and innovative catalytic/ adsorption reaction can extend operating time and decrease backwash frequency.

ii. Filtration Thesis

IRONMAX is innovative in its catalytic reaction of oxidizing iron ions effectively. Its porous surface allows quick absorption of iron ions; also to extend operating time and decrease backwash frequency. The catalytic reaction processes are as follows:



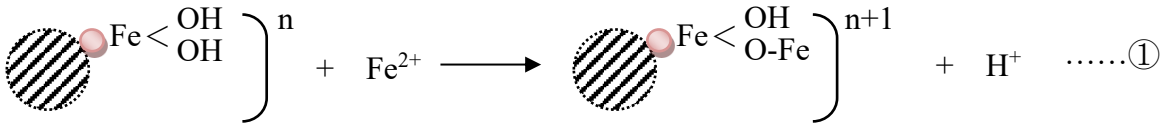
Reaction equation:

Catalyst (Filter Material): FeOOH

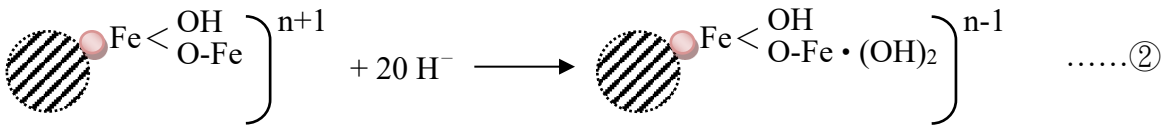
$$Fe^{2+} + FeOOH \rightarrow FeO(Fe)^{+} + H^{+}$$

$$2Fe^{2+} + \tfrac{1}{2}\, O_2 + 5H_2O \rightarrow 2FeOOH \cdot H_2O + 4CO_2$$

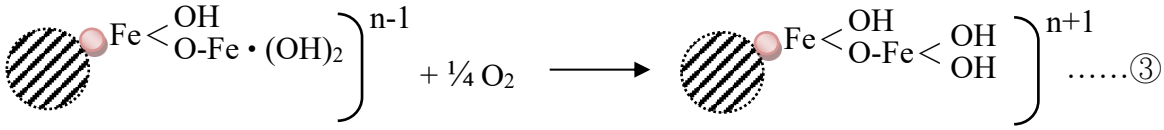
1. Absorption



2. Hydrolysis



3. Oxidation



iii. IRONMAX Specifications

IRONMAX (Package: 30L per bag):

Properties	*Specifications*
1. Effective Size	0.6~0.8 mm
2. Uniformity Coefficient	< 1.8
3. Specific Gravity	2.4~2.6
4. Bulk Density	1.0~1.2

iv. Feed Water Specifications

Feed Water Specifications	*Range*
1. Operating pH Range	pH > 6.2
2. Residual Chlorine	0.3~0.5 ppm
3. Min. Bed Depth	cm