

## PRE-TREATMENT OF INDUSTRIAL WASTEWATER

### CHALLENGE:

Dairy production company Latvijas Piens (Latvia) is discharging its wastewaters to the Jelgavas Udens WASTEWATER TREATMENT PLANT (WWTP). The wastewater contains a high concentration of BOD and nutrients. Pre-treatment and better process control of these effluents is needed within the dairy company's production facilities in order to enhance the treatment results at the municipal WWTP.



# LATVIJAS PIENS

Project BEST- Better Efficiency for Industrial Sewage Treatment

### SOLUTION: FLOTATION AS PRE-TREATMENT

As a solution, Latvijas Piens invested in pre-treatment of its wastewaters. Wastewater from the dairy plant is directed to the existing main pump pit from where it is pumped to the buffer tank, for equalization of the pollution concentration and its flow. The average daily amount of wastewater is 450m<sup>3</sup>. After buffering, the wastewater stream is pumped to flocculation flotation system for insoluble (total suspended solids) TSS, fat, oil and grease removal. A pre-treated stream is directed to the effluent pit no 2 and the sludge is pumped to the sludge storage tank.

### Components installed in the solution:

- Raw wastewater pumps with level control in main pump pit.
- Buffer tank of 600m<sup>3</sup> equipped with level control, air blowers and aeration system.
- Odour removal system.
- Flocculator equipped with basket filters, flow meter and feed pumps.
- 30m<sup>3</sup> coagulant tank equipped with dosing unit.
- 30m<sup>3</sup> neutralizer tank equipped with dosing unit.
- Flocculant dosing unit equipped with automatic flocculant make-up station for powder polymer.
- Flotation unit equipped with skimmer system for floating sludge, aeration system and recirculation pump.
- Sludge tank with level control and pump for mixing / truck loading.
- Effluent pump pit equipped with pumps and level control.

### COST DESCRIPTION

- The total cost for the wastewater pre-treatment reached 1.2m EUR;
  - 450 000 EUR - technological equipment
  - 750 000 EUR - related to project creation and civil works.

The investment was built in the BEST project and it was co-funded by European Regional Development Fund's Interreg Baltic Sea Region programme.



For more info: Project BEST- Better Efficiency for Industrial Sewage Treatment [www.bestbalticproject.eu](http://www.bestbalticproject.eu)

## PRE-TREATMENT OF INDUSTRIAL WASTEWATER

### LATVIJAS PIENS

The factory of Latvijas Piens was built in 2012 in Jelgava, Latvia.

The current processing capacity of the factory is 300 tons of milk per day and the factory's production capacity is 30 tons of cheese per day.

The factory produces industrial dairy products such as:

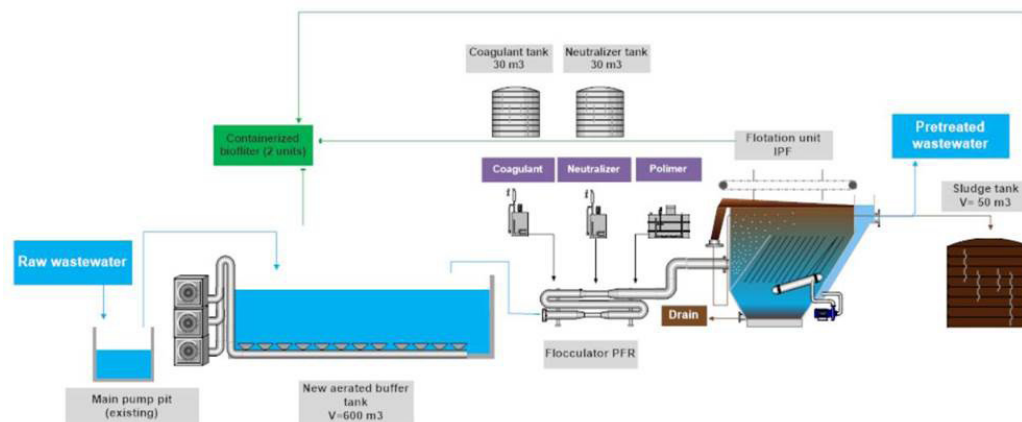
- whey protein concentrate
- sweet whey concentrate
- skimmed milk concentrate
- lactose permeate
- cream
- butter
- cheese (Gouda/Tilsiter/Maasdam)

Before the investment, there was no wastewater pre-treatment. All of the wastewater was directly discharged to the municipal wastewater treatment plant Jelgavas Udens. This led to situations where pollution limit values were 3-6 times higher than those set by Jelgavas Udens. The factory received constant claims from the wastewater treatment plant to reduce the pollution load.

### Flotation

In this flotation process, liquid-solid separation is induced by dissolving pressurized gas into the treatment unit. The gas is released as micro-bubbles that rise to the surface, capturing the solids on the way. The sludge bed formed on the surface of the tank is withdrawn by scrapers or overflow, and must be subsequently processed. Chemical coagulant and/or flocculant are usually required to accumulate particles into separable flocs.

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	Influent before pre-treatment	Effluent after pre-treatment	Allowable rate
pH	5.5-10.0	6.5-8.5	6.5-9.0
COD	2500-3500	≤625	625 (MAX 935)
BOD	1200-2200	≤250	250
TSS	300-600	≤410	410

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