HIGHER METHANE POTENTIAL USING SALSNES PRIMARY FILTRATION (SPF) TECHNOLOGY

DRIVERS FOR ADAPTATION OF RBF TECHNOLOGY

Primary wastewater treatment with primary sedimentation basins was originally installed to remove organic material, however stricter regulations to remove nitrogen now require many plants to upgrade their volume capacity. An easy way to accomplish this is with Rotating belt filter (RBF) technology, which is extremely compact and is a proven solution. RBF's can be easily retrofitted into existing treatment plants for primary wastewater treatment, with the option to convert sedimentation basins into the biological step[1].

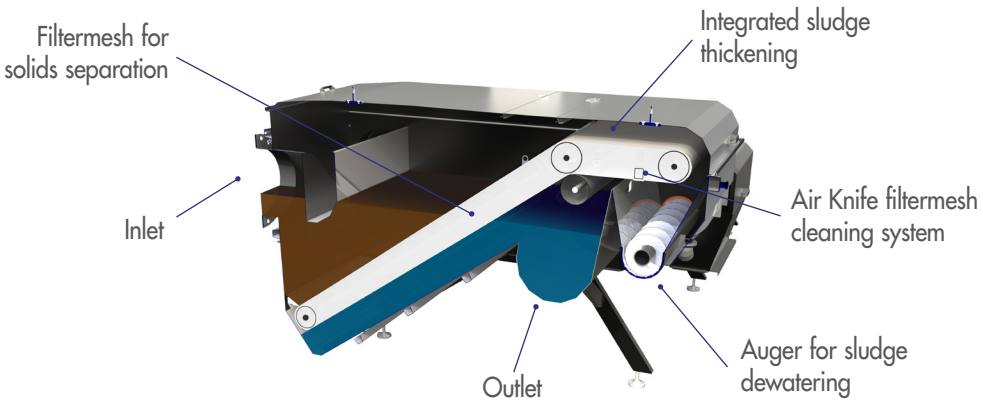
Second, RBF's with fine mesh sieves can achieve higher bio-methane potential compared to sludge from conventional primary sedimentation basins[1]. Bio-methane can be captured and used to generate electricity for use within the wastewater treatment plant or sold to other utilities.

SPF TECHNOLOGY

Salsnes Primary Filtration technology makes use of rotating belt filters with fine mesh sieves. SPF has been used as primary treatment technology in over 900 installations worldwide and can achieve a total suspended solids removal of up to 50% using fine mesh sieves. The SPF system typically uses a 350 µm mesh and uses mat formation and the patented Air Knife to remove solids and clean the belt.

The benefits of SPF technology for primary treatment are:

- Uses 1/10th the footprint compared to conventional clarifiers
- Automated operation
- Reduction in construction costs and land savings
- Easily retrofitted in existing treatment plants
- Modular architecture and design
- Possibility of higher TSS removal and biogas production with SEPF technology (see other case studies)



[1] Paulsrud, B. et al (2013) Increasing the sludge energy potential of a wwtp by introducing fine mesh sieves for primary treatment. HSM IWA Specialist Conference, Västerås, Sweden.

TEST SITES

Wastewater from 19 municipal treatment plants in western and northern Norway was investigated using SPF technology. Only five of the 19 plants had grit removal and the rest had no grit removal before the fine mesh sieves. Grab samples were used for investigation. Dry solids (DS) and volatile solids (VS) were measured using the NS-EN 12880 and NS-EN 12879, Norwegian Standards, respectively.

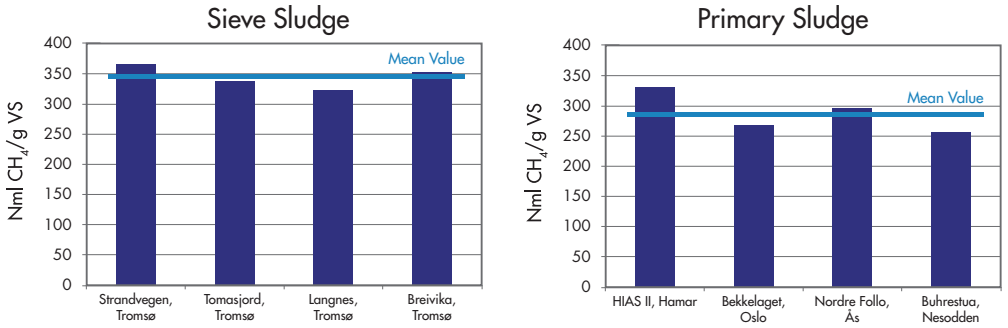
BIOMETHANE POTENTIAL TESTS

Bioprocess Control AMPTS, Lund, Sweden was performed with sieve sludge from primary Salsnes RBF and SEPF technology. The test runs were conducted at mesophilic temperature (37°C).

SPF PERFORMANCE RESULTS

The sludge from fine mesh sieves had a mean of 27.3% DS (15-35% DS), while primary sludge was 2.7% DS (0.5-6%). The chemical oxygen demand (COD) was on average 322 g O_2/L for sieve sludge and 36 g O_2/L for primary sludge.

Figure. Results from pilot scale SPF testing at different wastewater treatment plants.



A higher VS content of sieve sludge from SPF technology is obtained over primary sludge, thus giving higher bio-methane potential.

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