

Juice Factory

A juice and sports drink processor located in Florida, USA, required pre-treatment of concentrated raw juice and sports drink plant wastewater. Initially, the factory was permitted to have their wastewater pre-treated to meet a BOD and TSS concentration of 450 mg/l, respectively. Thus, a low-rate ADI-BVF[®] anaerobic reactor was chosen for anaerobic pre-treatment of the raw wastewater due to the BVF[®] reactor associated benefits of simple operation. After a 4.5 month construction schedule the BVF[®] reactor became operational in April 2003.

In 2004, the local municipality that accepts the pre-treated anaerobic effluent imposed an effluent TDS limit of less than 1000 mg/l and a BOD and TSS limit of 300 mg/l, respectively. In order to comply with the effluent TDS and BOD limits, a combined membrane bioreactor / reverse osmosis (MBR/RO) system was constructed in 2004 to post-treat a portion (i.e., 50 percent of the design flow) of the anaerobic effluent in an effort to meet the TDS, BOD and TSS limits. The post-treated anaerobic effluent (from the MBR + RO system) combines with the remaining portion of anaerobic effluent at a manhole prior to final discharge.

In May 2007, the ADI-MBR system was commissioned to post-treat 946 m³/d of anaerobic effluent to meet a final BOD and TSS concentrations of less than 300 mg/l, respectively. The MBR system includes a 757 m³ pre-aeration tank and two membrane tanks of 87 m³ each (utilizing Kubota's flat-plate submerged membrane unit technology), complete with aeration systems, permeate and recycle pumps, chemical cleaning system and instrumentation. After the first 7 months of MBR system operation, the MBR has proven its ability to produce a high quality effluent and of suitable feed water quality to a RO system.



KUBOTA Submerged Membrane Unit™



Top-view of the ADI-MBR system: 2 Membrane Tanks with Kubota ES150 units

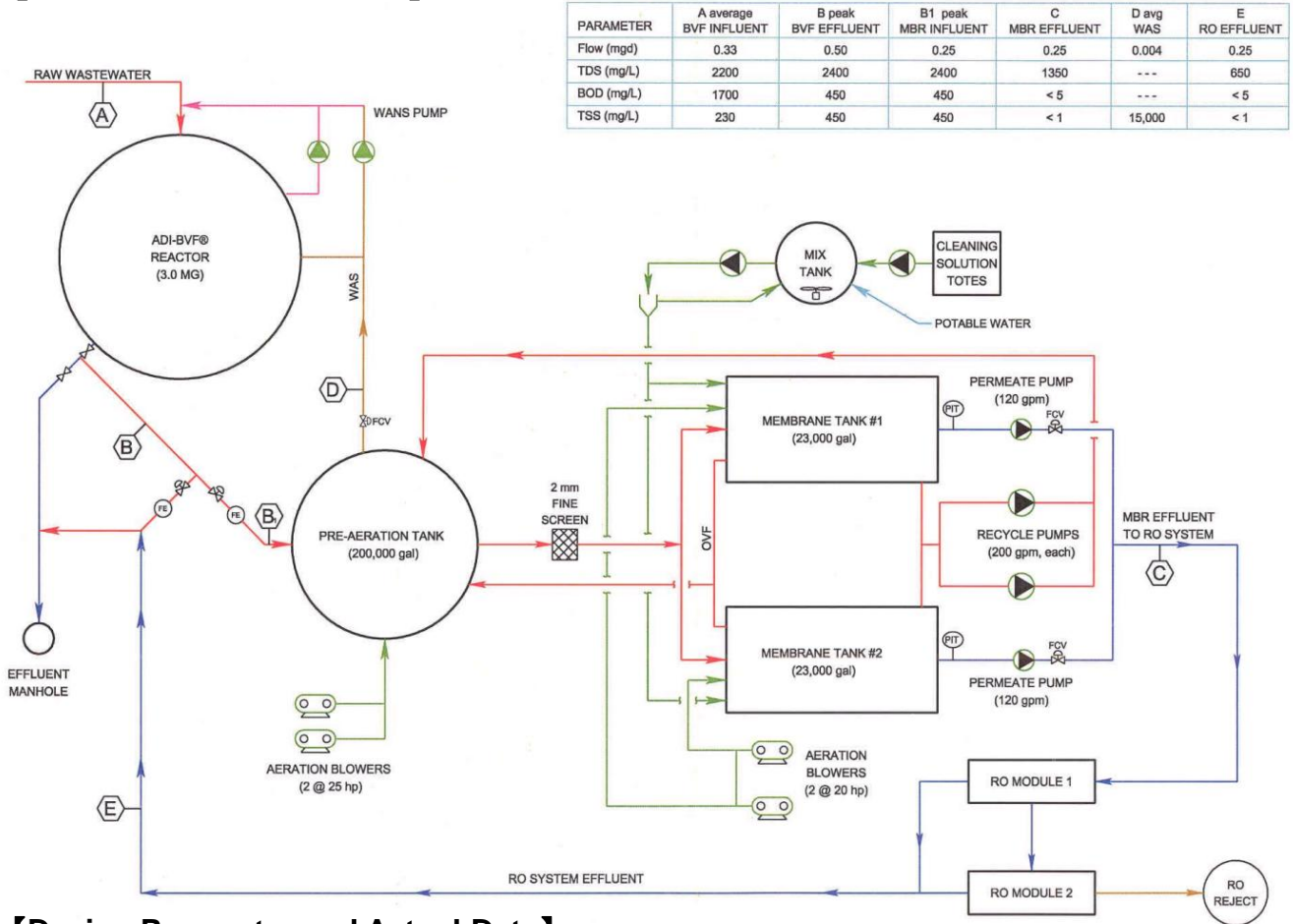
【Outline of the Facility】

Location :	Florida, USA
Type of wastewater :	Juice Factory Wastewater
Flow :	946 m ³ /d (MBR)
Commissioned :	May, 2007 (ADI-MBR)

Kubota MBR Case Study

Juice Factory

【MBR Process Flow Sheet】



PARAMETER	A average BVF INFLUENT	B peak BVF EFFLUENT	B1 peak MBR INFLUENT	C MBR EFFLUENT	D avg WAS	E RO EFFLUENT
Flow (mgd)	0.33	0.50	0.25	0.25	0.004	0.25
TDS (mg/L)	2200	2400	2400	1350	---	650
BOD (mg/L)	1700	450	450	< 5	---	< 5
TSS (mg/L)	230	450	450	< 1	15,000	< 1

【Design Parameter and Actual Data】

Parameter	Influent	Effluent		
	Raw water	ADI-BDF Effluent	MBR effluent	Discharge
BOD (mg/L)	1,700	300	<5	-
COD _{Cr} (mg/L)	3,000	450	35	300
TSS (mg/L)	230	50	<1	300
TDS (mg/L)	2,200	1,600	1,350	<1,000
Flow (m ³ /d)	1,892	1,892	946	-

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