HOW FLOTTWEG'S SEPARATION TECHNOLOGY HELPS THE HALL IN TYROL - FRITZENS WASTEWATER ASSOCIATION ACHIEVE SUSTAINABILITY

The Hall in Tyrol - Fritzens Wastewater Association (Abwasserverband Hall in Tirol - Fritzens), located about 15 km (9.3 mi) from Innsbruck, has been in operation since 1995 and consists of 16 adjoining communities. Every day, this wastewater treatment plant processes almost 16 million liters (4,226,753 gallons) of wastewater. A topic of particular importance for the Wastewater Association: Sludge dewatering – because dry matter content is a decisive cost factor. In cooperation with the machines from Flottweg, a sustainable and efficient solution was found, which at the same time enabled enormous cost savings.

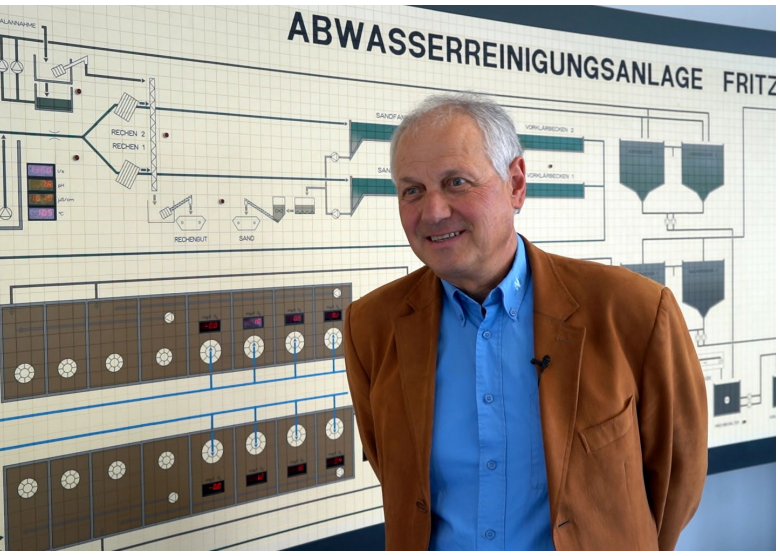
The Hall in Tyrol - Fritzens Wastewater Association's wastewater treatment plant is currently designed to serve 120,000 people, processing the wastewater from around 60,000 ‚private individuals as well as the wastewater from commercial and industrial enterprises in the surrounding area, such as hospitals or the local glass industry. This treatment plant not only processes wastewater, it also handles the region's biowaste management.

Christian Callegari has been Managing Director of the Wastewater Association since 1991, and the treatment plant's strategy is focused on one objective: „Sustainability and resource efficiency – that is our goal," explains Callegari. „We have decided to ensure that all measures support this objective to work sustainably and meet our energy requirements with renewable energy resources."

Sustainable thinking from start to finish: Wastewater treatment at the Hall in Tyrol - Fritzens Wastewater Association

Wastewater enters the treatment plant through the main inlet channels, then large solids and waste are removed

Abwasserverband Hall in Tirol - Fritzens consists of 16 affiliated communities and processes the wastewater of around 60,000 private individuals as well as commercial and industrial wastewater on a daily basis.



For Managing Director Christian Callegari sustainability is an important issue regarding the wastewater treatment treatment at the Wastewater Association Hall in Tyrol - Fritzens.

using screens. The remaining coarse material is then separated by the grit and grease trap. During primary clarification, the primary sludge, consisting of small organic particles, settles in the primary clarifier. The next step is to clean the wastewater: Microorganisms break down nutrients such as nitrogen or carbon, clarifying the water. This gradually increases the oxygen content in the various tanks – an organic process that does not use chemicals. During secondary clarification, the activated sludge settles and the clarified water is returned to the inner chamber. The thickened sewage sludge is then further processed in the digester, the powerhouse of the Wastewater Association: Hermetically sealed and kept at 38°C (100°F), the digester produces energy-rich biogas in 40 days, which is then used in the CHP plant. Finally, the sewage sludge is dewatered and then dried. The sewage sludge granulate is used as a substitute fuel in the cement industry.

The Fritzens wastewater treatment plant is pioneering a path of sustainability and resource conservation. The treatment plant uses the bound energy of the sewage sludge: The sewage gas produced during the treatment process is used as an internal source of energy within the CHP plant to generate green electricity as well as thermal energy. In addition, pure water is fed into the inner chamber in order to generate electricity using a Kaplan turbine, thus harnessing the power of the water. Managing Director Christian Callegari is also proud of the entire process: „Since we are a wastewater association, it is important that we do not have to buy any additional electricity or thermal energy. Our process must be energy self-sufficient."

In search of a solution: Flottweg decanters support sludge dewatering and thickening

Since 1991, Managing Director Christian Callegari has been interested in finding ways to work innovatively and, above all, sustainably. Sludge dewatering, in particular, has great potential for sewage treatment plants: It is crucial that the sewage sludge is as dry as possible so that it can be turned into sewage sludge granulate. In 2019, the Wastewater Association began looking for a way to increase the dry matter content of its sewage sludge, issuing a public invitation to tender for a solution to dewater digested sludge. The Wastewater Association ultimately chose Flottweg, first purchasing two C3E-4/454 HTS decanters for its dewatering process.

Managing Director Callegari is impressed by the savings that the Wastewater Association achieved with the new dewatering decanters:

„These dewatering machines resulted in considerable savings, which were even greater than originally expected. Specifically, we save around $17,497 on disposal costs per quarter as a result of the higher dry matter content made possible by Flottweg technology."

At the same time, this higher dry matter content also affects the required heating energy: „In the sludge drying process following dewatering, the significantly higher dry matter content also reduced the energy consumed by

For dewatering the sludge the Wastewater Association uses two C3E HTS decanter.

the dryer. This means that we can use our CHP plant to cover the energy demand of the entire treatment plant, both electrical and thermal. Flottweg's machines have helped make the Wastewater Association energy self-sufficient. We do not need to supply any energy from outside sources." After adjusting the treatment process for used cooking fat, the raw sludge then had a higher water content. To compensate for this, it was necessary to improve the thickening process for surplus sludge. Because of the previous positive experience, Flottweg was chosen once again. This time, however, a C3E-4/454 OSE decanter was required for thickening. This decanter centrifuge increased the dry matter content of the surplus sludge, resulting in a consistent solids content and digestion time in the digester. Using the Flottweg decanter, the dry matter content of the surplus sludge was concentrated to 6–7%, which also improved the gas yield. More biogas means that even more electricity and heat can be generated at the Wastewater Association's CHP plant, which in turn makes the treatment plant completely energy self-sufficient.

The C3E OSE decanter is used for thickening of the surplus sludge.

„Extraordinary collaboration" – Flottweg's service

Christian Callegari is not only satisfied with the results of the separation process, he is also impressed by the collaboration with Flottweg separation specialists to date: „The collaboration with Flottweg is extraordinary. Initially, we did face some issues because we also process biowaste, which makes our sewage sludge more challenging. However, Flottweg has never left us standing out in the rain. They are always ready to send us their technicians to develop a concrete solution for any problem. Our machines are running smoothly now – day and night – 24 hours a day, seven days a week." In addition, the Wastewater Association has concluded a complete maintenance contract for annual maintenance and spare parts deliveries.

Because of all this, the Managing Director would opt for Flottweg machines again in the future: „We do not regret our decision to use Flottweg machines. If we plan an upgrade in the future, Flottweg will always be our first choice," Callegari adds. „Because we now know how to properly operate these machines, they are working perfectly. There is no reason why we would not continue down this successful path together."

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