

Project Detail & Value Proposition

NAME OF CLIENT: Chambers Creek Regional WWTP
LOCATION OF PLANT: University Place, WA, USA
APPLICATION TYPE: Sidestream Treatment of Ammonia
FLOW RATE: 613 m³/day
INFLUENT AND EFFLUENT: 1,750 mg/L NH₃-N; <440 mg/L NH₃-N

With the Chambers Creek Regional WWTP upgraded to 113.5 MLD, the facility has new TN effluent limits which would be more difficult to meet with the recycling of ammonia from the dewatered anaerobic digested sludge.

By installing the new DEMON[®] anammox treatment system, the facility saved over \$6 million in construction costs due to not having to treat the entire sidestream flow. 75% of the ammonia load is to be reduced by the DEMON process. Chambers Creek pilot tested the technology back in 2011 to prove the DEMON system could meet the effluent limits imposed.



Project Detail & Value Proposition

NAME OF CLIENT: AIZ WWTP
LOCATION OF PLANT: Strass, Tyrol, Austria
APPLICATION TYPE: Gravimetric Selection for Sludge Densification
PLANT FLOWS: 40 MLD Winter; 20 MLD Summer

For many WWTPs, sludge settleability is the limiting factor effecting treatment capacity. Some of the most common problems are the result of filamentous bacteria, which can cause in bulking and foaming issues. In most cases settleability can be related to seasonal variations in influent flow and loading. For facilities, like AIZ WWTP, located in the Tyrol region of Austria, the mountains and skiing are a major tourist draw and support the local economy. With tourists come wastewater and wastewater facilities are put to the test during the coldest part of the year. AIZ WWTP has for years seen significant increases in SVI causing, during this season, operational issues and increased cost.

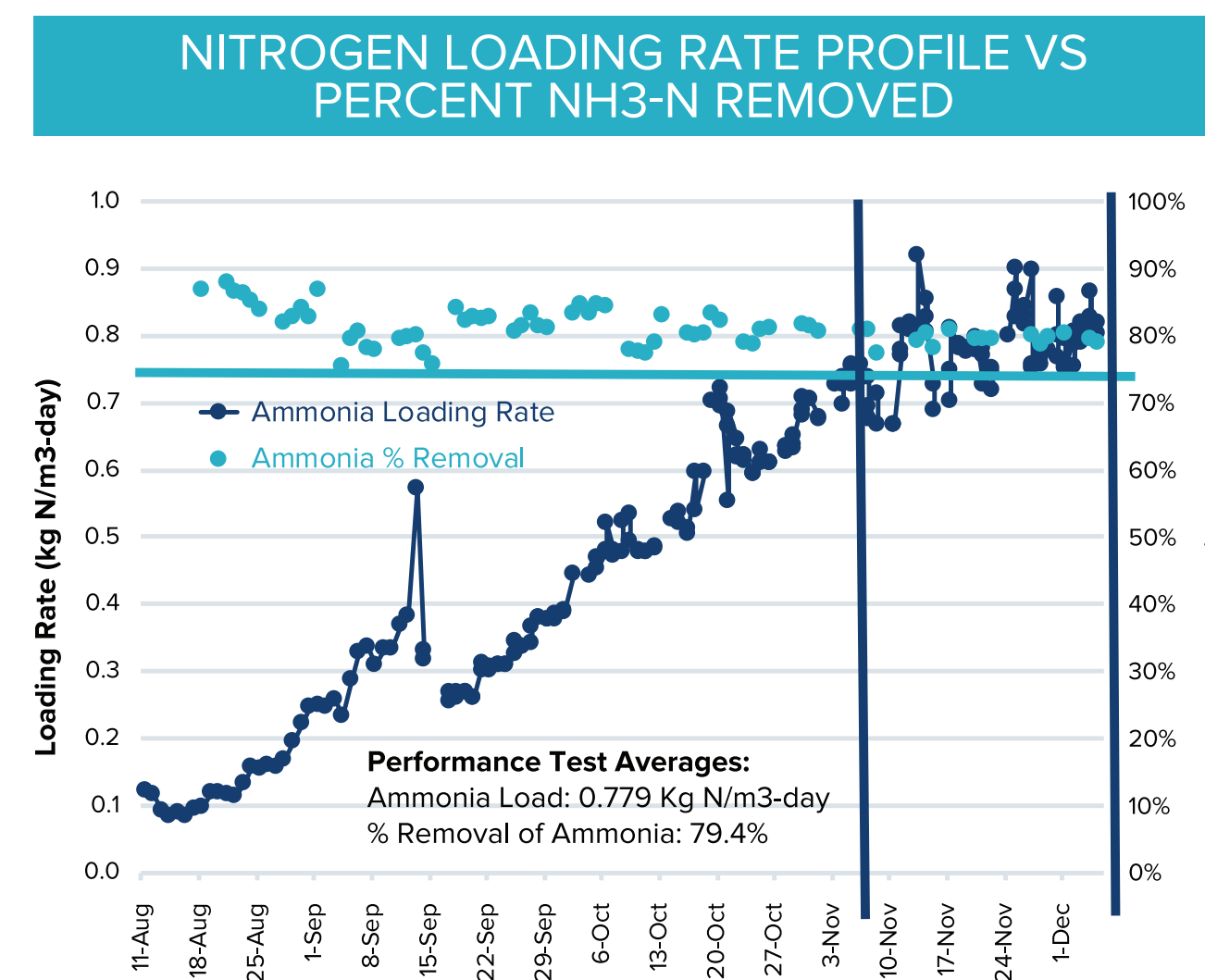


The DEMON[®] Experience

The Chambers Creek Regional WWTP DEMON system was started up in August 2017 with seed sludge harvested from the Netherlands. The system was quickly ramped up to full process design flows and loads within 11 weeks while achieving all process related effluent parameters for ammonia and TIN.

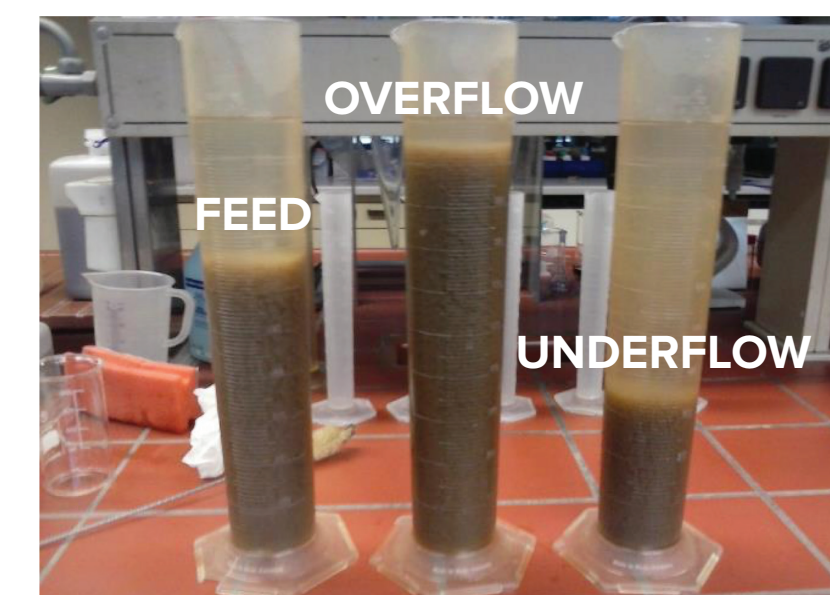
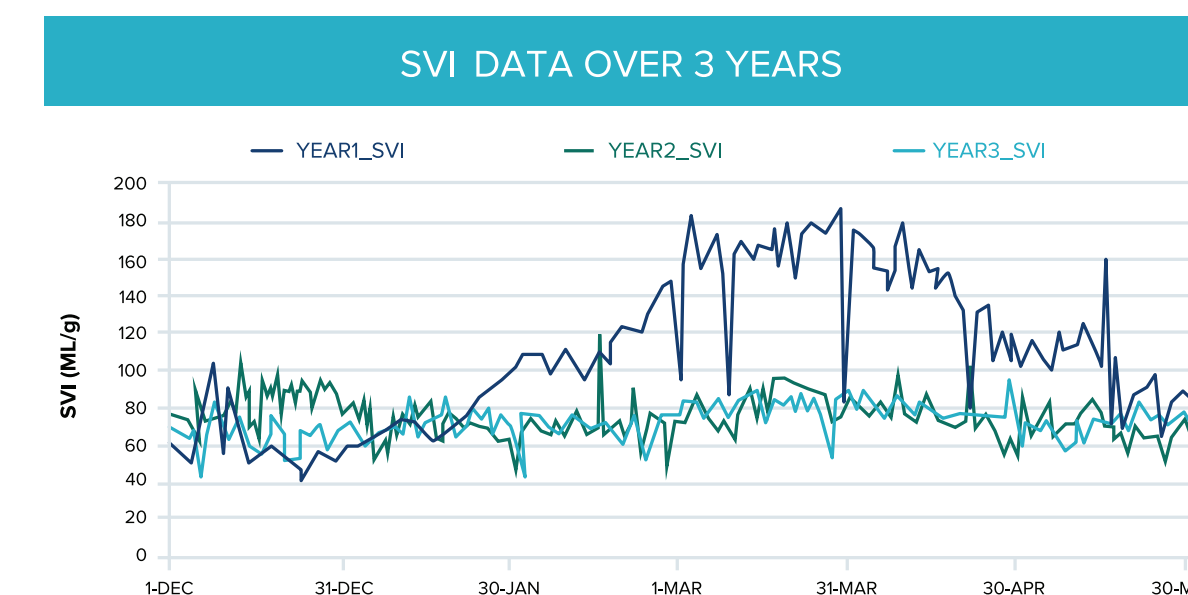
The system has met all expectations for treating the sidestream ammonia load. Operations staff review operations a few times per day and look at the data generated to see how the system is operating. With dewatering only working 5 days per week suits the DEMON system well as it idles during the down time.

The overall system has 2 SBR units with a primary settling zone, EQ tank and post EQ tank for discharge storage during the 30 minute decant period. This was all retro-fitted in existing structures making the system even more cost-effective.



The inDENSE[™] Experience

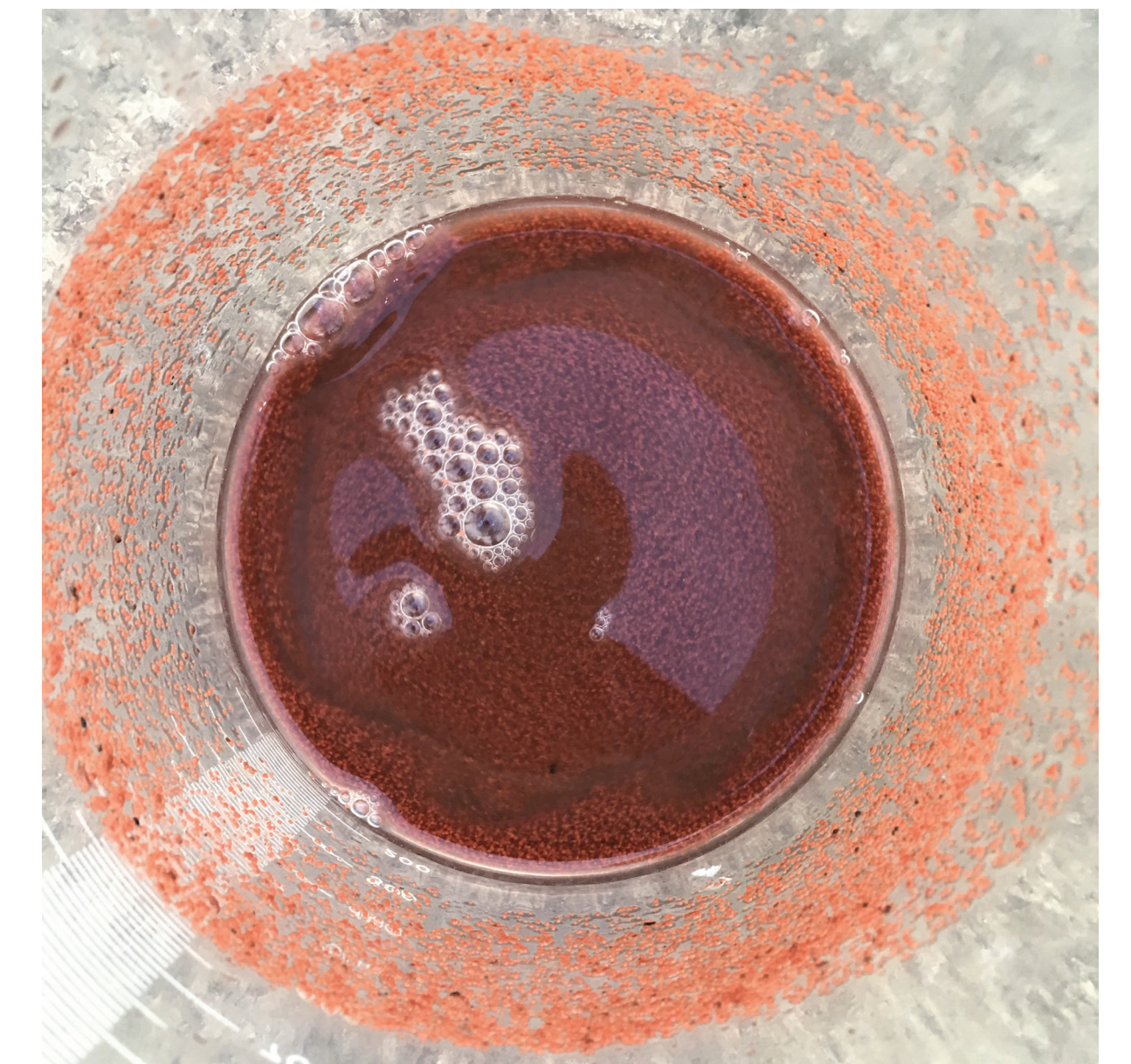
After installation of the inDENSE[™] selective wasting system, the SVIs of the main WWTP improved dramatically and were stable through the second and third year of operation. Another benefit found after running for a period of time was retainment of the heavier PAO bacteria which allowed the plant to see a reduction in chemicals needed for maintaining the effluent TP for the plant. The addition of inDENSE to a WWTP allows for process densification with the ability to provide a external sludge selection facilitating sludge densification and possible granular sludge formation.



Problems Solved & Future Benefits

Treating the high ammonia concentration / load from the sidestream which minimizes the impact to the main WWTP. Benefits to the use of the DEMON process are a) 60% less aeration, b) no external carbon required for doing this TN removal and c) allowing for better use of the influent BOD for pre-denitrification in the main activated sludge process.

The exciting future for the DEMON process is looking at a) increasing loadings to the DEMON system by use of a micro-screen and b) with use of bioaugmentation of the sidestream biomass into the mainstream WWTP. This will help reduce the impacts of aeration in the main plant while still meeting high quality effluent TN by looking at mainstream deammonification.



Problems Solved & Future Benefits

Provided for a improved operating system with consistent settleability allowing for clarifier optimization.

Use of the inDENSE gravimetric selection system allows WWTPs to increase capacity by having reduces SVIs to prolong or eliminate the need for building new secondary clarifiers. The advantage of also retaining beneficial bacteria, i.e. PAO and dPAO, provides the ability to improve other biological processes within the system. With the application of inDENSE, chemical addition for phosphorus was reduced providing a benefit both economically and for operator safety.

