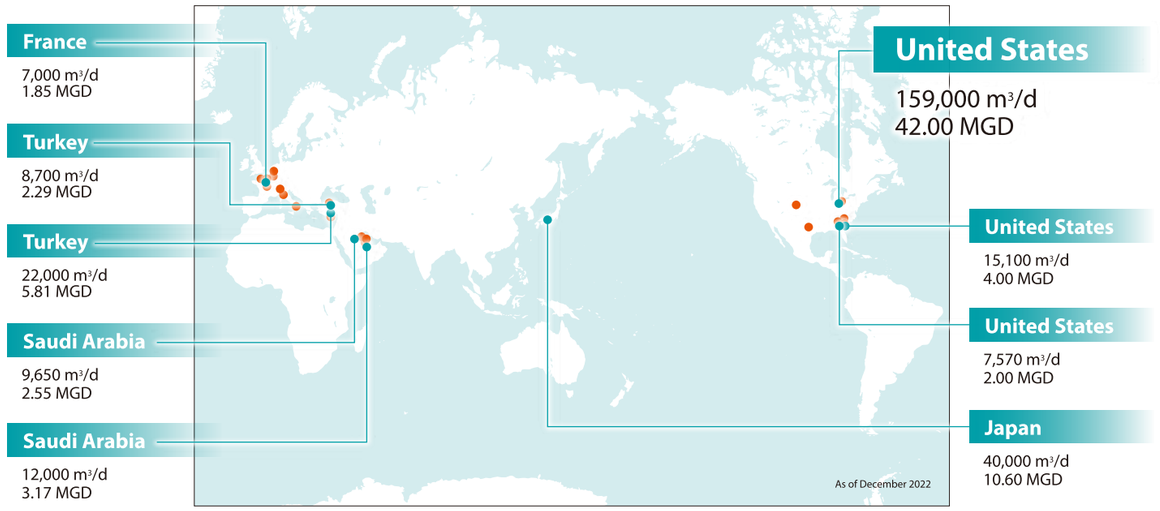
Unit Specification

The SP series has several unit types with different unit heights which can meet a **wide range of water depth requirements especially for retrofit projects**.

Unit Type	Total Membrane Area	Dimensions			Mass (Dry)	Required Min. Water Depth*
		Height	Width	Length		
SP225-A	225 m^2 / 2,421 ft^2	1,877 mm / 6.16 ft	944 mm / 3.10 ft	2,186 mm / 7.17 ft	590 kg / 1,301 lbs	2.3 m / 7.55 ft
SP337-A	337.5 m^2 / 3,632 ft^2	2,401 mm / 7.88 ft	944 mm / 3.10 ft	2,186 mm / 7.17 ft	790 kg / 1,742 lbs	2.8 m / 9.19 ft
SP450-A	450 m^2 / 4,843 ft^2	2,923 mm / 9.59 ft	944 mm / 3.10 ft	2,186 mm / 7.17 ft	990 kg / 2,183 lbs	3.3 m / 10.83 ft
SP675-A	675 m^2 / 7,265 ft^2	4,213 mm / 13.82 ft	944 mm / 3.10 ft	2,186 mm / 7.17 ft	1,510 kg / 3,329 lbs	4.6 m / 15.10 ft
SP900-A	900 m^2 / 9,667 ft^2	5,257 mm / 17.25 ft	944 mm / 3.10 ft	2,186 mm / 7.17 ft	1,910 kg / 4,211 lbs	5.7 m / 18.71 ft

* Extra water depth will be needed for gravity filtration.

KUBOTA SP Series References



KUBOTA Submerged Membrane Unit® models in all illustrations are with pickling treatment. KUBOTA Submerged Membrane Unit® design and specifications are subject to change without notice.
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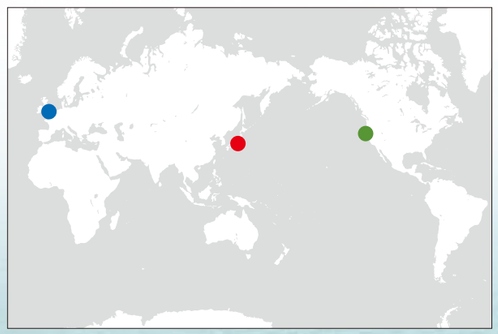

■ **KUBOTA Corporation (Tokyo Head Office)**
1-3, Kyobashi 2-chome, Chuo-ku, Tokyo, 104-8307 JAPAN
Phone: +81-3-3245-3665

■ **KUBOTA Membrane Europe Ltd.**
3rd Floor, No.1 Farriers Yard, 77-85 Fulham Palace Road, London, W6 8AH, U.K.
Phone: +44-20-8741-5262
http://www.kubota-mbr.com/

■ **KUBOTA Membrane USA Corporation**
11807 North Creek Parkway South, Suite B-109, Bothell, WA 98011, USA
Phone: +1-425-898-2858
http://www.kubota-membrane.com/

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For Earth, For Life
Kubota

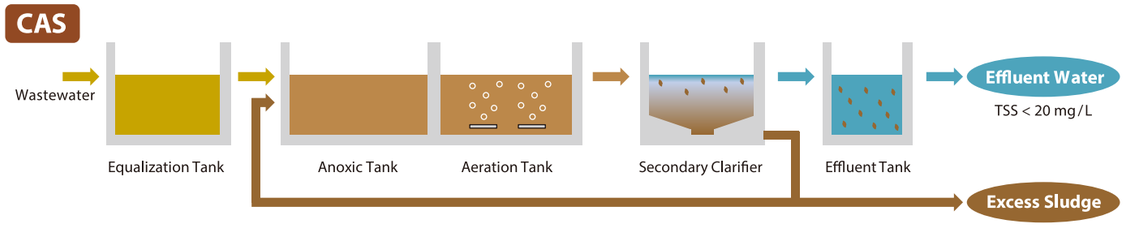
KUBOTA Submerged Membrane Unit®

SP-A

SP450-A SP900-A

Membrane Bioreactor

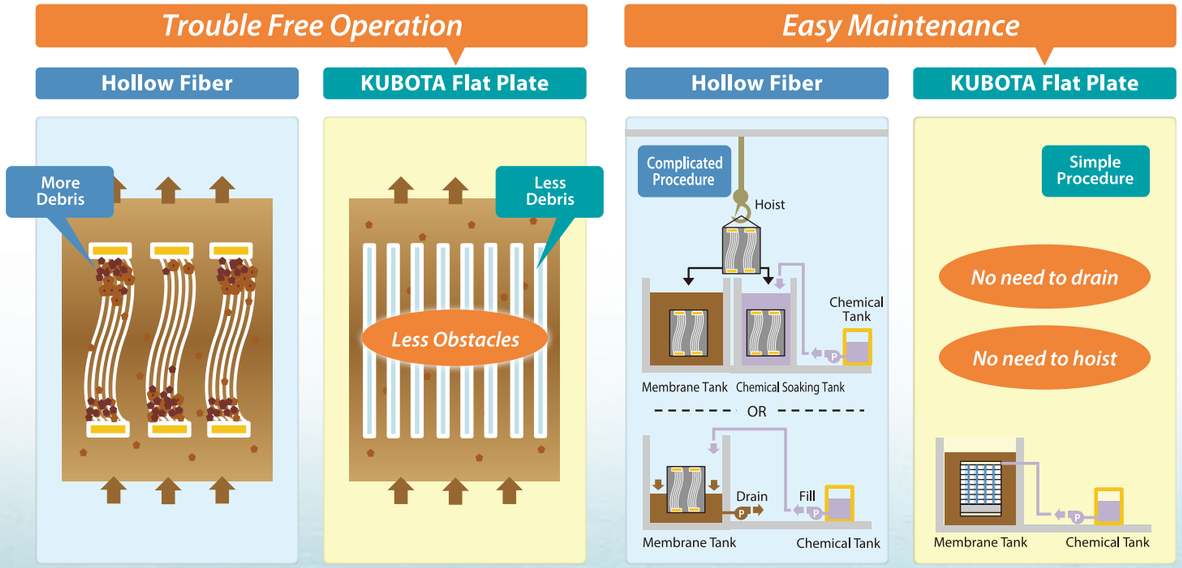
The Membrane Bioreactor (MBR) process is a proven wastewater treatment method which combines a biological treatment process and a membrane filtration process for final solid-liquid separation. The MBR perfectly eliminates the secondary clarifier and carry-over of the activated sludge. Therefore, the concentration of the activated sludge becomes higher and the process tank volume becomes smaller compared to the Conventional Activated Sludge (CAS) process.



*TSS < 2mg/L is a typical achievable value, not a guaranteed value.

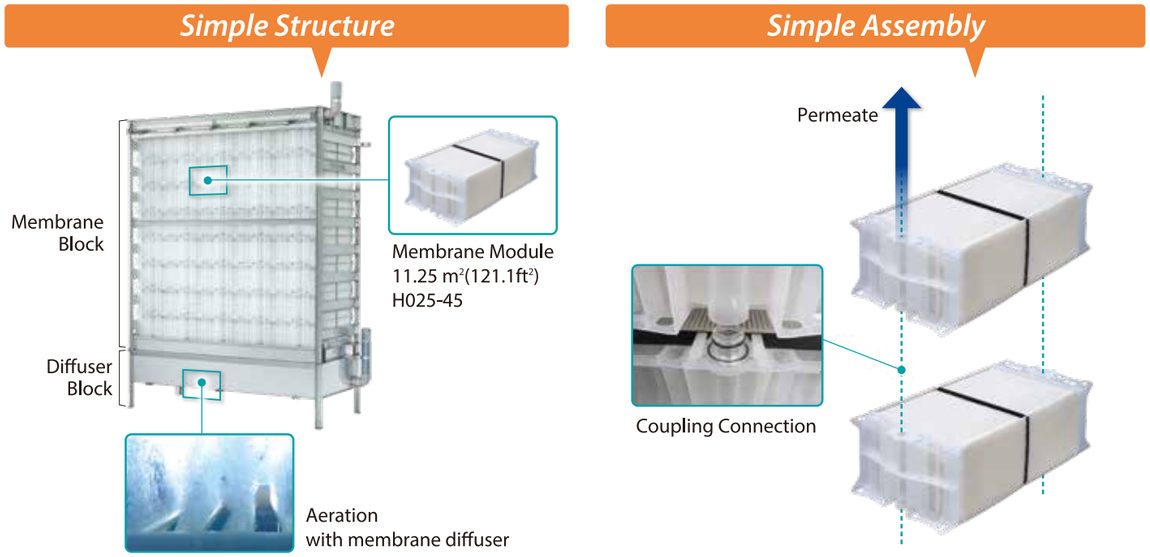
KUBOTA Submerged Membrane Unit®

The KUBOTA Submerged Membrane Unit® (SMU) is membrane equipment dedicated for the MBR process. The SMU can be directly submerged in activated sludge and allows only clean treated water to pass through its "**Flat Plate**" type membrane. The membrane sheet has 0.2 µm pores which block most microorganisms in the activated sludge.
The "Flat Plate" configuration keeps the space between membranes clear and minimizes debris accumulation. ***In-situ*** chemical cleaning is the only maintenance typically required.



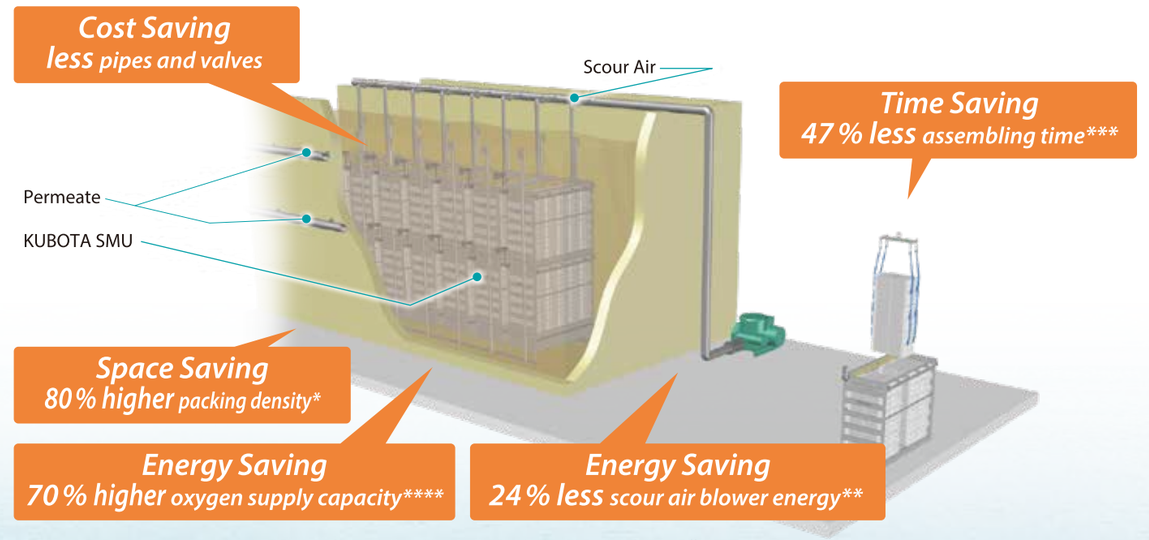
Structure of KUBOTA SP Series

The KUBOTA SP series is made up of SMU models optimized specifically for **medium to large scale wastewater treatment applications.** Forty five(45) flat membrane plates having a combined 11.25 m² of membrane area and permeate collection chambers are integrated into a compact "**Membrane Module**". This design improves packing density and reduces scour air requirements.
Multiple Membrane Modules are assembled into a Membrane Block using simple coupling connections. The coupling connection also serves as a conduit to the permeate header. This structure simplifies the assembling procedure of the SMU during field maintenance work. Moreover, the membrane diffusers contribute not only maintenance (cleaning) system but also to improvement of oxygen transfer efficiency.



Advantages of KUBOTA SP Series

Based on its unique structure, the SP series reduces **required space**, **required scour air** and **required assembling time during field maintenance work**; all of which are important considerations for medium to large scale projects.



* Comparing SP900-A to RW400 in terms of membrane area per required tank space for installation [m²/m³].
** Comparing SP900-A to RW400 in terms of required scour air blower energy consumption per membrane area [kWh/m²].
*** Comparing SP900-A to RW400 in terms of assembling time per membrane area [min/m²].
**** Comparing SP900-A to RW400 in terms of oxygen transfer efficiency per membrane unit [%].