

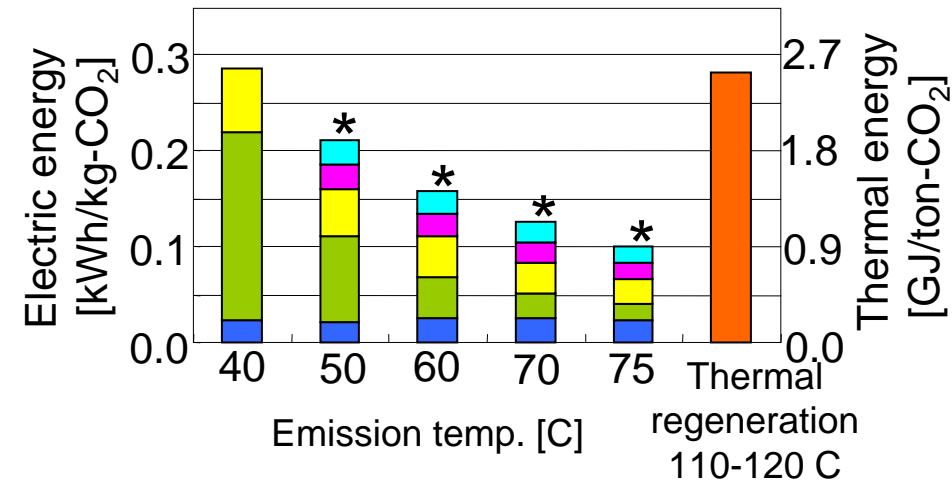
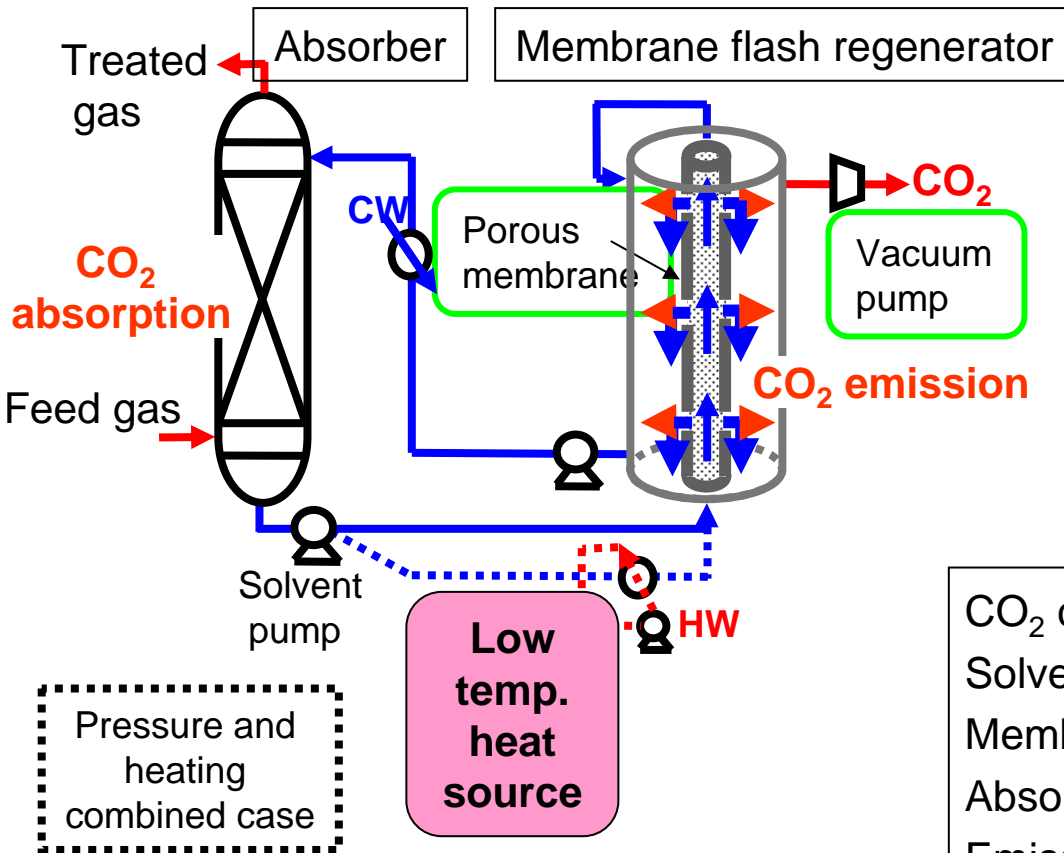
# **New regeneration technique in the chemical absorption method “Membrane / absorption hybrid separation technique”**

***Chemical Research Group  
Research Institute of Innovative Technology  
for the Earth (RITE)***



# Development of membrane / absorption hybrid separation technique

The CO<sub>2</sub> solvent is regenerated by flashing from the micropore of the porous membrane to the reduced pressure space for the purpose of energy reduction of the CO<sub>2</sub> recovery.



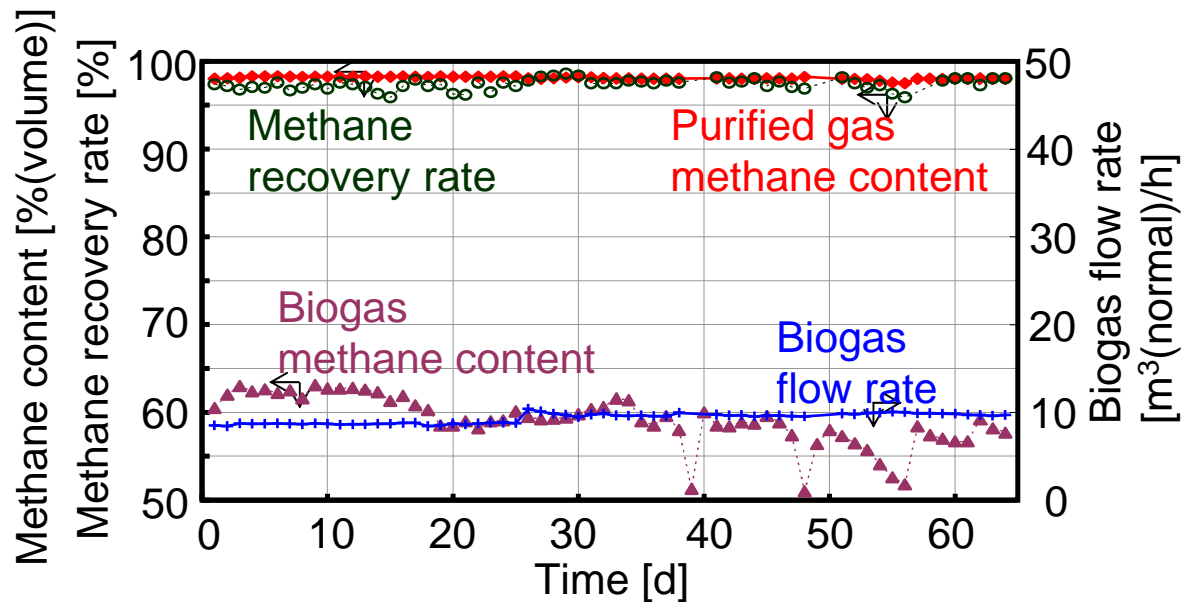
Energy consumption of major equipment

CO<sub>2</sub> content: 12%  
Solvent: 2M DEA  
Membrane: Alumina 1.0 $\mu$ m  
Absorption temp.: 40 C  
Emission temp.: 40-75 C

■ Cooling water pump  
■ Hot water pump  
■ Vacuum pump  
■ Solvent circulating pump  
■ Blower

\* Heating energy is not contained in order to utilize unused thermal energy of 100 C or less. (about 10 times of the above electric energy)

# Example of biogas purification



Membrane module



Test equipment  
-RITE / Taiyo Nippon Sanso Corp. joint development-