UNISOL
Membrane Technology

PFAS-free Technology

MYTEX
MBR CASE STUDY

LINDAU WWTP – FUTURE-PROOF WASTEWATER TREATMENT
ON LAKE CONSTANCE

INITIAL SITUATION

The wastewater treatment plant (WWTP) in Lindau, located on the shores of Lake Constance – one of Europe's most important drinking water reservoirs – had not undergone a major upgrade since the 1990s. Since then, the urgently needed modernization has failed due to a lack of investment.

The aging infrastructure, combined with an increasing demand for more advanced treatment due to a growing population and rising environmental standards, made comprehensive modernization essential.

SOLUTION APPROACH: MBR TECHNOLOGY WITH 4TH TREATMENT STAGE

In response, a full-scale upgrade was initiated in 2016, aiming to improve treatment efficiency and long-term sustainability. The selected solution centered around the implementation of membrane bioreactor (MBR) technology, integrating a fourth treatment stage to eliminate micropollutants.

The decision was made in favour of the PFAS-free **MYTEX membrane** system, developed and delivered by company UNISOL, which offers high filtration performance while avoiding the use of per- and polyfluoroalkyl substances (PFAS).

The system was dimensioned for 90 MYTEX H5L5 modules, with a total membrane area of 64,710 m^2. The membrane treatment, combined with simple powdered activated carbon (PAC) dosing, enables highly effective micropollutant removal at relatively low operational cost. The plant's capacity was expanded to 72,000 population equivalents (PE), replacing outdated treatment units and preparing the facility for future regulatory and environmental demands.

RESULTS & EVALUATION

Despite challenging external conditions – including the COVID-19 pandemic, inflation, and skilled labor shortages – the project was completed on schedule in December 2025. With this, Lindau is now home to Bavaria's largest MBR plant.

The upgraded plant achieves significantly improved effluent quality, meeting bathing water standards, while also reducing the environmental burden on Lake Constance.

Energy efficiency has been improved through modernized equipment, and obsolete infrastructure was successfully decommissioned.

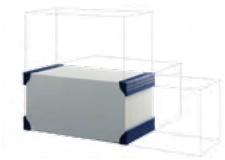
Moreover, the integration of the fourth treatment stage into the overall process was implemented with cost efficiency in mind, minimizing the financial burden on the municipality.

Economic and Technical Benefits

- ✓ **Improved treatment performance** including removal of micropollutants
- ✓ **Cost-effective 4th stage** integration via PAC dosing and MBR filtration
- ✓ **Reduction in energy consumption** compared to the legacy system
- ✓ **PFAS-free solution** in a sensitive water protection area
- ✓ **Decommissioning of aging infrastructure**, ensuring operational reliability
- ✓ **Support of Bavarian strategy** for micropollutant removal in key catchment areas

Technical Details

Parameter	Value
Fine screening	1 mm
Completion	Dec-25
ADF (Average Daily Flow)	13,306 m^3/d
PHF (Peak Hourly Flow)	1,980 m^3/h
Temperature (minimum)	10 °C
TS (Total Solids)	13.5 g/L
Module type	H5L5
Number of modules	90
Filtration chambers	6
Total membrane area	64,710 m^2



MYTEX H5L Membrane Unit

PROJECT PARTNER

- **Client / Operator**: Garden and Civil Engineering Services of the City of Lindau (GTL)
- **Engineering & Planning**: aqua consult Ingenieur GmbH
- **Plant construction:** wks Technik GmbH
- **MBR System & Technology Provider:** WTA UNISOL GmbH

WE SUPPORT YOU - WORLDWIDE!

China

UNISOL Membrane Technology (Xiamen) Co., Ltd.
#1670, Butang Mid Rd, Tong'an District, Xiamen
361112, China
+86 592 6301318
infochina@unisol-global.com

Germany

WTA UNISOL GmbH
Fritz-Bothmann-Str. 1, 99867 Gotha,
Germany
+49 (0) 3621 73 77 920
info@wta-unisol.com

USA

UNISOL LLC
108 W.13th street suite 100, WILMINGTON,
Delaware 19801, USA
+1 310 334 9707
infousa@unisol-global.com

India

Mumbai, India
+91 98330 90670, +91 98201 89128
infoindia@unisol-global.com

Vietnam

198 N7 Street, Dong Tang Long, Long Phuoc
ward, Ho Chi Minh city, Vietnam
+84 983 537 155
infovn@unisol-global.com

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