



## Water Softening Unit

Revision version : 001	Date of revision : 21-Dec-2024	Prepared by : Adisakdi Ch.
------------------------	--------------------------------	----------------------------

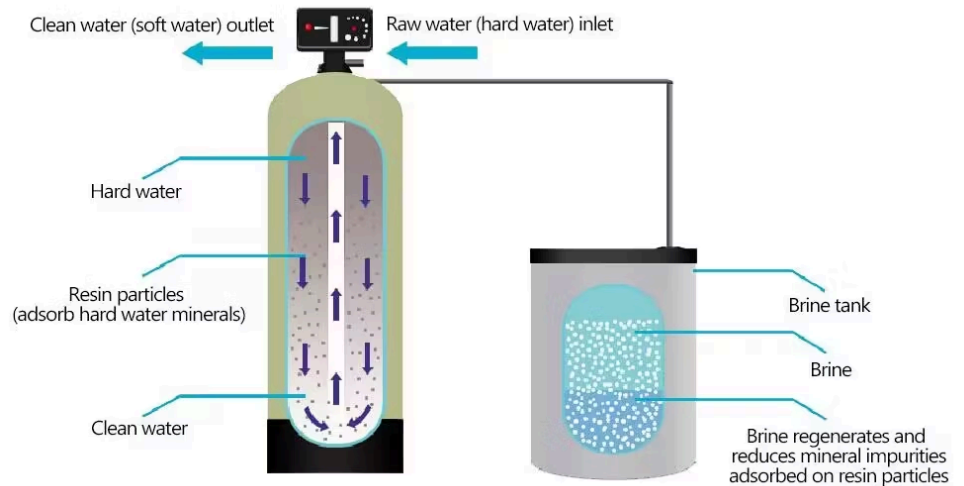
<b>Product Category</b>	<ul style="list-style-type: none"> <li>● Water Softening Unit</li> <li>● Design, Build, Install, Operate</li> </ul>
<b>Application</b>	<ul style="list-style-type: none"> <li>● Water Softening Unit</li> </ul>
<b>Key Function(s)</b>	<ul style="list-style-type: none"> <li>● Remove or minimize hardness from process water</li> <li>● Reduce consequent problem from hard water such as deposit</li> <li>● Adjust raw water quality to meet better quality for process requirement</li> </ul>

Using **hard water** in a factory setting can cause several problems that impact equipment, production processes, and overall operational efficiency. Hard water contains high levels of dissolved minerals, primarily calcium and magnesium. These minerals can cause issues in various industrial applications, particularly where water is used in cooling systems, machinery, cleaning, or even for mixing with chemicals.

Here are the main problems factories face when using hard water:

### 1. Scale Build-up in Pipes and Equipment

- **Problem:** The calcium and magnesium in hard water can form mineral deposits, or scale, when the water is heated or evaporates. These deposits accumulate on pipes, boilers, heat exchangers, pumps, and other machinery that comes into contact with water.
- **Impact:** Scale buildup can reduce the efficiency of heat transfer, clog pipes, and block water flow. This leads to higher energy consumption, reduced equipment performance, and increased maintenance needs.
- **Examples:** Boilers, cooling towers, and industrial water heaters are particularly susceptible to scaling, which can lead to costly repairs and potential failure of critical equipment.



For more information of product



Website : [www.s-unity.com](http://www.s-unity.com)

## 2. Increased Maintenance Costs

- **Problem:** The need to frequently clean and descale equipment, pipes, and machinery that is affected by hard water can lead to higher labor and material costs.
- **Impact:** Maintenance teams must spend more time and resources managing the effects of hard water, resulting in increased operational costs. This also leads to higher downtime for equipment servicing and repairs.
- **Example:** Regular descaling of boilers, heat exchangers, and pipes, along with replacement of damaged parts, can significantly inflate factory maintenance budgets.



## 3. Problems in Industrial Processes

- **Problem:** Certain industrial processes require precise control of water quality, and hard water can interfere with chemical reactions, formulations, or product consistency.
- **Impact:** In industries like pharmaceuticals, food processing, and textiles, hard water may negatively affect the quality or consistency of the final product. For example, in the textile industry, hard water can lead to uneven dyeing, and in the food industry, it can impact product taste or texture.
- **Example:** In the brewing industry, hard water can alter the taste and consistency of beer, while in pharmaceutical manufacturing, it could affect the mixing or purity of chemicals used in production.

## 4. Decreased Life Span of Equipment

- **Problem:** The cumulative effects of hard water — scale buildup, corrosion, and clogging — can dramatically shorten the life span of factory equipment and machinery.
- **Impact:** The reduced lifespan of critical equipment results in higher replacement costs and increased downtime for the factory.
- **Example:** Pumps, valves, and heat exchangers may need to be replaced prematurely due to damage caused by prolonged exposure to hard water.



## 5. Impact on Water Treatment Systems

- **Problem:** Hard water can overburden water treatment systems, especially those used to soften or purify water before use in industrial processes.
- **Impact:** This leads to increased maintenance and operational costs for water softening equipment, such as ion-exchange systems, and can result in inefficient treatment if the system is not adequately designed to handle the hardness level.
- **Example:** In manufacturing plants where water is used in large volumes (e.g., cooling or washing), softening units may need to work harder to treat the incoming water, causing them to wear out faster or require more chemicals.

Stellar Unity can provide full set of Water Softening Unit to mitigate the hard water problem. A water softening unit works by removing the minerals responsible for water hardness, primarily calcium ( $\text{Ca}^{2+}$ ) and magnesium ( $\text{Mg}^{2+}$ ) ions, which cause scale buildup and interfere with cleaning processes. The most common method used for water softening is ion exchange, but other techniques like reverse osmosis and chemical treatments can also be employed.

Consult or discuss with our sales representative for more details.

For more information of product



Website : [www.s-unity.com](http://www.s-unity.com)