The Next Generation Water Treatment System
Reduces TDS, Hardness, Metals and Salts in Raw Water
No Chemicals, Low Power, Low Wastage System
The Next Generation
Water Treatment
Technology

The Swiss Pürwater Systems is a new generation of water treatment system that can treat ground or surface water containing high dissolved salts to produce clean drinkable water that meets WHO standards.

This high recovery system does not use any chemicals, consumes very low power and has the lowest operating cost for treating water when compared to any system in the market today.

The Swiss Pürwater Systems uses a purification technology based on the principles of Capacitive Deionization.

Capacitive Deionization is a technology for removing salinity from water. This innovative technology is used to desalinate water without using resin or membrane filters. It does not require chemicals to treat water and uses very low power to separate salts in water.

* Swiss Pürwater Systems is powered using the Plimmer® Technology from Idropan, Italy and is manufactured and marketed in India exclusively by Aquasphere Greentech Solutions Pvt. Ltd.
Applications

The low power usage and low maintenance costs results in a very low operating cost for treating water.

Due to this reason, SPS can be used as a very effective Point of Entry based water treatment system where the entire premises gets treated water.

Some of the fields of applications where SPS makes the most economic impact are:

**Apartments & Villas**
As a single treatment plant for an entire Apartment building or community
- Ensures all taps in a house gets treated water
- Improved life of appliances - washing machines, solar heaters, geysers ..
- Reduced lime scales on expensive sanitary fittings
- Increased health benefits - loss of hair or skin irritation

**Hospitals, Hotels and Colleges**
Improves the water footprint - ensuring low wastage and better re-use of water

**Rural Drinking Water Initiatives**
The Economics of water production, low wastage of water, Simplicity of use and Ease of maintenance makes SPS an ideal choice for de-centralized drinking water solution that can be adopted in villages

The Cost of producing treated water with SPS works to 0.02p - 0.03p per liter making it the most economical De-centralized, Point of Entry based water treatment system in the market today
How the System works

1. Pump
SPS requires pressure in the range of 1.8 to 2 BAR to operate. A 0.5 HP or a 0.75 HP pump is adequate to deliver this to the SPS plant.

2. Sand Filter
A Sand filter is used to take out the suspended particles in the inlet water.

3. Cartridge Filter
The 1 Micron Cartridge filter takes out any residual particles that might have accidentally come from the sand filter.

4. UV System
The inlet water then passes through a high powered UV system to take out bacteria.

5. Pressure Reducer
The Pressure reducer is the last stage of the process before water enters the CDI unit. The inlet water pressure is reduced to 1.8 BAR at this stage.

6. CDI Unit
The CDI Unit treats the inlet water and the outlet is sent directly to the outlet tank.

Swiss Pürwater Systems are available from small to large units starting from 2000, 4000, 8000, 16000 and 24000 Liters / day.

1. Purification
Water is passed through a series of electrodes placed in a compact cell. A voltage of 1.5V is applied between the electrodes. The oppositely charged ions get attracted to the electrodes. Clean, de-ionized water flows out of the system.

2. Regeneration
Once the surfaces of the electrodes get saturated with ions, the polarity of the electrodes are reversed. The attracted ions drops from the electrodes. The Outlet is shut off and the drain valve is opened and the concentrate is flushed out.

3. Flushing
Once the concentrate is flushed out, the drain valve is closed, the outlet valve is opened and the polarity of the electrodes are restored and the system starts the process of de-ionization again. The entire process is handled automatically.

The CDI Water Treatment Process
The Economics of Water Treatment

Besides the Capital costs, there are many other parameters that go in determining the economics of operating a water treatment plant.

1. **Energy Consumption** – what does it take to operate a treatment plant, can it be run using alternate energy sources?

2. **Reducing water consumption / wastage** – How much input water do we need to treat? - Can we reduce the wastage given that water is so scarce?

3. **What kind of consumables are required to operate the plant daily.**

4. **Does the water treatment plant require skilled personnel to operate it**

5. **How dependable is the water treatment plant to produce the yield consistently - can it run smoothly for a long duration of time**

The table below summarizes how SPS compares in its economics of Operation as against conventional Reverse Osmosis Systems

<table>
<thead>
<tr>
<th>ECONOMIC DRIVERS</th>
<th>USING SPS</th>
<th>USING REVERSE OSMOSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Amount of Input Water required to produce 24,000 liters of treated water per day</td>
<td>29,000</td>
<td>38,000</td>
</tr>
<tr>
<td>2. Power required to treat water. This includes pump, UV and other systems required to treat water</td>
<td>2 kWh</td>
<td>4 kWh</td>
</tr>
<tr>
<td>3. Consumables required for running the plant. This includes chemicals, membranes, cartridge filters etc</td>
<td>5% of the product cost</td>
<td>15% of the product cost</td>
</tr>
<tr>
<td>4. Average Wastage Quantity. Amount of water wasted AFTER consuming power and other consumables</td>
<td>15%</td>
<td>50%</td>
</tr>
<tr>
<td>5. Wastage Cost. Excluding the cost of water - assuming 5 paisa per liter for both SPS and RO system (though RO takes more costs by virtue of higher power consumption and consumables)</td>
<td>5,000 liters X 0.05 = Rs. 250/day</td>
<td>14,000 liters X 0.05 = Rs. 700/day</td>
</tr>
</tbody>
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The Water Footprint

The water footprint of an individual, community or business is defined as the total volume of freshwater that is used to produce the goods and services consumed by the individual or community or produced by the business.

SPS delivers 80% - 90% of the freshwater after treatment as against 40% - 50% delivered by conventional Reverse Osmosis technology.

At a time when freshwater availability continues to be a challenge globally, its time to think on the choice of technologies we use to treat water.
SPS has been designed to run with little or no interference. Care has been taken to consider all practical situations typically encountered in working of the product and a high degree of automation has been implemented. Some of the key automations aspects that has been implemented are:

- Automatic working on a 5 hours production and 1 hour rest cycle.

  The system is configured to work continuously in a 5 hour production and 1 hour rest cycle. This ensures pumps and other components gets adequate rest during continuous working. This cycle works continuously till any of the following conditions occurs – on correction of which, the system restarts automatically:

  a. There is no water in the inlet tank. In such cases, the system suspends operation till water is available in the inlet tank
  b. The outlet tank is full. The system starts operation when the outlet tank is ready to be filled
  c. When the temperature inside increases to more than 60 degrees centigrade. The system suspends operation till the temperature is right for operation
  d. The Citric Acid tank is empty. In such case an indication is given and the system suspends operation.

- Inline UPS for steady state current and short backup due to power fluctuations
- GPRS Integrated Micro controller module for sending status of machine regularly. SMS is sent to key personnel for any stoppage of system and the status of the machine is tracked automatically on the internet.

### Automatic Citric Acid Level Sensing

Citric Acid is a weak Organic acid that is extracted from lemon trees. SPS uses a diluted amount of Citric Acid to clean the electrodes regularly. This increases the life of the electrodes and also the quality of output water.
Aquasphere has taken adequate measures to ensure a trouble free running of the SPS treatment plant.

a. A GPRS based system to track the status of the machine so that pro-active support is provided
b. A routine quarterly visit by qualified engineers for preventive maintenance
c. Telephonic support for emergency
d. Online / chat support for ad-hoc queries

All our distribution partners are equipped to handle technical queries and provide local support in local languages

SPS uses the best in class components in its systems. This ensures high degree of reliability whilst ensuring minimal maintenance. We also utilize our suppliers support network to handle technical issues on the field.

Swiss Pürwater Systems is powered using Plimmer® technology. Plimmer® is a Hybrid Capacitive De-ionization technology that has been pioneered by Idropan, Italy.

Every product using Plimmer® comes with 5 patents relating to power optimization, eco-friendly usage and clean methods of operation

The Plimmer® technology delivers the following key advantages:

- **Eco-friendly treatment process.** The entire process of cleaning the electrodes using diluted Citric Acid solution has been patented by Idropan. Citric Acid is an organic acid extracted from lemon trees. Using this to clean extends the life of the electrodes. The Swiss Pürwater Systems has been configured to automatically clean the electrodes at certain intervals of time based on hardness of the incoming water.

- **Low Carbon Footprint.** Plimmer® uses a patented method to reuse the energy stored in the electrodes during desalination. This ensures 30% less energy required to desalinate water.

- **Improved Water Footprint.** The patented Plimmer® process ensures 80% - 90% of fresh water recovery

- **Automated Operation.** The entire process is operated through a patented electronic controller that ensures minimal operator interference.

- **40 years** of experience in Water treatment
Turn on the advantage.  
its time to Reverse Your Wastage