

Reducing high COD, BOD and S/S loads at a Cheese Processing Plant

- ◆ Designed to treat the effluent on site to acceptable levels for direct discharge to field soakaway
- ◆ Gross solids screened out of the effluent
- ◆ Reduction in COD/BOD of 85% and Suspended solids of 90%
- ◆ Above ground installation that reduced civil cost and installation time scale
- ◆ Low operation and maintenance cost



Project Description

F J Needs Ltd WWTP is a bespoke effluent treatment system and is based on our high performance modular Eco-SAF biological system comprising of:

- Inlet pump chamber
- Mechanical brush screen for solids separation
- Hydraulic flow control
- Up-flow Bioreactor based on Submerged Aerated Filter (SAF) technology
- Final clarification in a Lamella Clarifier

Flow	4m ³ /day
Average COD	5900mg/l
Average BOD	3500mg/l
Average S/S	2500mg/l
Design flow	0.12l/s

The Effluent treatment system is to treat the site wastewater to the minimum trade effluent quality as follows:

Parameter	Unit	Discharge standard
COD (settled)	mg/l	< 1000
BOD (5 day settled)	mg/l	< 500
Suspended Solids	mg/l	< 120



Preliminary treatment:

Comprising of the following elements:

- Inlet pump station c/w Duty/Assist set back vortex impellor submersible pumps
- Mechanical brush screen

Secondary Treatment:

The **Eco-SAF** module – the essential biological stage where bacterial microorganisms are cultivated and actively consume the suspended organic material found in the decanted liquid from the primary process. The aerated cells are equipped with a fine-bubble aeration system distributing the oxygen that is required for a healthy and stable population of heterotrophic bacteria. Oxygen is supplied to the air diffuser system by a side channel blower that require minimum maintenance.

The module is a series of aerated cells and anoxic zones. The aerated cells are also furnished with fully submerged bio-film growth media to ensure that the microorganisms have a substantial area for growth and a stable environment. Full floor coverage with the aeration diffusers ensures there is maximum oxygen transfer and there are no 'unaerated' dead zones as in circular tank designs.

Final Settlement – Clarifier. Any remaining solids (Humus) are settled out of the biologically treated effluent with the aid of a lamella pack and returned upstream as enriched activated sludge (RAS) to be absorbed in fresh wastewater. The lamella pack increases the active area and therefore improves the settling ability of the sludge within a small footprint.

The Eco-SAF system was selected for the following reasons:

- Predictable performance
- Lower operation and maintenance costs
- No interruption to the process whilst servicing the aeration system
- Modular design that can be added if production is increased
- Better whole life cost
- Easy installation with minimum excavation required
- Life expectancy of over 30 years with minimum maintenance
- No internal moving parts
- Easy to de-sludge
- Manufactured to Quality Management System ISO 9001