



Dairy and Ume Plum Processing Wastewater Treatment System

• Name of System

JA Facility Milk and Ume Plum Processing Wastewater Treatment System (Gunma Prefecture, Japan)

• Start of Operation

March 1996

• Outline of System

Dairy wastewater and ume plum processing wastewater are treated in a membrane bioreactor, then released into a nearby stream. The system also includes a membrane-type sludge concentration tank to reduce the volume of excess sludge.

• Throughput

27 m³/day (20 m³/day of dairy wastewater + 7 m³/day of ume plum processing wastewater)

• Influent BOD

Average influent BOD = 1,600 mg/L
(Dairy wastewater = 800 mg/L;
ume plum processing wastewater = 4,000 mg/L)

• Membrane Modules

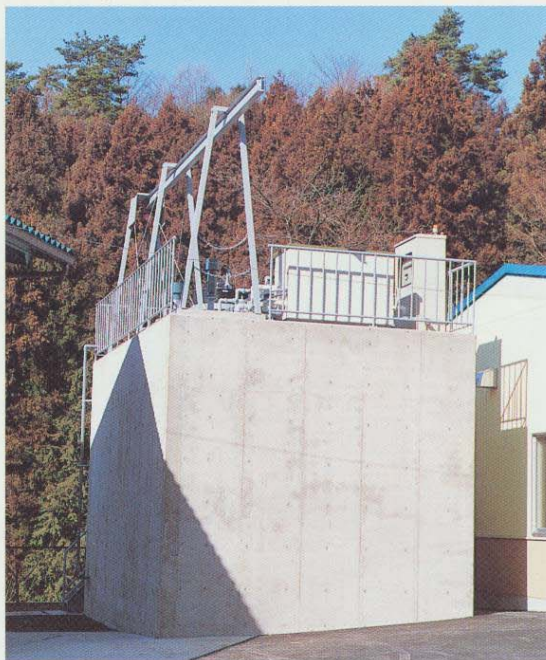
- Product No. (for membrane bioreactor): UMF 6424 × 2 tiers × 2 units (256 m²)
- Product No. (for sludge concentration tank): UMF 424 × 4 units (16 m²)
- Particle cutoff: 0.1 μm
- Membrane replacement: Membrane has not yet been replaced as of March 2000

• Advantages of Membrane Use

In spite of the intermittent feed of high BOD wastewater at this facility, a compact system design was possible because of the ability of the membrane bioreactor to maintain a high MLSS concentration.

System Features

This JA (Japan Agricultural Cooperative) facility is used to collect and process milk, and to process Japanese ume plums. The facility intermittently generates high BOD wastewater. To minimize the environmental impact on the ecologically rich rivers and streams of the area, a wastewater treatment system was designed to voluntary standards for BOD of <25 mg/L and for SS of <5 mg/L. The system also includes a membrane-type sludge concentration tank to reduce the volume of excess sludge. The frequency with which excess sludge is carried away as industrial waste has been reduced to only once every three months.



General view of facility

Remarks

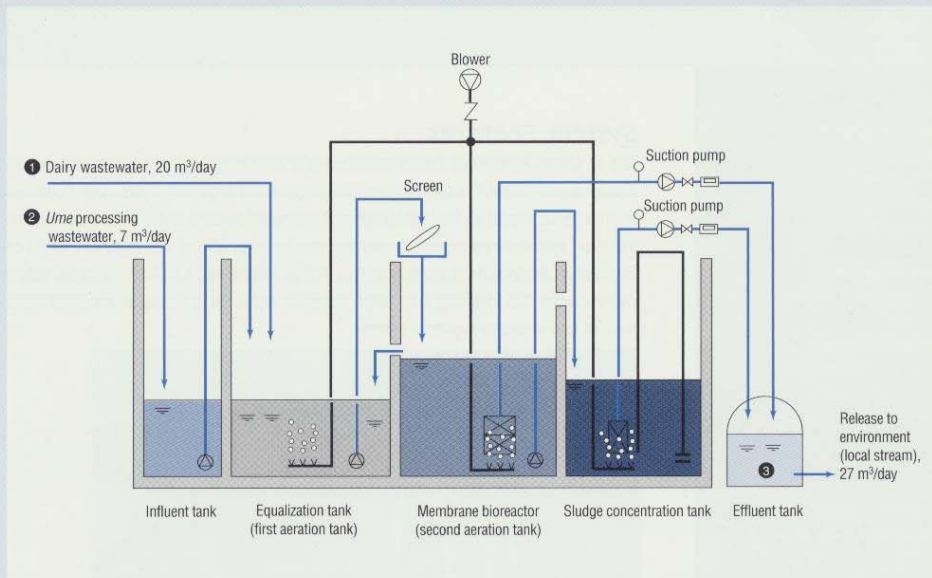
Inadequate treatment due to load fluctuations is often a problem in activated sludge wastewater treatment systems intermittently fed with different types of wastewater. However, because the bulking of sludge does not represent a problem in activated sludge treatment with a submerged membrane, good treatment is possible without requiring special operating procedures.



SUR234

The element shown here is a new model which differs from the membrane module used in the wastewater treatment system described on this page.

• **Flow Sheet**



• **Water Quality Analysis**

Test items	Dairy wastewater ①	Ume processing wastewater ②	Membrane-treated water ③
pH	6.9	3.7	7.1
BOD (mg/L)	810	4,600	1
COD(Mn) (mg/L)	210	1,900	5
SS (mg/L)	710	32	<2

• **Operating Conditions (activated sludge treatment)**

HRT: 1.5 days
 MLSS: 8,000 – 12,000 mg/L
 Chemical Wash for Membrane Modules
 Chemical: Sodium hypochlorite (0.1%) + NaOH (4%)
 Washing time: Overnight immersion
 Frequency: Twice a year

• **Operating Conditions (sludge concentration treatment)**

MLSS: 1 – 4%
 Differential pressure: 30 kPa
 Sludge drainage: Once every 3 months, about 10 m³

Data furnished by: Mitsubishi Rayon Engineering Co., Ltd.
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This flow sheet presents one example of an industrial wastewater treatment system. Each system must be designed according to the water quality of the influent and the target wastewater standards.



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