



The sensor that can measure pressure, temperature and humidity simultaneously | Photo source Thor Balkhed

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## SOLAR-POWERED DESALINATION PUMP MADE FROM NATURAL MATERIALS



### A new design for a water purifier uses cellulose and is powered by a polymer that absorbs energy from the Sun

**Spotted:** One way of purifying or desalinating water is to heat the liquid until it becomes steam, then condense the steam back to liquid water – a process which leaves behind the impurities but takes a lot of energy. Now, a high-efficiency steam generator has been developed that uses cheap, natural materials and sunlight for energy.

Researchers at Sweden's Linköping University created the steam generator using an aerogel filter with a porous cellulose nanostructure, which allows it to absorb large quantities of water. This aerogel is then coated in an organic polymer which is able to absorb energy from sunlight, including energy in the infrared spectrum. The heat from the sun is used to vaporise the water, which exits the aerogel as steam, leaving the salt and impurities behind.

The aerogel is durable, can be easily cleaned and reused and produces very high-quality drinking water. In the generator, a porous layer of foam is placed between the water and the aerogel, to keep the steam generator afloat.

Senior researcher Simone Fabiano **explained that:** "What's particularly nice about this system is that all the materials are eco-friendly – we use nanocellulose and a polymer that has a very low impact on the environment and people. We also use very small amounts of material: the aerogel is made up of 90 per cent air. We hope and believe that our results can help the millions of people who don't have access to clean water."

With billions around the world lacking reliable access to safe drinking water, Springwise is always on the lookout for innovations to tackle the problem. We have recently covered a [solar-powered generator](#) that extracts water from the air and a desalination pump inspired by [mangroves](#).

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### **Takeaway:**

The World Health Organisation estimates that around 785 million people around the world lack access to a basic drinking water service, with 144 million dependent on surface water, and a further 2 billion reliant on a source of drinking water contaminated with faeces. As global warming dries up more areas, this situation could get much worse. The purifier could help alleviate this, by decontaminating water using solar power and inexpensive, natural and reusable materials.