Study for Developing JCM Projects under City-to-City Collaboration between Yokohama City and Batam City

February, 2016

Institute for Global Environmental Strategies (IGES)

IGES Institute for Global Environmental Strategies

1.a. Project location

I. Energy Saving at Hang Nadim Airport

1.b. Description of the technology

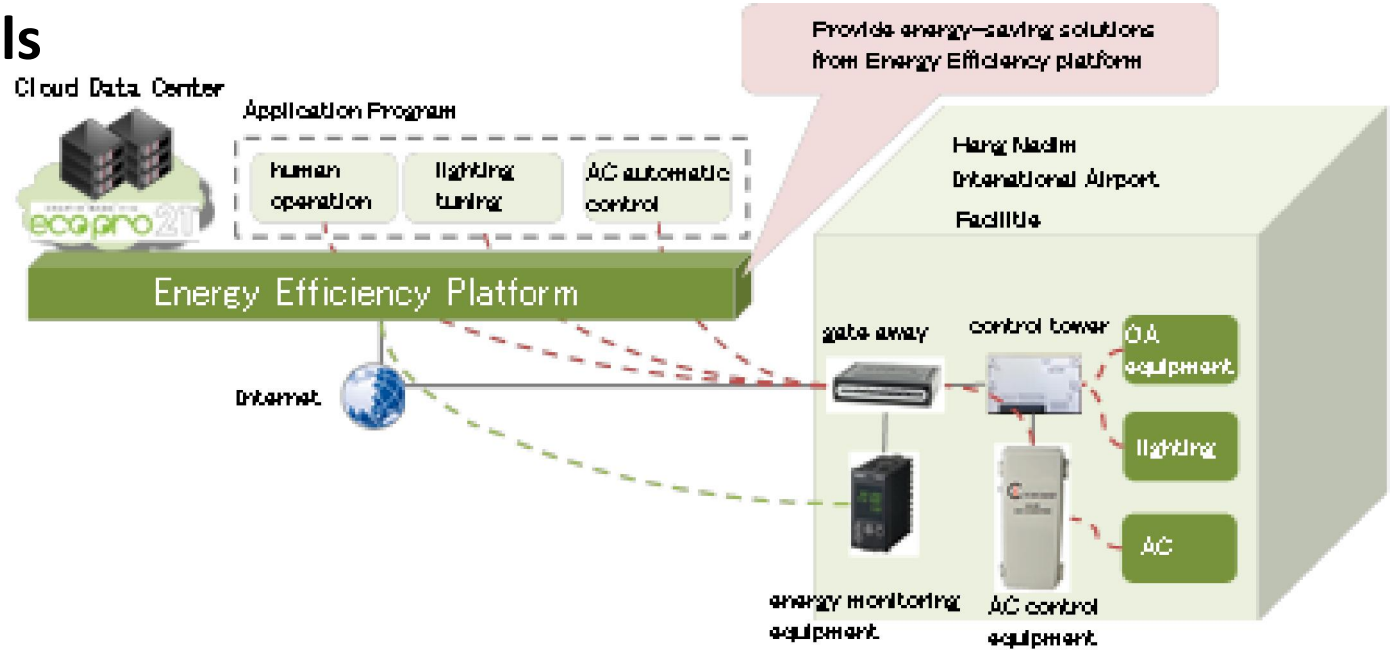
- Introduce new system to save energy consumption of A/C in passenger terminal building
- Establish rule of energy saving operation
- Install automatic control of A/C

1.c. Indonesian partner (Project Participant)

- Indonesia: Hang Nadim Airport Authority of BIFZA

(Japanese side: iFORCOM Co, Ltd.)

1.d. Project details



I. Energy Saving at Hang Nadim Airport

2. Reference emission

Conservative calculation of "Energy saving ratio (λ)" from track record of similar energy saving project.

REp = $EC_{PJ,p} \times 1/(1-\lambda_{EMS}) \times EF_{elec}$

REp :Reference emissions during the period p [tCO2/p]

ECPJ,p :Amount of electricity consumption of the project air-conditioning system during the period p [MWh/p]

λ_EMS :Energy-saving ratio by EMS [-]

EFelec :CO2 emission factor for consumed electricity [tCO2/MWh]

3. Monitoring methods

Automatic data logging (electricity consumption) and transmitting to iFORCOM Co, Ltd

I. Energy Saving at Hang Nadim Airport

4. Quantification of GHG emissions and their reductions

Year	Estimated Reference emissions (tCO_{2e})	Estimated Project Emissions (tCO_{2e})	Estimated Emission Reductions (tCO_{2e})
2017	10,095	9,090	1,005
2017-30	141,330	127,260	14,070

5. MRV methods (Eligibility criteria)

Criterion 1	The project energy-efficient air-conditioning system is newly installed or installed to replace existing air-conditionings equipment and centrifugal chiller at a building.
Criterion 2	The compressor motor of the centrifugal chiller applied in the project air-conditioning system has automatic control technology of motor speed of the inverter-driven compressor and evaporation temperature of the centrifugal chiller which is controlled by EMS defined in the section B. In cases where the project replaces existing air-conditionings equipment and centrifugal chiller, the existing centrifugal chiller is non-inverter-type products without EMS.
Criterion 3	Periodical check at least once a month is planned. And the project system is continually monitored by the manufacturer on the internet.

6. Capacity building plan: Training programme for operation

7. Others (Next step): signing LOI

II. High-efficiency Industrial Waste Water Treatment

1.b. Description of the technology

Introduce new wastewater treatment system which have high-efficiency on pollutant removal and energy consumption

1.c. Indonesian partner (Project Participant)

Indonesia: PT Desa Air Cargo Batam (Japanese side: AMCON)

1.d. Project details

Existing process:

1. The Electrolytic Flocculation Tank
2. Existing filter press

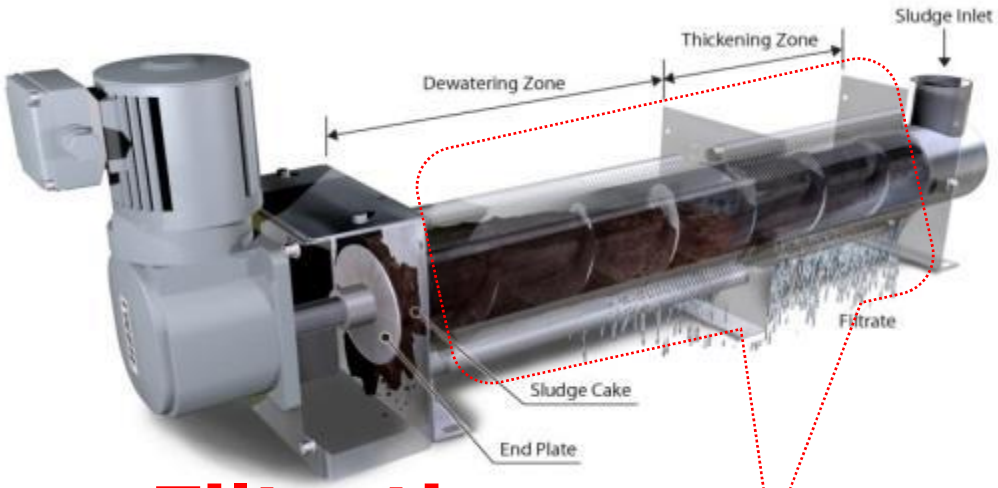
New System :

1. Microbubbler Equipment
2. "Volute" Dewatering Press

1.d. Project details

Volute Technology Information.

Volute Dewatering Press is the so-called Multi-Disk-Plate Screw Press with unique “Volute” technology developed by AMCON, enabling stable SLUDGE dewatering with less operational cost. As of today, installation amounts to more than 2600 units in 62 countries worldwide, covering both municipal and industrial sector.



Advantages

Clog-Free System

Suitable for Oily Sludge

Energy Saving

Water Saving

Filtration Body can Move

For Various Application

Easy Operation

Low Concentration Sludge

II. High-efficiency Industrial Waste Water Treatment

2. Reference emission

High-efficiency model of conventional wastewater treatment plant.

$$REp = ECPJ \times EFelec \times 1/(1-\lambda)$$

REp :Reference emissions during the period p [tCO2/p]

ECPJ,p :Amount of electricity consumption of the project plant during the period p [MWh/p]

λ :Energy-saving ratio [-]

EFelec :CO2 emission factor for consumed electricity [tCO2/MWh]

3. Monitoring methods

Electricity consumption to be monitored by Indonesian partner

II. High-efficiency Industrial Waste Water Treatment

4. Quantification of GHG emissions and their reductions

Year	Estimated Reference emissions (tCO_{2e})	Estimated Project Emissions (tCO_{2e})	Estimated Emission Reductions (tCO_{2e})
2017	42	2	40
2017-30	588	28	560

5. MRV methods (Eligibility criteria)

Criterion 1	The project energy-efficient wastewater treatment plant is newly installed or installed to replace existing equipment.
Criterion 2	The project plant consists of micro-bubble wastewater treatment unit and high-efficiency dewatering unit for sludge treatment.
Criterion 3	Periodical check at least once a month is planned. And the project system is continually monitored.

6. Capacity building: Training for operation of the project plant

7. Others (SD): Control quality of discharging water (Microbubble)

Easy operation and maintenance (Volute)

III. Renewable Energy at Industrial Area

1.b. Description of the technology

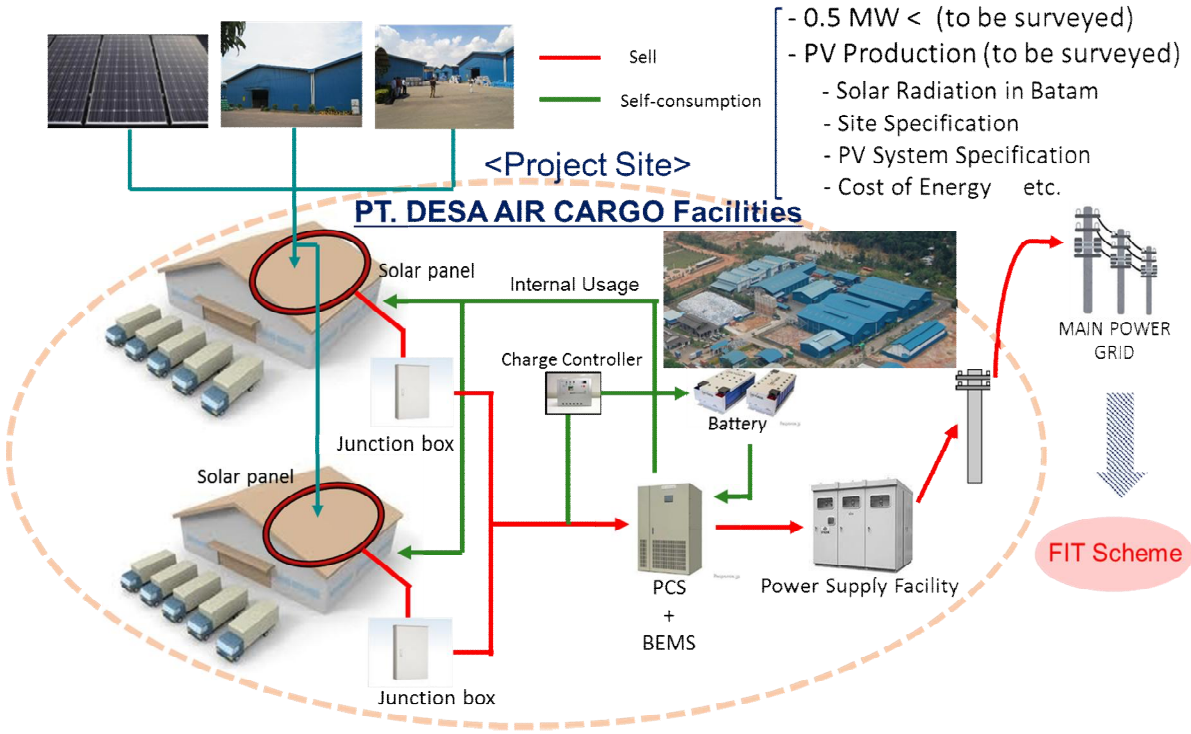
Hybrid Roof-top PV Solar System, covering for electricity consumption in the factory with innovative functions for demand monitoring & controlling through Dashboard Management.

1.c. Indonesian partner

(Project Participant)
Indonesia:
PT Desa Air Cargo Batam

(Japanese side:
FINETECH Co., Ltd.)

1.d. Project details



III. Renewable Energy at Industrial Area

2. Reference emission

$$RE_p = \sum_i EG_{i,p} \times EF_{RE}$$

REp : Reference emissions during the period p [tCO2/p]

EGi,p : The quantity of the electricity generated by the project solar PV system i during the period p [MWh/p]

EFRE : The reference CO2 emission factor of the captive generator electricity) [tCO2/MWh]

3. Monitoring methods

Electricity consumption to be monitored by Indonesian partner

III. Renewable Energy at Industrial Area

4. Quantification of GHG emissions and their reductions

Year	Estimated Reference emissions (tCO_{2e})	Estimated Project Emissions (tCO_{2e})	Estimated Emission Reductions (tCO_{2e})
2017	1,400	0	1,400
2017-30	19,600	0	19,600

5. MRV methods (Eligibility criteria)

Criterion 1	The project installs solar PV system(s).
Criterion 2	The solar PV system is connected to the internal power grid of the project site and/or to the grid for displacing grid electricity and/or captive generator electricity at the project site.
Criterion 3	The PV modules have obtained a certification of design qualifications (IEC 61215, IEC 61646 or IEC 62108) and safety qualification (IEC 61730-1 and IEC 61730-2).
Criterion 4	The equipment to monitor output power of the solar PV system and irradiance is installed at the project site.

6. Capacity building plan: Training for operation of the project plant

7. Others (Next step): Further discussion on final quotation of the project cost