German engineering for clean water all over the world

On March 23, 2020, ISHE AB acquired 100% of the German company SolarSpring GmbH. Read more about the recent successful and international projects conducted by the Fraunhofer ISE spin-off.

In Germany, 25 percent of the fresh water consumed each year is used for industrial purposes. SolarSpring GmbH from Freiburg has developed a solution for the recovery of this resource, based on membrane technology.

SolarSpring develops wastewater recycling to market maturity

With its latest innovation rEvap, SolarSpring comes into play where the industry is facing challenges. Around the world, a continuous increase in environmental toxins and pollution from industrial emissions can be observed. This leads to stricter discharge regulations, especially for companies in the galvanic, plastics and food industries. With the rEvap, SolarSpring offers a novel solution for wastewater treatment and resource recovery with innovative membrane technology: substances and resources from industrial rinsing solutions can be concentrated or cleaned to such an extent that they can be reused and fed back into the industrial process. Energy and material cycles are thus closed and industrial processes are made more sustainable.

From a spin-off to a global leader in membrane distillation

The membrane distillation process on which the rEvap system is based has been investigated for over 15 years at the Fraunhofer Institute for Solar Energy Systems (ISE) in Freiburg. Since its spin-off in 2009, SolarSpring has developed into a global leader in the field of membrane distillation. Numerous membrane distillation and filtration plants have already been installed worldwide.

Five drinking water systems at Vitoria Lake

In cooperation with the Siemens Foundation WeWater, SolarSpring has installed five drinking water systems in Kenya. At four locations in Mbita, Sindo, Sori and Nyandiwa people can buy safe, filtered drinking water at anytime. SolarSpring installed robust, low-maintenance water filtration systems specifically designed for rural developing regions called MBS (Multistage Barrier System). The drinking water systems consist of a smart combination of filtration barriers. A disk filter, a sand filter, an ultrafiltration module, an active carbon filter and a UV- disinfection leave no room for any contamination risks. All components are completely synchronized and operate fully automatically including the inbuilt cleaning intervals. The MBS installed in Kenya can filter up to 15,000 liters of water per day.

The water is sourced from rain and from Lake Victoria, meaning a steady supply of clean drinking water is available even during drought periods. Thus, the MBS is the perfect drinking water system for this kind of source. Local caretakers were educated in order to perform the surveillance and maintenance of the systems independently. The

project has been very successful and is running without technical failures. The water is available for customers at any time using an ATM system.

Watch a short clip about the project in Kenya:

https://youtu.be/w4UICNlR1i4

Drinking water systems for the peace movement in Columbia

In 23 locations distributed throughout the country, police stations are being built in Columbia at which Farc Fighters can hand in their weapons. These stations will be equipped with the MBS drinking water system by SolarSpring. Ten systems were delivered in December 2019. The installation is conducted by a local service provider. If the peace process proves successful, further stations will be equipped with drinking water systems by SolarSpring.

Resource recovery from liquid waste streams

The ReWaCEM approach offers a promising solution to the problem of wastewater disposal in the metal surface treatment industry and aims at creating a circular economy by recovering resources. SolarSpring delivered the membrane distillation technology rEvap for the “Deutsche Edelstahl-Werke” in Hagen, Tecnozinco in Italy, Electroniquel in Spain and AT&S in Austria. Especially at AT&S in Austria, a technology leader in the PCB industry, the SolarSpring MD module led to a significant reduction of gold loss resulting in significant savings for the company. The project received funding from the European Union.

Water treatment is also often essential for industries with a high process heat demand. Thus, it is of great advantage to synchronize heat supply and industrial water treatment to maximize the efficiency of energy usage. By combining the technologies of Industrial Solar and SolarSpring, waste heat from thermal processes can be used to power the rEvap systems which need only a temperature level of 85 °C. Seeing the possibilities which can evolve from a combination of the technologies of Industrial Solar and SolarSpring initiated ISHE's decision to acquire SolarSpring. The goal of this acquisition is to offer a broader basis of technologies to industrial customers on the way to a sustainable circular economy.

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