

CASE STUDY



Mayan Zvi Wastewater Treatment Plant Retrofit

Fluence's submerged MABR (membrane aerated biofilm reactor) technology, "SUBRE", enabled the wastewater treatment plant to treat increased flow concentrations with no additional footprint.

- **Location:** Mayan Zvi, Israel
- **Customer:** Mayanot Ha-Amakim, a water utility in Israel
- **Technology:** 22 SUBRE T3 modules featuring MABR technology
- **Upgraded Capacity:** 3.3 mgd (12,000 m³/d)
- **Application:** Avocado field irrigation, with surplus discharged into the sea

Background

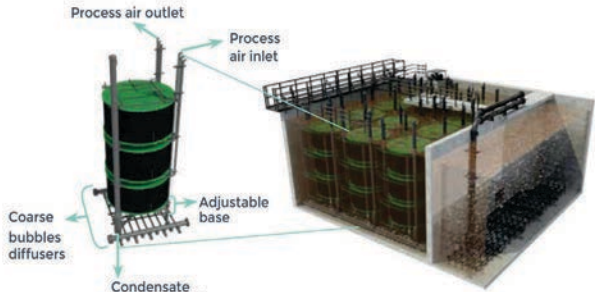
The Mayan Zvi wastewater treatment plant treats highly concentrated and industrial wastewater from nearby villages, including Fureidis, Zichron Yaakov, and Kibbutz Mayan Zvi. As the local population increased, so did the load of COD, Nitrogen, and TSS per day – which reached higher than the designed capacity. Mayanot Ha-Amakim sought a treatment upgrade that could treat the concentrated influent and produce effluent that would meet the local agricultural reuse requirement.

Solution

For the upgrade, Mayanot Ha-Amakim selected Fluence's MABR-based SUBRE, due to its excellent nitrogen removal, single pass process, energy savings, and reliable results regardless of load fluctuations.

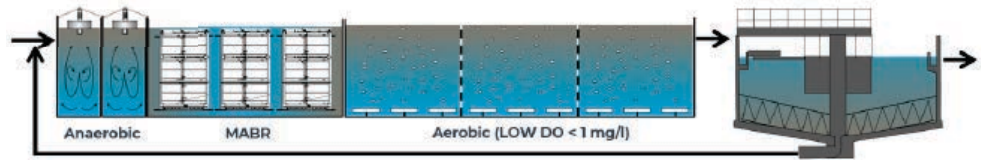


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How it works

- SUBRE towers are installed in an existing anoxic basin
- Utilizes existing aeration system
- Eliminates internal nitrates circulation
- Fast and easy module installation with immediate results



Results

- **Increased Performance:** Treats double the organic loading and produces better effluent quality
- **Footprint:** No additional footprint required
- **OPEX Savings:** Single pass process saves the need for internal circulation and lowers the aeration needed in the aerobic stage
- **Energy Savings:** 33% energy saved compared to original energy usage due to different set point for aeration
- **Sustainability:** No hazardous chemicals used, and effluent meets local standards for agricultural reuse



Effluent meets local agricultural reuse standards

The actual influent concentration was double the original designed influent concentration, but Fluence's SUBRE brought the concentration of effluent down to far less than the local reuse standards.

	Units	COD	BOD	TSS	TKN/TN	NH ₄	P _{tot}
Original Design Influent	mg/l	945	388	388	67	47	-
Plant's Discharge Permit	mg/l	100	50	30	25	15	-
Measured 2023 Average Influent	mg/l	935	514	645	75	52	11
Measured 2023 Average Effluent	mg/l	24	10	2	10.1	6.4	0.3
Original Basis of Design	Lbs/day	18,754	7,700	7,700	1,330	931	-
SUBRE Retrofit Basis of Design	Lbs/day	22,879	9,394	9,394	1,622	1,135	-
Measured Loadings 2023	Lbs/day	16,493	9,071	11,378	1,323	917	194