

2중 효용 담수장치 실험

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Procedures of Experiments

- 1) Calibration of transducer and thermocouples
- 2) Data acquisition using PC
- 3) Monitor the temperatures and pressures
- 4) Data sampling : one set(20 data) per 2 minute for 1 hour
5,400 data in total

Table 1 Experiment conditions

Description	Values
Flow rate of hot water(l/min)	95
Total feed rate(l/hr)	280
Feed rate of each stage(l/hr)	140
Temperature of feed water	24, 26, 28, 30, 32
Temperature of hot water	69.1, 72.4, 73.5, 75.4, 78.1

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Introduction- Necessity of Fresh water

- Global Resource of fresh water : scarce, uneven distributed
- Limited resources → water shortage in developing countries
- Use of poor water → diseases and deaths

■ State of arts - Desalination

- In the Middle East, MSF, MED, RO Integrated into Hybrid system
- In United States : The Desalination and Water Purification Road Map (2005)
 - 1) Identify the needs through case studies and state-of-the-practice
 - 2) Create the critical objectives of each Needs
 - 3) Identify metrics for each Objective : Near and long term sub-targets
 - 4) Identify technology areas → offer the best chances of meeting future Needs, Objectives and Metrics
 - 5) Identify research areas within Technology Areas
- In China : South-North water transfer project(the Yangtse to the Yellow) (2002) Desalination may be best method to provide fresh water

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Result and Discussion

Effects of inlet temperature of hot water

Fig. 2 Fresh water generating rates with inlet temperature of hot water

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In the present study

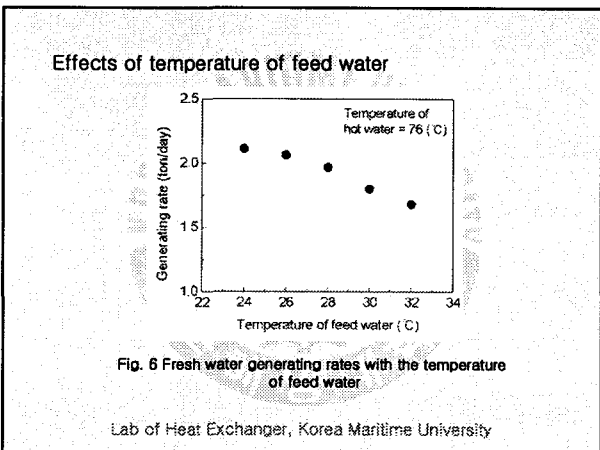
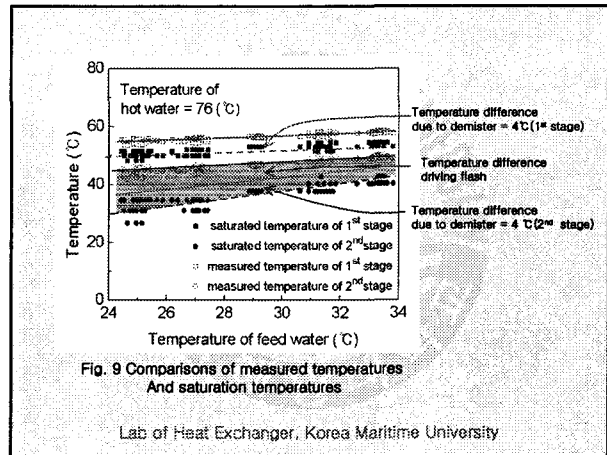
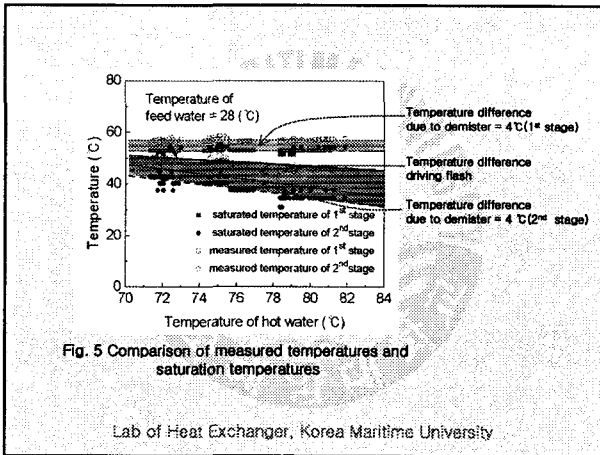
Objectives of present study

- 1) To verify operating of the 2 effect desalination system
- 2) To get the operating conditions

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Fig. 3 Variation of heat transfer rates to 1st stage with inlet temperature of hot water

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- ### Conclusion
1. Fresh water generating rates, operating conditions depends on hot water temperature and feed water temperatures
 2. In case of constant temperature of feed water
 - Find out the flashing effect in the 2nd stage
 - Temperature difference driving the flash increases with hot water temperature
 - Thermo-siphon induces the flow in tubes
 3. In case of constant inlet temperature of hot water
 - Temperature difference driving the flash decreases with feed water temperature
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