

# ROLE OF BUILDING SERVICES ENGINEER IN ENERGY SUSTAINABILITY OF BUILDINGS

BY

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# Building Services

- Europe – Building Services
- Middle East – MEP Services
- Asian Countries - M & E Services

# Building Services

- Branch of Engineering that combines all the building services in buildings
- Services

Other than Architectural and Structural

# Building Services Engineer

- Building Services are what make a building come to life.
- A building must do what it was designed to do – not just provide shelter but also be an environment where people can live, work and achieve.
- ‘Building Services Engineer’ is the one who makes that happen

# Building Services

- Building Services represent 30-50% of the construction costs in buildings
- 40-50% of the energy consumed are due to buildings
- 60-80% of the energy consumed in buildings are due to Building Services

# Building Services - Background

- Formally recognized in 1976 with the formation of the “Chartered Institution of Building Services (CIBS)”
- The word ‘Engineers’ was added in 1985 to become the “Chartered Institution of Building Services Engineers (CIBSE)”
- CIBSE has contributed immensely towards the development

# Building Services Engineering

## ELECTRICAL SERVICES

- Lighting
- Electrical power distribution
- Telephones/ communication systems
- Fire detection, security & surveillance systems
- Lifts/ escalators and transportation systems

## MECHANICAL SERVICES

- Air conditioning & ventilation systems
- Fire protection
- Water supply
- Sewer, waste water and storm water disposal
- Solid waste disposal
- Acoustics

# BUILDING SERVICES ENGINEERING

- Energy supply – gas, electricity and power
  - Natural and artificial lighting
  - Escalators and lifts
  - Heating and air conditioning
  - Ventilation and refrigeration
  - Water, drainage and plumbing
  - Acoustics
  - Fire detection and protection
  - Security and alarm systems
  - Telephone and IT networks
  - Operation and maintenance
- Source: **CIBSE**



# ROLE OF BUILDING SERVICES ENGINEER

Four distinct areas associated with it.

- Design
- Manufacture
- Installation
- Maintenance

Knowledge of the (above + architecture)  
makes a complete Building Services  
Engineer

# ROLE OF BUILDING SERVICES ENGINEER

- Building Design Team

## Initial inputs

- Door & window design
- Site selection – noise levels...etc
- Location & orientation of the buildings
- Design of the envelope
- Planning of internal divisions

Actual designs to follow.

# DEVELOPMENTS

- Building Services Management
- Facilities Management
- Water management
- Lighting Design

# BUILDING SERVICES MANAGEMENT FOR WHAT ?

- Higher energy efficiency
- Maintain appropriate comfort levels
- Higher productivity

# ENERGY EFFICIENCY

## DEPEND ON

- Building envelope / fabric
- Building Services
- Management of building services (often neglected).

# LIGHT/ SOLAR TUBES



**SOLATUBE**  
Innovation in Daylighting.

**Highest Performance GUARANTEED\***  
All day long. All year long.

ARCAT green  
LEED with Daylighting Systems  
Sustainable Building  
Energy Star  
GreenSource  
ACE

## Capture Zone

**Raybender® 3000 Technology**  
Patented daylight-capturing dome lens



- Redirects low-angle sunlight
- Rejects overpowering summer midday sunlight
- Provides consistent lighting and superior visual comfort



## Transfer Zone

**Spectralight® Infinity Tubing**  
The most reflective material used in TDD's



- 99.7% Spectral Reflectance
- Provides superior color rendition
- Bend daylight 0-90° to avoid construction obstacles

## Delivery Zone

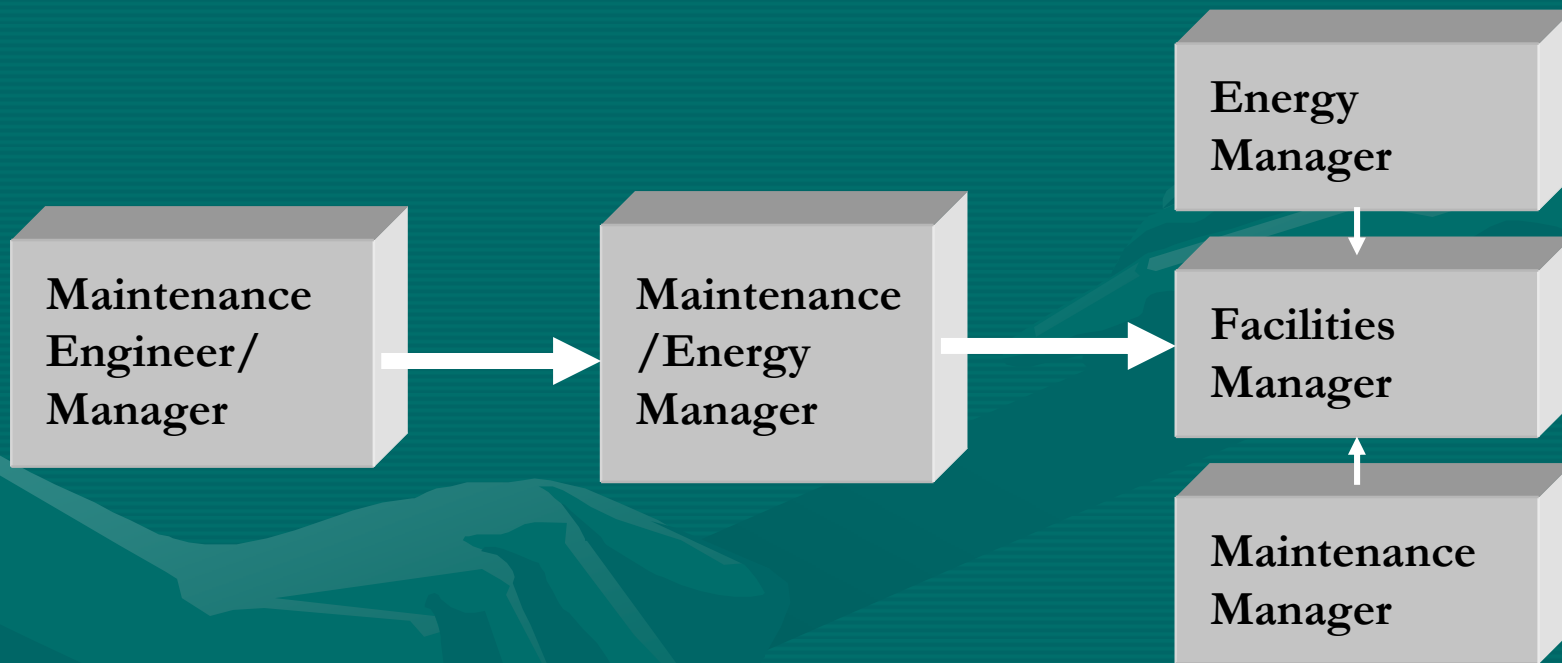
**Engineered Light Diffusion**



- Block UV Transmission
- Optical Lens Provides Superior Results
- Designed for Visual Comfort

# FACILITIES MANAGEMENT

## Facilities Manager



# FACILITIES MANAGEMENT

DEFINITION (of the European Committee for Standardization and ratified by BSI British Standards):

Facilities Management is the integration of processes within an organization to maintain and develop the agreed services which support and improve the effectiveness of its primary activities.



# FACILITIES MANAGEMENT

- Areas covered
- Property Strategy – Quality Policy, Maintenance Policy, Purchasing Policy...etc.
- Space Management
- Communication & Infrastructure including building fabric
- Building Maintenance
- Administration and Contract Management – including catering, cleaning, mail room, health & safety

# FACILITIES MANAGEMENT

## PROFESSIONAL INSTITUTIONS

The Chartered Institution of Building Services Engineers, UK (CIBSE) (formed in 1976) – Facilities Management Group

British Institute of Facilities Management (BIFM) (formed in 1993)

CIBSE and BIFM have joined forces, through signing a MOU, in December, 2004 to develop and promote excellence in facilities management practice.

# INSTITUTIONS PROMOTING BUILDING SERVICES

- CIBSE (Internationally)
- Lanka Association of Building Services Engineers (LABSE)
- IESL – Building Services Sub-Committee
- ASHRAE – Sri Lanka Chapter

# SUSTAINABILTY

- Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
- Source: **CIBSE**

# THANK YOU



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