Holistic optimization at dairy plant. Improving efficiency in flotation, dewatering and biogas production

INDUSTRIAL WASTEWATER TREATMENT IS OFTEN COMPLEX. PRODUCTION OF MILK AND DAIRY GENERATES SIGNIFICANT WASTEWATER, CONTAINING A HIGH LEVEL OF PROTEINS AND FAT.

CHALLENGE: STABLE WASTEWATER PROCESS UNDER VOLATILE CONDITIONS

In this actual case described, the pretreated wastewater from the factory is discharged to a municipal sewage treatment plant. Special effluent parameters must be respected, particularly 500 ppm for volatile fatty acids (VFA) must be guaranteed.

Furthermore, the smooth process of the industrial wastewater treatment plant is a decisive factor for production at the milk and dairy plant. In the event of any delay or disruption, the milk and dairy production is significantly disturbed. The wastewater treatment task is challenging: high variations in the incoming flow, organic load and changing composition make it more difficult to obtain optimal purification.

SOLUTION: BEST INTERACTION OF ALL USED WATER CHEMISTRY

With our complete treatment solution, we bring our know-how and expertise to every part of the wastewater treatment plant, not only a partial area. Achieving the best interaction of all products used in the overall process is decisive.

In this case, the Kemira Biogas Service Team optimized the process in three steps:

Flotation for grease separation:
By replacing the current coagulant from a conventional aluminum salt with an iron-based coagulant BDP-860, a drastic odor reduction on the flotation unit was achieved, as well as a much lower H2S level in the biogas, due to an internal circulation of the anaerobic sludge. As a side effect, the separation of fat also improved significantly.

Results:
• Improved performance of flotation and dewatering
• Increased anaerobic reactor capacity
• Stabilization of the anaerobic process even with high variations in incoming flow
• VFA below discharge limit of 500 ppm – normally around 200 ppm

Key Benefits
15% INCREASED BIOGAS PRODUCTION
20% REDUCED POLYMER CONSUMPTION
LESS MAINTENANCE / BREAKDOWNS DUE TO A MORE STABLE SYSTEM
AUTOMATED TANK LEVEL CONTROL INCLUDING REORDERING AND REFILLING

Where water meets chemistry™
In the graph, process data is presented from the anaerobic process showing the performance during a time interval before the solution was implemented and also afterwards. COD load can be followed together with the methane production and level of VFA (volatile fatty acids) in the reactor. The horizontal green line shows the maximum level for VFA accepted by the municipal wastewater treatment plant.

For more information contact: water@kemira.com