Unit Specification

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

Unit Type	Total Membrane Area	Dimensions			Weight (Dry)	Required Min. Water Depth*
		Height	Width	Length		
SP225-A	225 m² / 2,422 ft²	1,877 mm / 6.2 ft	944 mm / 3.1 ft	2,186 mm / 7.2 ft	590 kg / 1,300 lbs	2.3 m / 7.55 ft
SP337-A	337.5 m² / 3,633 ft²	2,401 mm / 7.9 ft	944 mm / 3.1 ft	2,186 mm / 7.2 ft	790 kg / 1,741 lbs	2.8 m / 9.19 ft
SP450-A	450 m² / 4,844 ft²	2,923 mm / 9.6 ft	944 mm / 3.1 ft	2,186 mm / 7.2 ft	990 kg / 2,181 lbs	3.3 m / 10.83 ft
SP675-A	675 m² / 7,266 ft²	4,213 mm / 13.9 ft	944 mm / 3.1 ft	2,186 mm / 7.2 ft	1,510 kg / 3,326 lbs	4.6 m / 15.10 ft
SP900-A	900 m² / 9,688 ft²	5,257 mm / 17.3 ft	944 mm / 3.1 ft	2,186 mm / 7.2 ft	1,910 kg / 4,208 lbs	5.7 m / 18.70 ft

* Extra water depth will be needed for gravity filtration.

KUBOTA Installations

6,000+ Installations All Over the World.

Spain
35,000 m³/d
9.25 MGD
Sewage
EK

France
11,627 m³/d
3.07 MGD
Sewage
SPC

Turkey
22,000 m³/d
5.81 MGD
Sewage
SPC

Ethiopia
4,000 m³/d
1.06 MGD
Sewage
RW

Saudi Arabia
12,000 m³/d
3.17 MGD
Sewage
SP

Hong Kong
9,600 m³/d
2.54 MGD
Sewage
EK

China
20,000 m³/d
5.28 MGD
Sewage
RW

Oman
125,000 m³/d
33.0 MGD
Sewage
RW

India
4,500 m³/d
1.19 MGD
Sewage
EK

Australia
7,500 m³/d
1.98 MGD
Sewage
EK

Japan
40,000 m³/d
10.6 MGD
Sewage
SP

United States
159,000 m³/d
42.0 MGD
Sewage
SP

United States
15,140 m³/d
4.00 MGD
Sewage
SP

United States
22,700 m³/d
6.00 MGD
Sewage
EK

Ecuador
4,320 m³/d
1.14 MGD
Sewage
RW

KUBOTA SMU models shown in this brochure received image processing. KUBOTA SMU design and specifications are subject to change without notice.
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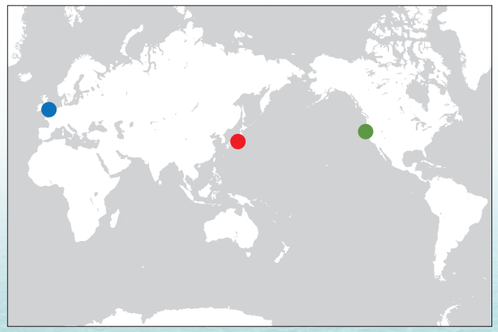
KUBOTA Corporation
Membrane Systems Dept.
http://www.kubota-global.net/



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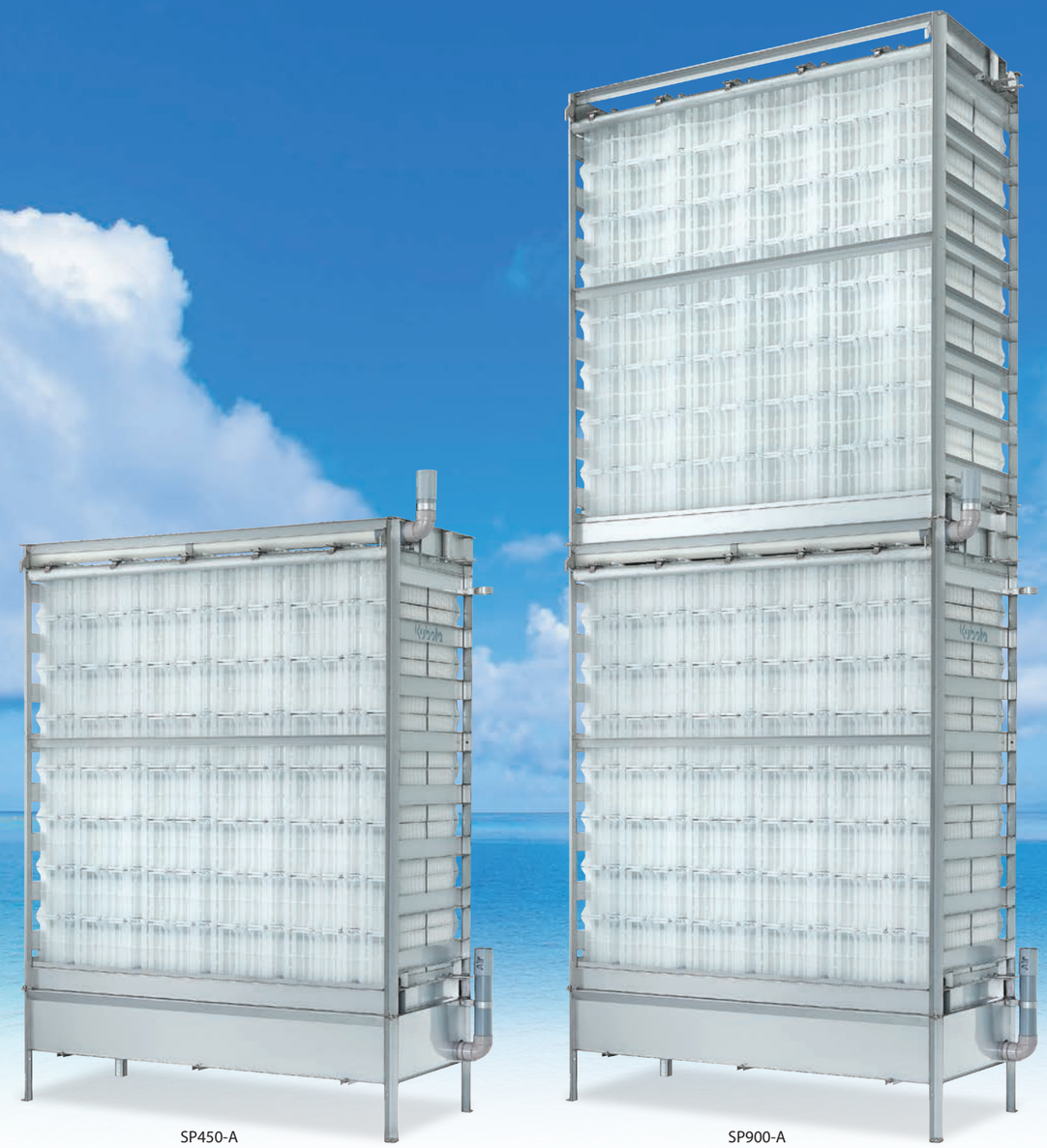
For Earth, For Life
Kubota

KUBOTA Submerged Membrane Unit®

SP Type

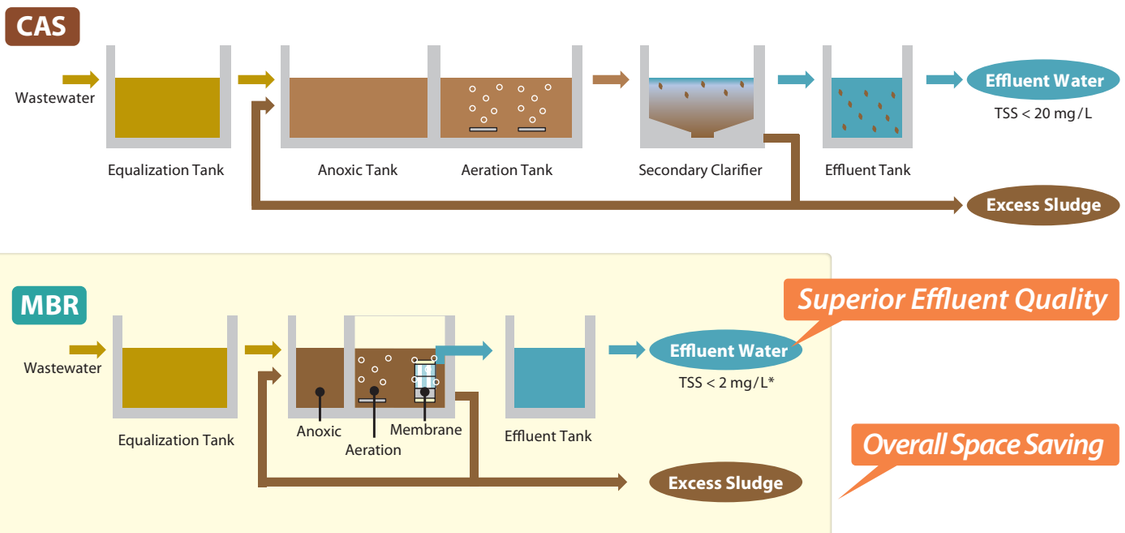
With Highly Packed Membrane Module



SP450-A SP900-A

Membrane Bioreactor

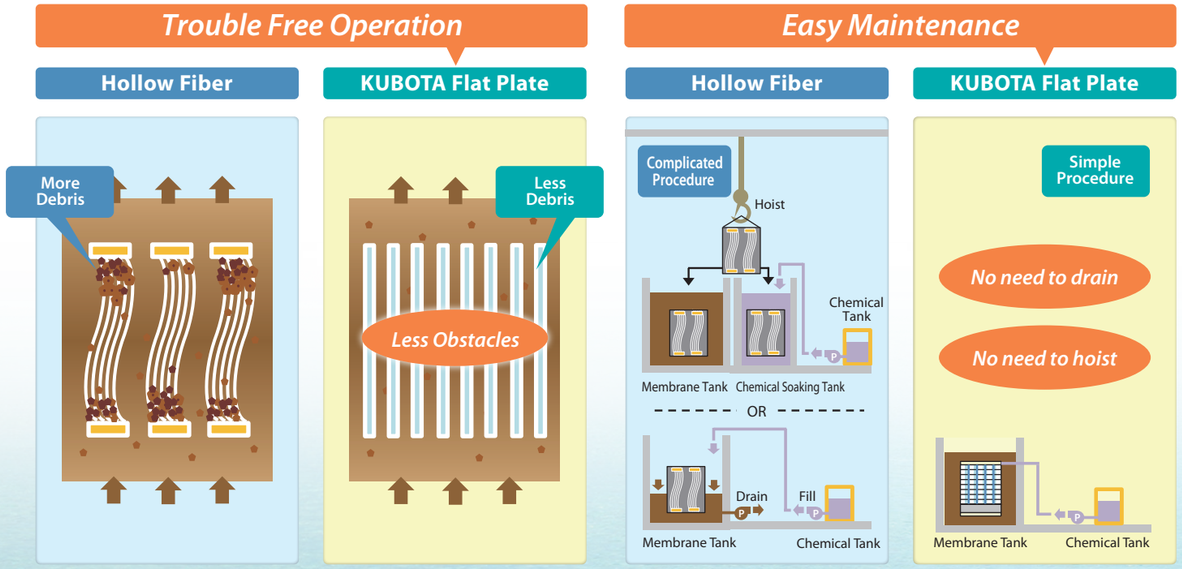
The Membrane Bioreactor (MBR) process is a proven wastewater treatment method which combines a biological treatment process and a membrane filtration process for final solid-liquid separation. The MBR perfectly eliminates the secondary clarifier and carry-over of the activated sludge. Therefore, the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



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

KUBOTA Submerged Membrane Unit®

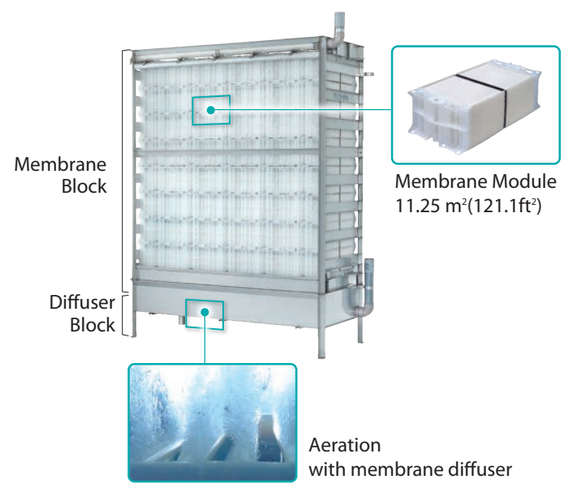
The KUBOTA Submerged Membrane Unit® (SMU) is membrane equipment dedicated for the MBR process. The SMU can be directly submerged in activated sludge and allows only clean treated water to pass through its "**Flat Plate**" type membrane. The membrane sheet is made of chlorinated polyethylene with maximum (nominal) pore size of 0.4 µm (average: 0.2 µm) which blocks 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.



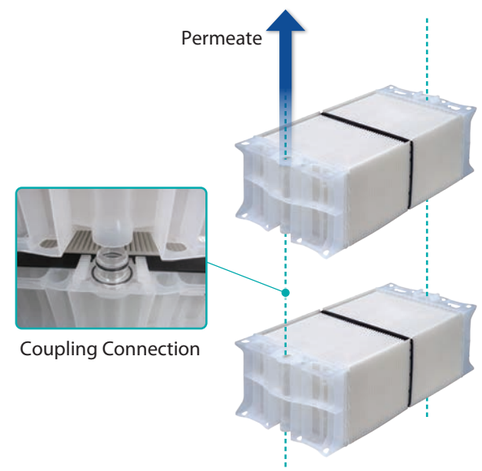
Structure of KUBOTA SP Series

The KUBOTA SP series is made up of SMU models optimized especially for **medium to large scale wastewater treatment applications**. Forty (45) flat membrane plates having 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.

Simple Structure

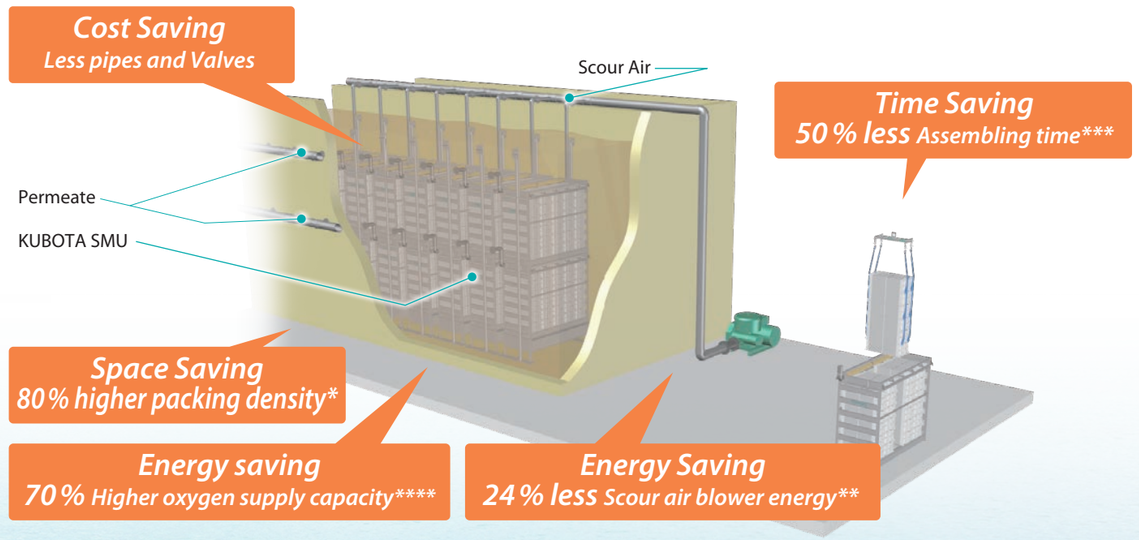


Simple Assembly



Advantages of KUBOTA SP Series

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



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