Buckman

WATER TECHNOLOGIES

CASE HISTORY

Restoring settler operation and improving sludge quality in a European food processing plant with Bulab® 5828

Background

Wastewater plant operators used to introduce ferrous sulfate as powder into the effluent treatment system from time to time in an attempt to get the sludge to settle. This treatment did not improve plant operation and there was no control regarding levels and frequency of addition. This activity cost the customer in the order of US$ 300,000 per year.

The aeration in the biological basin is intermittent (21 sequences of 25 minutes per 24 hours). When the basin is aerated, sludge goes into suspension and is transferred to the settler; other than that, only high turbidity water from the aeration basin goes to the settler via the overflow tube.

The water treated by the wastewater plant is released into a small river and the managers are sensitive about the environment and sustainability.

Action

After a survey of the wastewater plant, Buckman proposed an action plan executed in two steps:

1. Restore the settler and sludge extraction to standard operating conditions.
2. Improve sludge quality and aeration basin running conditions.

For the first step, it was proposed that ferrous sulfate be replaced with a treatment program based on an organic coagulant. A laboratory evaluation was done on sludge samples, Bulab® 5828 was selected.

The technical objectives of the program were set as follows:

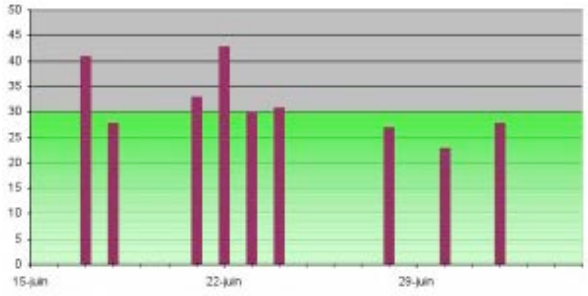
1. Specifications for the water released back into the river:
   a. Turbidity < 30 FAU
   b. Suspended solids < 40 mg/l
2. To significantly increase the frequency of sludge extraction.
3. To provide substantial level of technical service and operational advice.

Dosing equipment that was controlled by a timer in order to interlock the Bulab 5828 dosage to the run times of the aerators was installed on the plant. Thus, whenever sludge goes to the settler, the Bulab 5828 will be dosed and can impact the incoming sludge immediately. The dosage rate was controlled at 15 ppm on the incoming flow and calculated to an actual flow.

Results

The turbidity of the released water remained below the required specification limit of 30 FAU for the largest part of the evaluation. Two peaks are visible. These resulted from mechanical problems on the clarifier.

Turbidity of rejected water (FAU)



The suspended solids levels remained below the 40 mg/l limit. Only two peaks appear as a result of the mechanical problems on the clarifier.

Continued on back.

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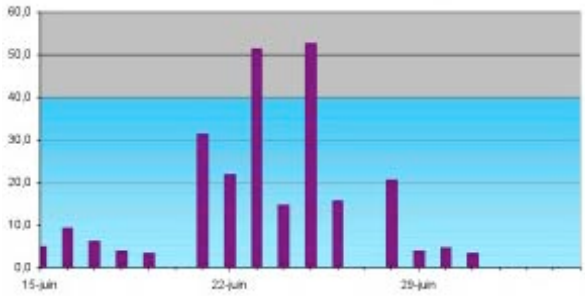
Suspended solids of rejected water (mg/l)



During the application on the plant it became apparent that the real opportunity was in sludge extractions. The sludge extraction frequency changed from slightly more than 1 extraction per month to approximately 1 per week during the Buckman application of Bulab® 5828.

Because of the sludge recirculation loop, the Bulab 5828 treatment influenced the aeration basin sludge quality as was expected. It was observed during the trial that there was an augmentation of the Sludge Volume Index and it stabilized around 200 ml/l compared to only 100 ml/l or less prior to the treatment. This implies that the sludge was less liquid as a result of larger particle sizes created by the application of Bulab 5828.

Extracted sludge on the sludge table depicts an improved sludge quality.