

# Green Transformation of EMSD Headquarters Building

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Organisers:



International Co-owners:



# Hong Kong's Targets

## Energy Saving Plan

Energy intensity reduction 40% by 2025  
(2005 as the base)

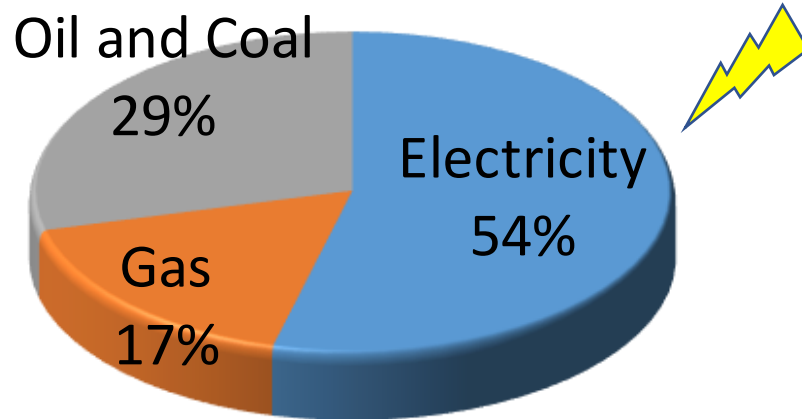


## Hong Kong's Climate Action Plan 2030+

Carbon intensity reduction 65%-70% by 2030  
(2005 as the base)

# Energy Use in HK

## Energy End Use Data in 2014



**Buildings** account for about **90%** of total electricity consumption

# EMSD Headquarters Building

Former Air Cargo Terminal 2 Building

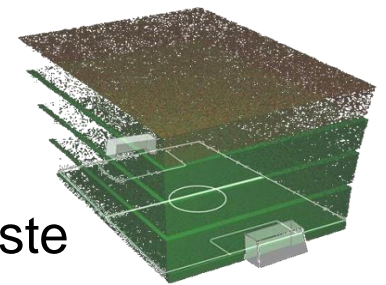


EMSD HQs Building in 2005



Retain over 90% existing building structure

Reduction of demolition waste = 4-storey football pitch



# EMSD Headquarters Building



Over 2,300 PV panels



Double-glazing

Green roof



EMSD HQs Building

Sun shading fins

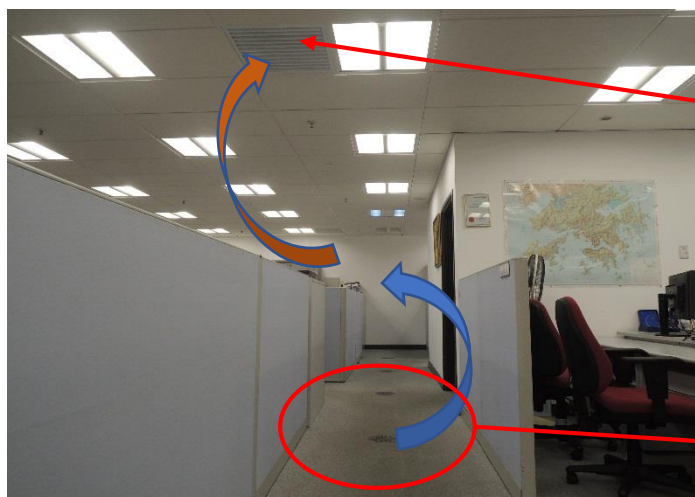


# EMSD Headquarters Building



Ammonia water-cooled chiller

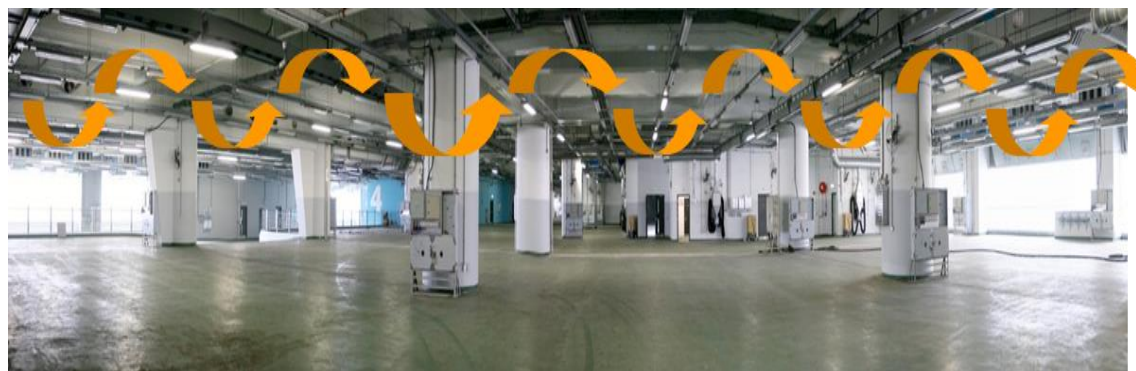
- High COP ( 5.7 )
- Zero ozone depletion



Return air louvre at ceiling

Displacement ventilation

Supply air grille



Cross natural ventilation + mechanical ventilation in workshops

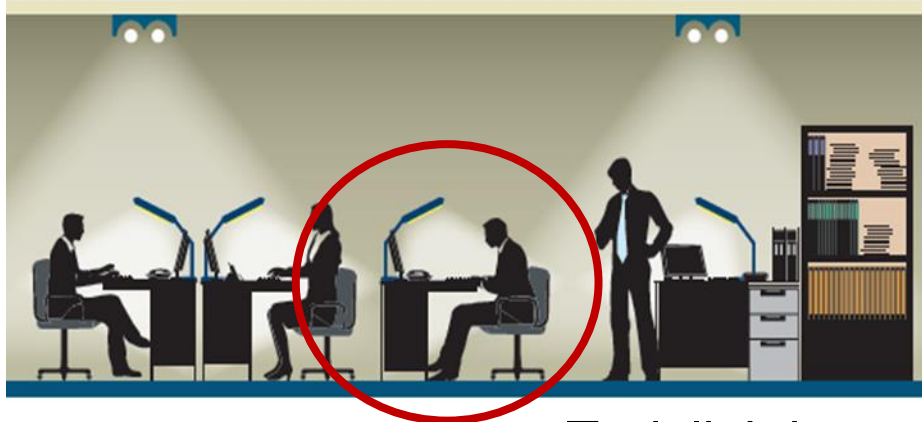
# EMSD Headquarters Building



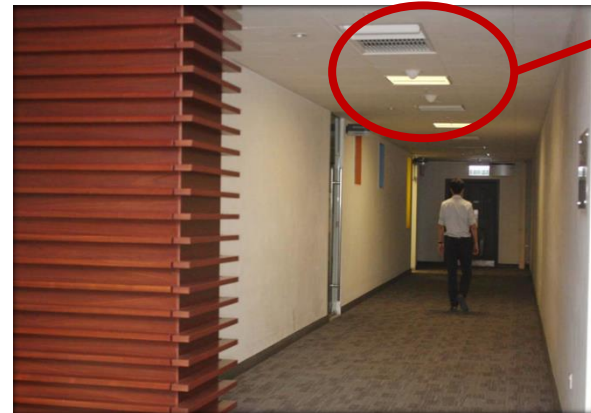
Skylight



Sun pipe



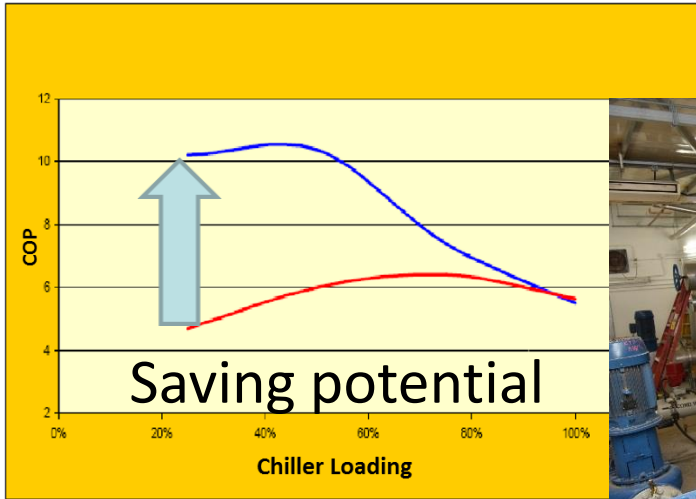
Task lighting



Occupancy sensor

# Continuous Evolution

## Air-conditioning



Oil-free centrifugal compressor chiller

- High COP (6 ~ 11) at part load

Electromagnetic induction descale system

- Prevent scale formation in condensing circuit



# Continuous Evolution

## Air-conditioning



DCS sub-station inside EMSD Headquarters

Connection to Kai Tak District Cooling System (DCS)

- Consume approximate 20% less electricity
- Set an example for existing buildings

# Continuous Evolution

## Lighting



Renovation

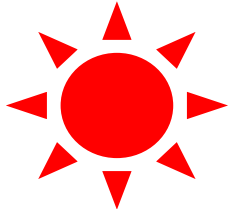


LED + occupancy sensors + daylight



|              | Lighting Power Density (LPD) W/m <sup>2</sup> under BEC Requirements (2015) | LPD after fitting out/ W/m <sup>2</sup> | % Outperform BEC Requirements (2015) |
|--------------|---|---|--------------------------------------|
| Meeting room | 14  | 11                                      | 21%                                  |
| Toilet       | 11  | 7                                       | 36%                                  |

# Continuous Evolution



Solar hot water panel



Sun tracker PV panel

Solar powered lamp pole



Solar-wind powered lamp pole



# Continuous Evolution

## Greening



External and indoor green walls



More external green walls are under construction

Bicycle parking spaces



Charging facilities

# Continuous Evolution

## Waste Management for Recycling



Waste management facilities



Grey water recycling system



Food waste decomposer



Recycle condensate water of AC system



Organisers:



International Co-owners:



# Continuous Evolution

## Assessment of BEAM Plus (Existing Building) and Neighbourhood

- 26% lower electricity consumption
- over 30% water saving
- about 2% energy from renewables
- over 70% purchased items are certified as environmentally friendly
- about 9% of publicly accessible open/green space within the site



# Continuous Evolution

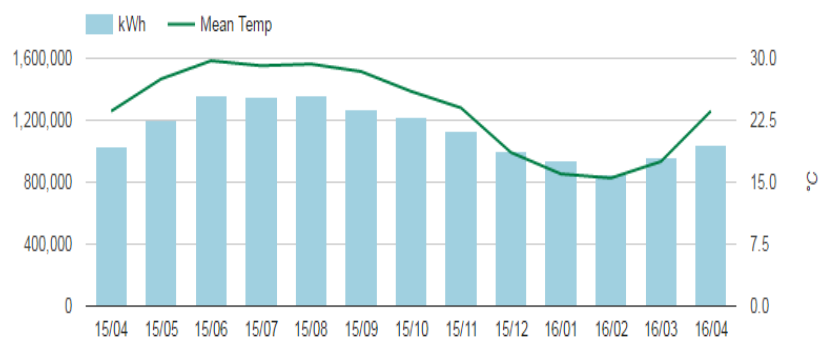
## Building Energy Management

MTD kWh vs Last Year Same Month (2016/04 vs 2015/04) Up to 2016-04-30



- Add smart meters to log and collect more operation parameters and energy consumption records
- Facilitate users to visualize energy consumption for change of their behavior

13 Months kWh for 6/F (2015/04 - 2016/04)



Join us to implement energy efficient and sustainable design and operation for your buildings

# Thank you



Organisers:



International Co-owners:



Sustainable Buildings and Climate Initiative  
Promoting Policies and Practices for Sustainability

