



Heatonex Boilers Instrumentation

heatonex.boilers@gmail.com +91 7770000300

www.heatonexboilers.com

Water Softener Plant

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1 Product Overview:-

One of the most important accessories you can have for your steam boiler is a water softener.

Raw water having high hardness is passed through a sodium based resin, where hardness related calcium and magnesium ions are replaced with the sodium ions of the resin and treated water coming out of its outlet having zero hardness.

This type of plants are installed in all the process industries where water of low hardness is required for the process such as in textiles, feed water for boilers and cooling towers.



2 Why need water softener

Hard water that's having minerals like calcium and magnesium can cause damage to the tubes inside steam boilers. If these minerals are present in the boiler's water supply, it can lead to hard scale forming on the surface of the tubes, which has the potential to cause the tubes to overheat and ultimately the tubes may be puncture or tear .

The efficiency of a boiler can also be negatively affected by hard water. If the presence of calcium and magnesium causes hard scaling, it will have an impact on the heat transfer inside the boiler.

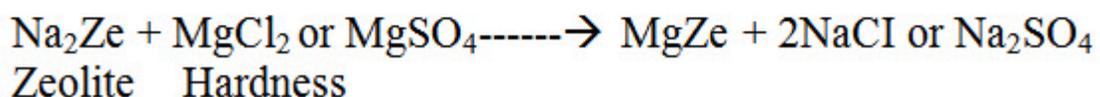
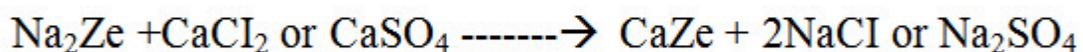
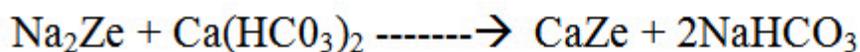
This will only make the boiler work harder and consume more fuel in order to meet your steam needs.

A water softener will reduce the risk of hard scaling inside the boiler, improve the flow of water, ensure maximum levels of efficiency, and help your boiler avoid failures or any kind of damage that could reduce its lifespan.

If the hard water is feed directly to the boilers, there arise many troubles such as: (i) scale and sludge formation, (ii) corrosion,(iii) priming and foaming and (iv) caustic embrittlement.

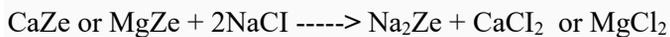
3 OPERATIONS :-

For softening of water by zeolite as sodium resin process, hard water is go through at a specified rate through a bed of zeolite as sodium resin kept in a cylinder. The hardness causing ions (Ca^{2+} , Mg^{2+} , etc.) are retained by the zeolite as CaZe and MgZe ; while the outgoing water contains sodium salts. Reactions taking place during the softening process are;



4 Regeneration

After some time, the zeolite is completely converted into calcium and magnesium Zeolites and it stops to soften water, At this stage, the supply of hard water is stopped and the exhausted zeolite is reclaimed by treating the bed with a concentrated (10%) brine (NaCl) solution.



The washings containing CaCl_2 and MgCl_2 are led to drain and the regenerated zeolite bed thus-obtained is used again for softening purpose.

5 Why choose Heatonex water softener:

It removes the hardness almost completely and water of about 0 ppm hardness is produced.

The equipment used is compact, occupying a small space.

No impurities are precipitated, so there is no danger of sludge formation in the

Treated water at a later stage.

The process automatically adjusts itself for variation in hardness of incoming water.

It is quite clean.

It requires less time for softening.

It requires less skill for maintenance as well as operation.



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Mohd Rafeek +91-7770000300



heatonex.boilers@gmail.com



Rudrapur Uttarakhand
Bilaspur Rampur UP



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