Sustainable Electrical and Mechanical Services

Vision with Action

Ir CHEUNG Kwok-fai (Assistant Director)
Ir Dr. WONG Kam-hay, Arthur (Chief Engineer)
Ir CHAN Ming-yee (Senior Engineer)

Electrical and Mechanical Services Department
Government of the HKSAR
Contents

• Our plan, our commitment
• Application of technology
• Innovation
• Sustainable green operation
• Ways ahead
Electrical and Mechanical Services Trading Fund

✓ An executive arm of EMSD of the HKSAR Government established in 1996.
✓ Diversified services for more than 100 clients.
✓ In 2015/16, annual business turnover around HK$5.7 billion (US$730 million).
Our Plan, Our Commitment

- 1st 5-Year Strategic Plan
- 2013/14 – 2017/18
- Support corporate goal
- 5 strategies and 18 initiatives
  - Sustainable (green & energy conservation)
  - Reliable (security and health of assets)
Knowledge Management

- A strong foundation of the strategic plan for sustainable development
- EMSTF developed a well structured knowledge portal for sustainable development
  - Application of technology
  - Encouragement of innovation
  - Enrichment to work practices
  - Continuous actions on green operation
  - Strengthen capability for sustainable development
Application of technology

✓ Better informing the customer through a customer centric e-platform
➢ Sharing of information with stakeholders on a common platform
Application of technology

✓ Public services availability
  ➢ Remote monitoring and pre-alarm alert →
  Integrated Building Management System (iBMS)
Application of technology

Geographic Information System (GIS)

Instant display of fault locations

GIS server

Router

Remote monitoring unit

Tunnel lighting

Traffic Light

Escalator

E&M at Public Transfer Interface
Application of technology

✓ Application of energy saving technologies and E&M equipment using renewable energy
Innovation
Green Sustaining Operation of Existing Buildings
Innovation
Green Sustaining Operation of Existing Buildings

Retro-commissioning and retrofitting of buildings

Most of the existing buildings were designed and built at a time when energy saving was not a foremost consideration. Nevertheless, many of the commercial and institutional buildings built in the past two decades were designed to meet various standards and had equipment built-in. When they were first built, there should have been a commissioning process to test performance. Retro-commissioning is a cost-effective systematic process to periodically check an existing building’s performance. The process identifies operational improvements that can save energy and thus lower energy bills. The process can be performed alone or with a retrofit project, such as replacing less energy efficient appliances with more efficient ones (e.g. chillers, pumps, elevators, lights etc) and fitting meters to measure operations.

Global experience shows that even buildings that are just a few years old can benefit from retro-commissioning because it can still help to identify unnecessary energy losses, such as leakage in the building envelope, where energy management systems need to be reprogrammed, controls that are out of calibration or fault in equipment.
Innovation
Green Sustaining Operation of Existing Buildings

✓ Environmental Data (Indoor and Outdoor)
✓ Building Operations Data
✓ E&M System Operation Data

Cooling load vs Outdoor Temperature

Daily, Monthly and Yearly Energy Demand
Innovation
Green Sustaining Operation of Existing Buildings

- Objectives
  - Collect the existing operations data
  - Identify the gaps
  - Develop a GREEN OPERATIONS

Simulated Load Demand vs Measured Load Demand
Sustain Green Operation

Former Air Cargo Terminal Building

- Conservation
- Green Power
- Waste Reduction
- Asset Management

Year 2005 – EMSD Headquarters

Face Lift

- Greening
- Technology

Continuous Evolution / Transformation
Sustain Green Operation

BEAM Plus Online Exhibition

Transformation of EMSD Headquarters into a Green Building
Electrical and Mechanical Services Department, 3 Kai Seng Street, Kwokwan, Hong Kong

BEAM Plus Green Building

BEAM Plus Green Neighborhood
Sustain Green Operation
EMSTF STRATEGIC PLAN

What are our changes?

Establish
- Customer Centric Platform
- New customer service centre

Construct
- Integrated building management system
- Remote monitoring unit
- Geographic Information System

Strengthen
- Outsource and contract management
- E&M asset management

Implement
- Competence matrix
- Caring culture
- Knowledge management

Advocate
- Green operations
- Green building
- Lead by example

Change
- Simplify process
- Green technology
- Strength green power

Sharing information
Green operation
Professional service

Reliable partner
Promote image

Organisers:
CONSTRUCTION INDUSTRY COUNCIL
HKGBC
SBE SERIES
International Co-owners:
Global Alliance for Buildings and Construction
Call for action
Call for action

Enhancing Liveability
Develop Hong Kong into a smart city, protect and enhance our environment, combat climate change

Investing for the Future
Developing infrastructure to meet social and economic needs of Hong Kong

The annual expenditure on capital works projects will reach $86.8 billion in 2017-18

Ways Ahead

✓ More efforts to support the Government’s initiatives on
  ➢ Innovation and digital connected
  ➢ Smart city
  ➢ Energy savings
  ➢ Combat climate change
  ➢ E&M services, e.g. BIM, AM…..

✓ Develop the next strategic plan

Thank you