

MOLEAER IMPROVES DISSOLVED AIR FLOTATION PERFORMANCE AT NEW ZEALAND RENDERING PLANT

New Zealand is well known for its beautiful landscape and huge range of biodiversity, and much of the economy is based on agriculture. Coupled with a strong environmental policy, New Zealand takes great pride in efficient and ecologically sustainable solutions. When an aging meat rendering plant was in need of an upgrade to its dissolved air flotation (DAF) system to cope with the increased demand, they turned to Moleaer's innovative nanobubble solution to increase their system's performance. The maximum flow rate of the DAF would reach 8.9 m³/hr, pushing the DAF's limits and causing critical issues such as reduced recovery of fat from the wastewater, fat accumulation on the downstream pond that led to foul odor, and longer treatment time. Moleaer's nanobubble generator is a simple, chemical-free way to boost a DAF's performance. The system was easy to install and did not require a major retrofit to the plant's existing system.

Client:
New Zealand Rendering Plant

Type:
Dissolved Air Flotation (DAF)

Unit Type:
25 GPM

Installed:
April 2019

Benefits:
71% Oil & Grease Reduction
30% BOD Reduction
60% TSS Removal Increase



Moleaer's nanobubble generator is compact, and easy to install without retrofitting the existing system.



The impact of the nanobubble treatment is clearly visible in the samples.

The secret of the power of the Moleaer nanobubble generator lies in the unique properties of nanobubbles which make them far superior at enhancing the recovery of flocculated particles beyond what traditional flotation methods allow. Nanobubbles are extremely small at ~80 nanometers in size, about 100 times smaller than a red blood cell. At this size, the bubbles have more than 400 times the surface area of microbubbles, with more than 64 million nanobubbles fitting into one microbubble. Nanobubbles also have a strong negative surface charge, which in combination with the larger surface area, increases the attraction and collision rate with suspended particles. Attachment and charge neutralization of particles improve float sludge density, producing higher solids concentration in recovered sludge compared to standard DAF processes.

After installing the nanobubble generator, the rendering plant saw a 71% final reduction in oil and grease, which was a 136% improvement compared to the previous system. Additionally, the plant saw a 60% final reduction in total suspended solids (TSS) and a 30% final reduction in BOD₅. The plant operators also noticed a marked visual improvement in the sludge, commenting that it was thicker and more uniform, making it easier to skim and process.