



# WATER & ENERGY FOR CLIMATE CHANGE

# WE4CC

## CONNECTING HEAT - WATER - AIR CYCLES

TECHNICAL DEMONSTRATION, BUSINESS RATIONALE AND IMPLEMENTATION OF NEW VALUE CHAINS FOR PRODUCTION OF HIGH QUALITY WATER AND DESICCANT CONCENTRATES USING LOW GRADE HEAT FROM COOLING WATER

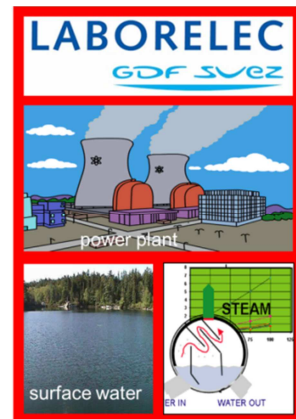
### INTRODUCTION

In Europe huge amounts of waste heat (EU27: more than 6.9 TWh) are lost and discharged via cooling water into surface water (once through coolers) or atmosphere (cooling towers). This results in large emissions of greenhouse gases, water and chemicals.

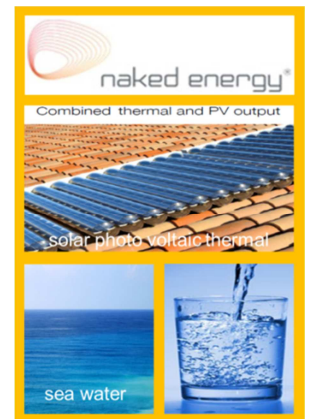
In WE4CC innovative heat – water – air networks will be developed and demonstrated, both for large scale and small scale applications, by:

- Smart combinations of new modular technologies (solar PVT, membrane distillation, desiccant systems)
- Utilization of low grade heat (low temperature waste heat) or renewable solar heat, for
- Production of high quality water production and indoor air for cooling/ humidity control.

### MARKET OPPORTUNITIES

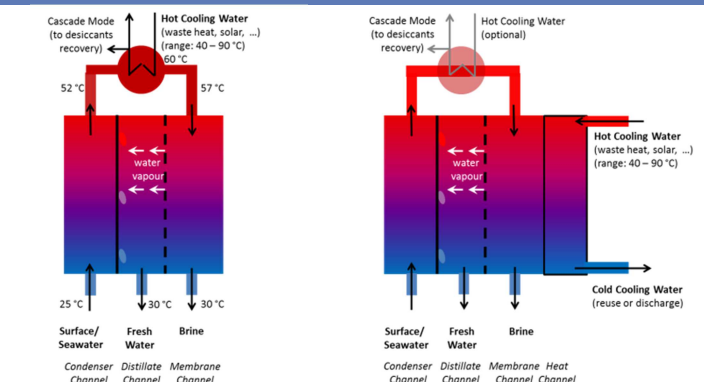


HP-boiler feed: from surface water with waste heat from power plants.



Drinking water: desalination with renewable heat from solar PVT.

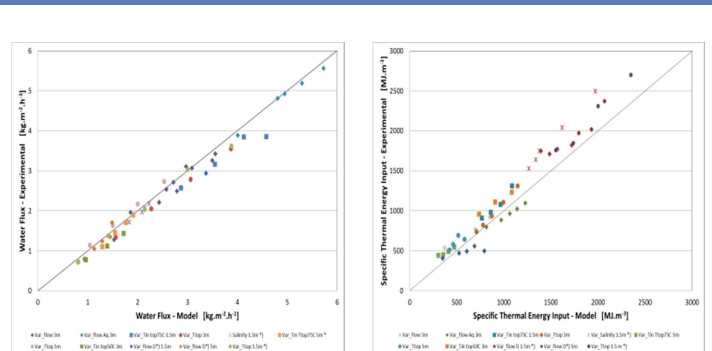
### PRINCIPLE



Memstill® for low grade heat desalination of surface/seawater.

Memstill® with heat envelop for low grade heat desalination.

### RESULTS TO DATE



Experimental flux (left) and experimental specific heat consumption (right) vs. model predictions for various modules & test conditions.

### POTENTIAL

#### Technical & economical

- Production of high quality water (drinking water, process water) & indoor climate control at lower costs

#### Climate

- Less heat discharge to environment
- Water production at low electricity consumption
- > 90% exploitation of waste heat in cascade mode

### BUSINESS MODEL



Current challenge is to build reliable sensitivity analyses of the underpinning business cases in each pilot. This allows us to understand exactly what variables will make the business case successful.