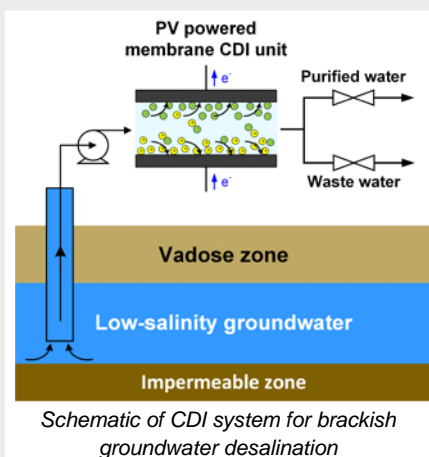


Capacitive deionization (CDI): When a voltage is applied across two electrodes, cations are attracted to the cathode and anions to the anode, resulting in the salt ions being removed from the solution. During discharging, the electrodes can be regenerated by executing polarity reversal, with the trapped ions released back into the brine stream.



PV powered membrane CDI for brackish water desalination

Water Research Centre, School of Civil and Environmental Engineering

Competitive advantage

- Energy efficient alternative (columbic efficiency > 85%) with low operating voltage (~1.2 V) for brackish water desalination;
- Extremely low cost and no energy consumption when driven by solar energy;
- Ease of maintenance, especially suitable for remote communities.

Recent research projects

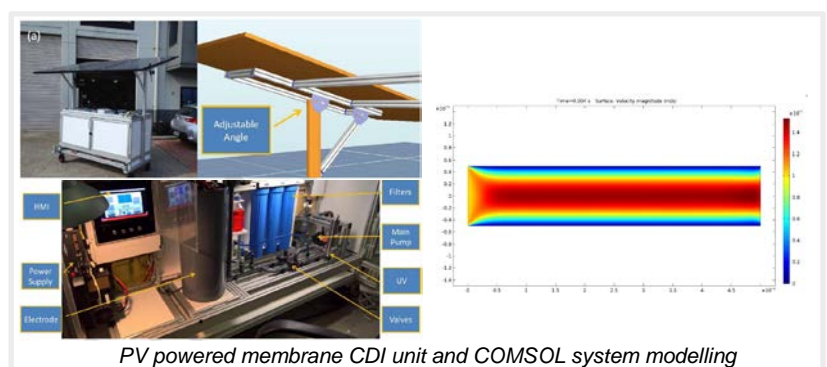
- PV powered membrane CDI for irrigation and fresh water production;
- Fluoride, nitrate and charged micropollutants removal in membrane CDI;
- Energy recovery and reuse in PV powered membrane CDI;
- Durability of carbon electrode (and membrane) in long-term operation and the impacts on desalting performance.

Successful applications

- A PV powered membrane CDI unit for irrigation (Tata, India);
- Pilot production line to set up PV powered membrane CDI for brackish groundwater desalination (Key R&D project, Jiangsu China).

Facilities and infrastructure

- UNSW Water Research Centre has extensive research resources and facilities including laser cutter, CNC mill, potentiostat electrochemical working station and stopped-flow instrumentation. which ensures the implementation of high-quality research and development.



More information

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