

Feasibility Studies with the Aim of Developing  
a Joint Crediting Mechanism FY2013

Studies for Project Exploration and Planning

# **Refrigerant Supercooling System Project for Air Conditioners in Thailand**

New Energy and Industrial Technology Development Organization (NEDO)  
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# “Refrigerant Supercooling System Project for Air Conditioners in Thailand”

## (Studies for Project Exploration and Planning)

Proposed by : Takasago Thermal Engineering Co., Ltd., Recycle One, Inc.

Takasago Thermal Engineering's refrigerant supercooling system for air conditioners is a system with relatively low initial investment and estimated energy-saving effect of about 20%. The system can contribute greatly to the energy conservation in Thailand where the energy consumption of air conditioners is expected to increase in the future.

### Survey in Summary

Explore a feasible project for reducing energy cost and GHG emission in factories and buildings by installing a water-cooled heat exchanger with supercooled refrigerant to an existing air-cooled air conditioning package to improve its energy efficiency.

### Survey Items

- ① Investigation of governmental policies
- ② Evaluation of business potential
- ③ Evaluation of implementation sites
- ④ Development of an implementation plan
- ⑤ Establishment of MRV methodology

### Partner / Site

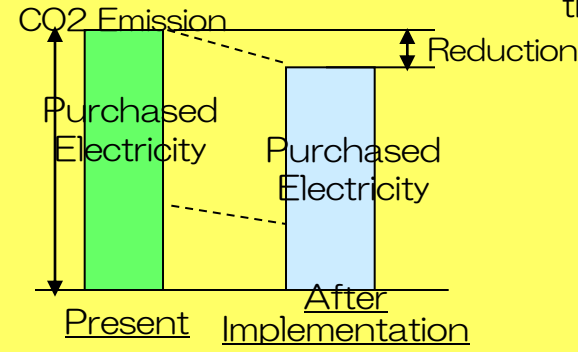
- Thailand  
Factory of Japanese Company
  - Thailand  
Bangkok Vicinity
- 

### Estimated Reduction amount

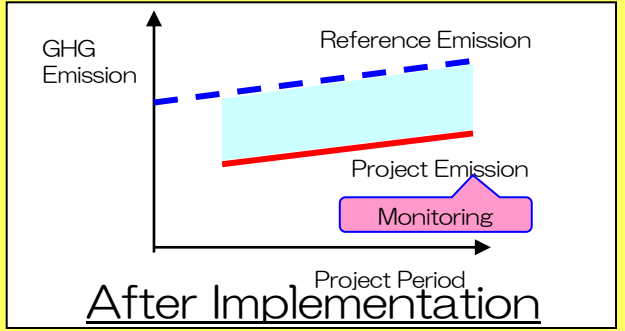
Reduction amount: 20%, 9.4 ton-CO<sub>2</sub>/year\*unit  
(Potential market: 3.29 million ton/year)

The reference scenario would be assumed that air conditioners will have been used without the refrigerant supercooling system.

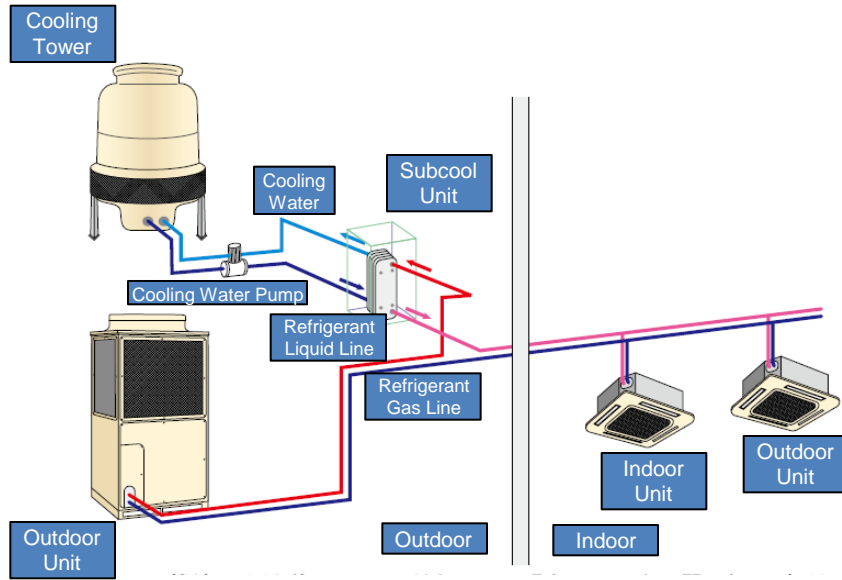
Present



Calculate GHG emission reduction after the equipments are installed.



# Summary of Introduced Technology



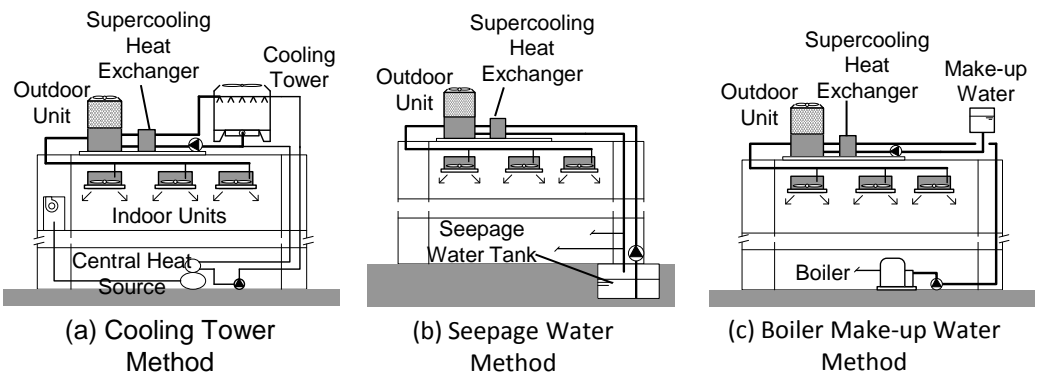
Installation Image

## Technology / System Overview

- Increases air cooling capacity by inserting water-refrigerant heat exchanger (subcooling unit) to the main refrigerant line and supplying cooling water from outside to cool the refrigerant
- 10-20 units are typically installed in one factory.

## Strength

- Reduction of 25% of maximum power and 20% of yearly power consumption is possible under Thailand's climate condition.
- Relatively low initial investment of approx. 1 million yen/system. Payout time can be less than four years.
- Can be installed to the existing air conditioning system.
- Easy maintenance
- Elongate lifetime of an air conditioner lifetime



Example of system structure

## Importance of Technology

### Dissemination

- The technology has potential of being implemented to many of the air conditioning equipments installed along with the economic growth of the project country and will contribute greatly to its energy savings.