

The original
Swedish filter design
from Bernoulli System

Bernoulli System AB pioneered the application of the principle of Daniel Bernoulli to water filtration. Our filters harness the power of this natural physical phenomenon in order to create an ingeniously simple and highly reliable filtering operation. Our speciality is water filtration systems to protect plate heat exchangers.

A treasury of expertise

As a result of focusing on this niche business for two decades, we have developed extensive knowledge and experience of water systems, and their associated corrosion and clogging problems. This means that besides an unbeatable product offering, we also have a wealth of expertise in self-cleaning filter design and manufacturing to share with our customers.

A modern company with historical roots

Bernoulli System AB is one of a growing group of micro-multi-national companies. We focus on a technological niche, developing unique expertise and translating this into a product offering of global relevance. In this sense, Bernoulli System is a very modern company. However, our roots reach all the way back to the 1700s and the discovery of the Bernoulli Principle by Swiss scientist Daniel Bernoulli.


A natural physical phenomenon

Worldwide presence

From the outset, Bernoulli System AB has been active in the international business arena, with approximately 80% of sales made outside Sweden. Our customer contacts in some countries are handled directly by our Swedish HQ; in other markets we work with a network of knowledgeable distributors. To date, approximately 1,500 Bernoulli Filters have been installed in over 70 countries worldwide.

Daniel Bernoulli 1700-1782

Rather like his 16th Century counterpart Leonardo Da Vinci, Daniel Bernoulli had an irrepressible curiosity which led him to research fields as diverse as astronomy, botany, medicine, gravity, magnetism, ocean currents and ship movements. Between 1725 and 1749 he received ten different prizes for his scientific studies, the most famous of these being Hydrodynamica produced in 1738. Hydrodynamica comprises fundamental facts on the pressure, density and velocity of fluids and their relations. Today his findings are known as "Bernoulli's Equation" or "The Principle of Daniel Bernoulli."



Bernoulli's Equation
 Total pressure = static pressure + dynamic pressure = constant
 An increase of flow velocity will lead to a decrease in static pressure.

$$Total\ Pressure = H_1 + \frac{U_1^2}{2g} + \dots = H_2 + \frac{U_2^2}{2g} + \dots = Constant$$


Keeping it simple

Many industrial processes need pure water, free from particles and other impurities. Modern water supplies are often severely polluted and this generates heavy demands on purification and filtration equipment. A good system has to be simple, efficient and reliable.

Bernoulli Filters are self-cleaning filters for continuous filtration of liquids in pressurized system. They can be used to remove debris from natural water sources such as sea water or river water, or to remove particles in process liquids. Our filters function according to a very simple and reliable cleaning mechanism in which the lion's share of the work is done by a disc mounted on a pneumatic cylinder.

Unrivalled reliability

The very first Bernoulli Filter was installed at Leine Smolt, Bodö Norway in 1990 - a BSS 200 model. The same filter has been in operation 24 hours 7 days a week since 1990. A track record like that is hard to match, let alone beat!

This degree of reliability is due to the simplicity and robustness of our filters. Made using the correct materials, according to a very carefully considered design, the Bernoulli Filter offers a long-term solution to corrosion problems, even in salt water systems.

Bernoulli Filters offer all the following advantages:

1. Simple and ingenious cleaning system with few moving parts - ensures high operational reliability and simple maintenance.
3. A low and constant pressure drop, the same in both clean and dirty conditions.
4. A low flushing pressure - only 0,3 barg required!
5. Installation is easy. The filter can be fitted directly to pipe lines, and any horizontal or vertical position is possible.

The Bernoulli principle at work

The filter basket is cleaned by a disc. Water passes through a gap between this disc and the basket. Flow velocity increases locally around the disc and, in accordance with the Bernoulli principle, the static pressure is reduced. It is the vacuum effect of lower static pressure around the edge of the disc that cleans the basket.



Why compromise?

So why compromise when buying equipment that has such an important job to do, when you can protect your valuable capital investment over the long term by using the simple and proven filtration technology offered by Bernoulli System?



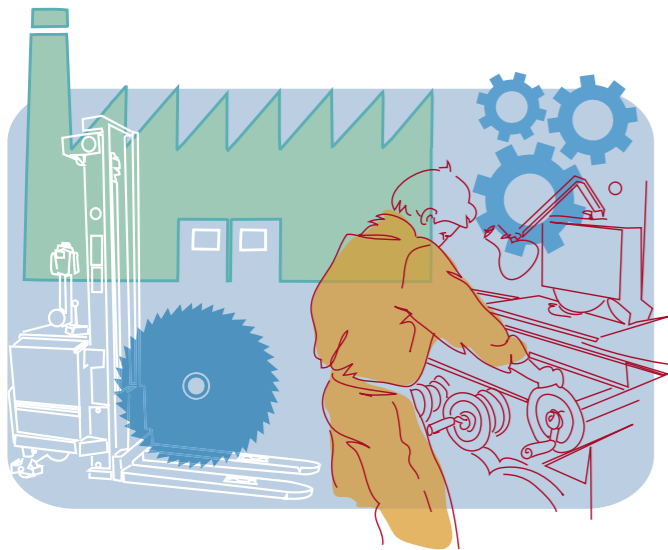
Normal filtering operation
The flushing valve is closed. The piston remains outside the strainer basket.



Flushing phase one
Cleaning is initiated by a timer or differential pressure control. The flushing valve opens and large particles are flushed out.



Flushing phase two
The piston moves twice into the basket, thereby removing the particles which are stuck to it.



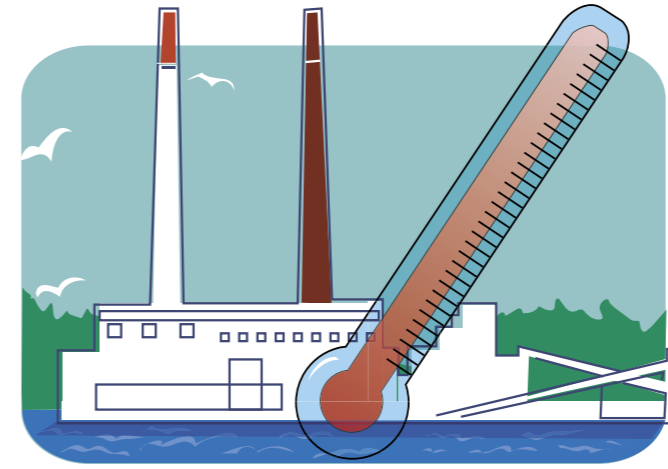
Cooling water systems

Customers in the chemical, steel, power, food, mechanical, paper and petrochemical industries all use Bernoulli Filters to protect the heat exchangers in their cooling systems. We provide excellent technical solutions for sea, brackish or fresh water applications.



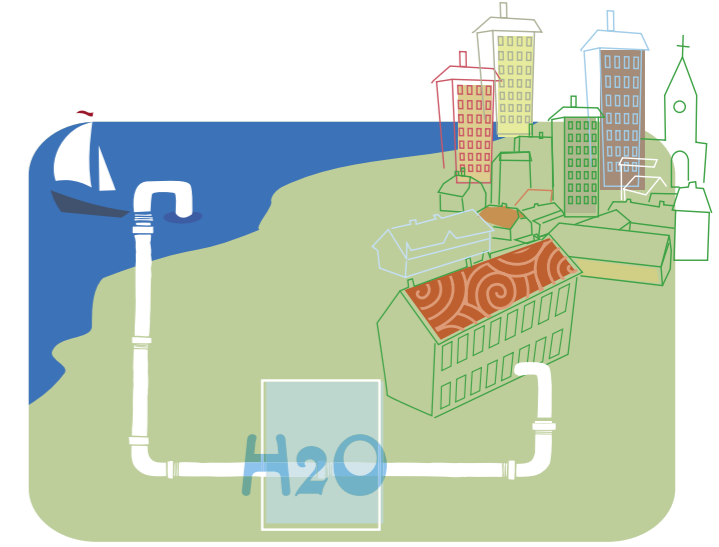
Intake water - Pre-filter

Bernoulli Filters are widely used for pre-filter applications before UV-sterilising, ultra filtration and reverse osmosis plants. Such installations are mainly found in land-based fish farms, mussel production plants, public aquariums or zoos and in drinking water production plants.



Cooling tower systems

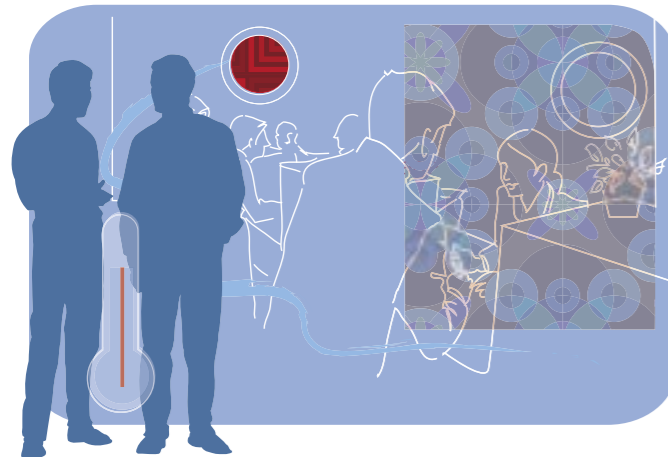
When it comes to cooling tower systems, there are three different applications for the Bernoulli Filter: full stream filter, side stream filter and make-up water filter. Our filters are used in both fresh- and sea water systems.



District cooling

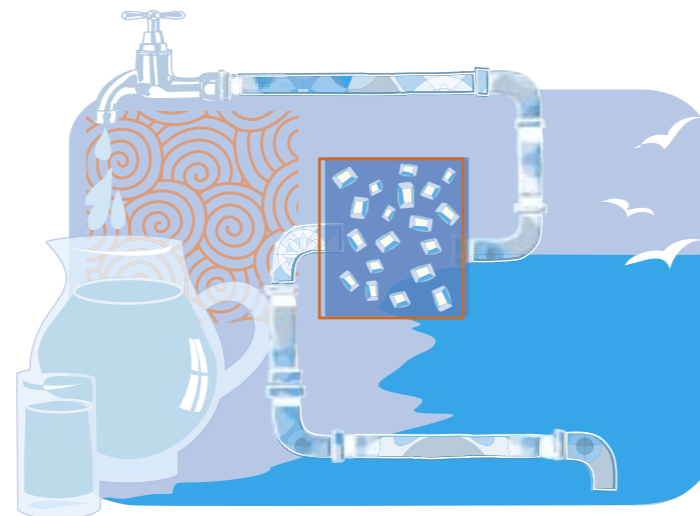
Bernoulli Filters help to meet the cooling needs of cities and larger industrial areas in an environmentally friendly way. Installed to protect the main heat exchangers, they enable the use of different water sources such as deep wells, lake water or sea water.

Bernoulli filters in practice



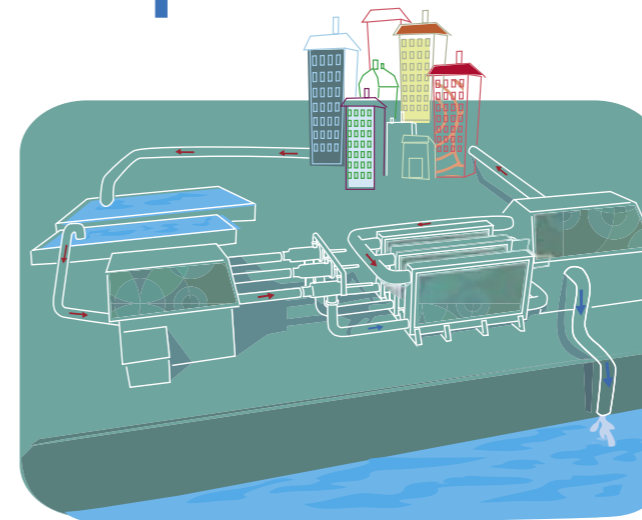
HVAC

Offices, congress centres, concert halls, government buildings, museums and other public buildings generally have their indoor temperature regulated by HVAC System. Bernoulli Filters protect the heat exchangers in these systems from getting clogged up by dirt or organic growth from the sea, lake, pond and river water which is used for cooling.



Desalination plants

Bernoulli Filters are widely used in desalination plants both as pre-filters before membranes and in distillation processes. Our high temp polyester filters are ideal for distillation since they can withstand the high temperature and salinity of the process.



Waste water

In certain instances, Bernoulli Filters are suitable for waste water applications. For example, they can be used to protect heat exchangers used for heat recovery from processed waste water.



Irrigation

Greenhouses and golf courses are examples of customers in this segment. However, our filters are suitable for use in any larger irrigation systems.

3 good reasons to choose Bernoulli System

- Our filters harness the power of a natural physical phenomenon, which leads to an ingeniously simple but highly reliable filtering operation.
- Our company is run by a team of focused experts, who strive continually to fine tune filtration technology and products to our customers' needs.
- We are an established and reliable Swedish engineering firm with reference installations in operation around the world.

 **Bernoulli**
System

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