

# Energy-saving MBR System with Ceramic Flatsheet Membrane

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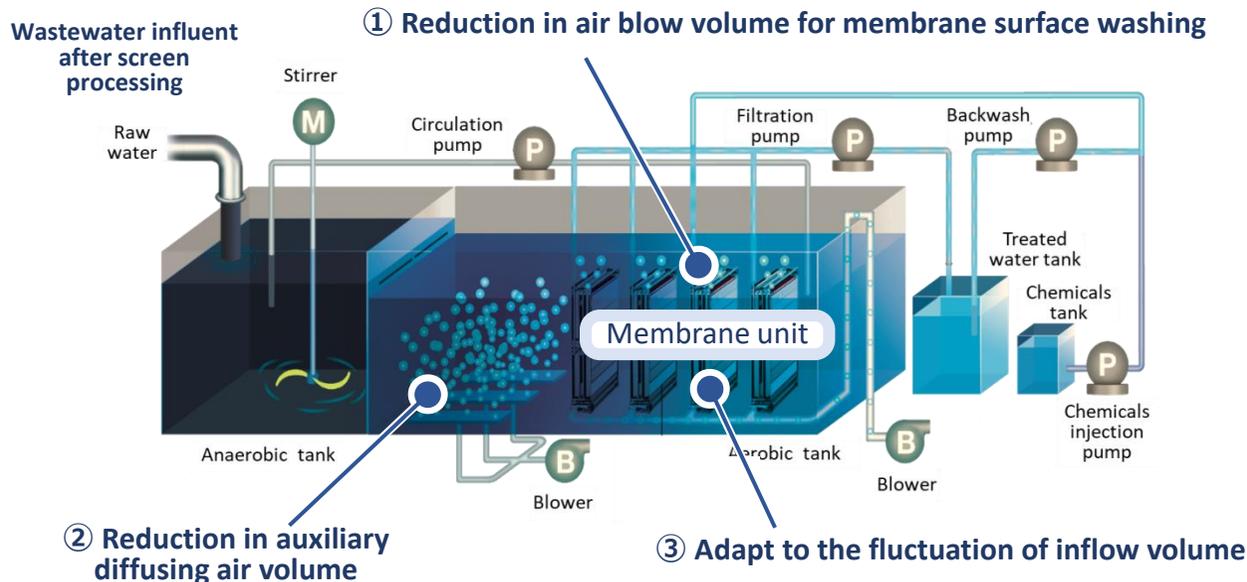
## 《Background》

MBR system, as a wastewater treatment technology that enables nutrients removal with compact facilities, is already widely used. The technology is expected further reduction of treatment costs, and stable treatment performance at a temporary increase in inflow volume.

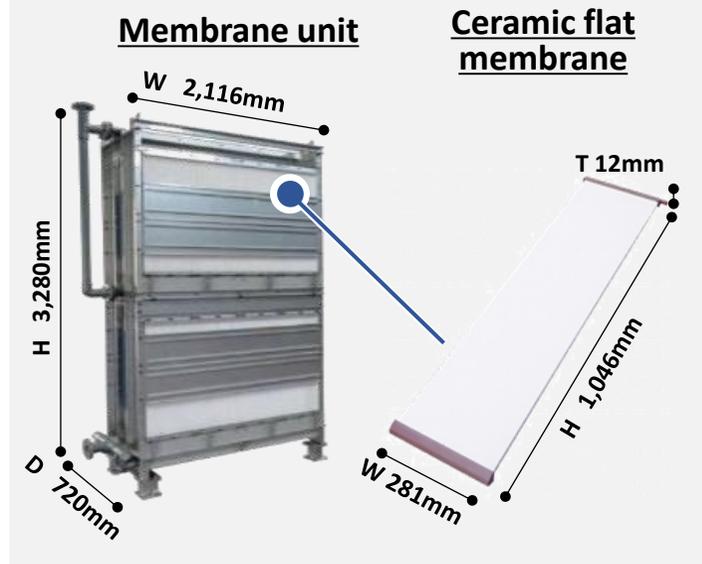
## 《Technology Summary》

Energy-saving MBR System adopting **Ceramic flat membrane which is an inorganic and alumina-based** enables **energy saving and an adoption to the fluctuation of inflow volume.**

### Flow chart of Energy-saving MBR



### Overview of Membrane



## 《Technology features》

- ① **【Energy saving】** High durability and chemical resistance of membrane enable backwash and regular chemical washing which can reduce the air volume for aeration washing
- ② **【Energy saving】** **Low MLSS concentration (8,000mg/L) • DO constant control (set value 0.8mg/L) operation**  
reduce air volume of auxiliary diffusion
- ③ **【Fluctuation of sewage inflow volume】** "Peak flux operation" that temporary increases flux is adaptable to flow fluctuation

Scope of peak flux operation(Estimation)

\*Flux: quality of treated water per unit area of membrane

Fluctuation by time : Peak-to-average inflow volume ratio of 1.4 times, twice a day, for 4 hours each

Fluctuation by long precipitation: Two times of maximum daily wastewater flow for 24 hours

Fluctuation by short precipitation: Three times of maximum daily wastewater, twice a week, for 4 hours each

## 《Scope of application》

Wastewater	Municipal wastewater, mainly domestic wastewater
Treatment capacity	Any capacity
Biological treatment method	Only combination with modified Ludzack-Ettinger process
Temperature of inflow	Minimum 13°C and over *The annual minimum value of monthly average water temperature
Water quantity fluctuation	Small scale(200-3,000m <sup>3</sup> /day): Flow equalization tank Mid to large scale(below 3,000m <sup>3</sup> /day ) : Peak flux operation

## 《Benefits》

- ✓ **Achieve energy-saving operation**  
by the reduction of aeration volume (electric consumption of 0.4kWh/m<sup>3</sup> or less\*)  
\* treatment capacity of 5,000m<sup>3</sup>/day in joint research
- ✓ **Adaptable to the temporary increase in inflow volume**  
Stable membrane treatment is possible for the temporary increase in inflow volume by rain