

SUBMISSION FORM

ASEAN Energy Efficiency and Conservation (EE&C)

Best Practice Competition in Buildings

ASEAN Energy Awards – 2016

**Category: Retrofitted Building**

(Deadline for submission of Electronic Entries to ACE: 14 April 2016)

p a g e 1

Certification and Covering Note from Consultant

Sample:

The (*name of building*) occupies a site area of about \_\_\_\_\_\_ square meters and was completed in \_\_\_\_\_\_. (Following is a brief description of the building, say). The building has 2 basements and 9-storeys (5 storey H-shaped ward tower block above the 4-storey podium block) with a total gross floor area of \_\_\_\_\_ square meters.

The details of client and project consultants (as appropriate) are:

Client : *(Name of Building)*

Architect :

M&E Engineers :

C&S Engineers :

Project Managers :

|  |  |  |
| --- | --- | --- |
| **I t e m** | **D a t a** | **Compliance**  **(Put check)** |
| **Submission Requirement** |  |  |
| - Certification and Note from Consultants | 1 page |  |
| - Cover of Report | 1 page |  |
| - Overall on-site design | Max 2 pages |  |
| - Active Design | Max 4 pages |  |
| - Passive Design | Max 4 pages |  |
| - Maintenance and Management | Max 4 pages |  |
| - Environmental Impacts | 1 page |  |
| - Building Information | Max 4 pages |  |
| - Drawings | Max 4 pages |  |
| **Pre-Qualification** | **Data** |  |
| * Energy Efficiency Index of Occupied Air-conditioned Area: Office: 160 kWh/m2/yr; Library: 160 kWh/ m2/yr; Retail/Shopping Malls: 192 kWh/ m2/yr; Hotels: 216 kWh/ m2/yr; Hospital: 288 kWh/m2/yr | \_\_\_ kWh/m2/yr |  |
| * Temperature and Other Settings: Not less than 21ºC but not more than 26ºC; RH: max 70% (applies to air-conditioning. Not pre-requisite - Higher score for having RH control system (below 65%). |  |  |
| * Lighting Load: Office - Max 12 watts/m2; Others - Max 20 watts/m2 | \_\_\_ watts/m2 (GFA) |  |
| * Operating hours/yr: 2,000 hours/year |  |  |
| * At least 1 full-year of operation after retrofitting prior to nomination in national competition | \_\_\_ year/s |  |
| * Total Energy Savings: 20% of the total energy consumption for a/c retrofits; 10% of the total energy consumption for non-a/c retrofits |  |  |
| **Type of Font and Size: Times Roman 12** |  |  |

The (name of building) hereby agreed to allow the ACE Board of Judges and the Japanese experts to visit the building and verify the authenticity of the data. However, two weeks advance notice is required to allow for necessary arrangements.

The undersigned certified that the information given is true and accurate and prepared with the consent of the party/ies involved.

|  |  |  |
| --- | --- | --- |
| **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Name of the Client**  Office, Position  Tel, fax, e-mail |  |  |
| **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Name of Consultant**  Office, Position  Tel, fax, e-mail | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Name of Consultant**  Office, Position  Tel, fax, e-mail | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Name of Consultant**  Office, Position  Tel, fax, e-mail |
| **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Endorsed by Focal Point** Name, Office (*country*) & Position  Tel, Fax, e-mail |  |  |

p age 2

Cover of Report (Name of Building, photo, etc.)

p age 3

Total energy savings (2 page Write-up)

1. Air-conditioning system
2. Lighting systems
3. Others (specify)  
   More than 10% for non-A/C retrofits e.g. lamps, etc.

20% - active retrofit such asA/C

(**This introductory note must be deleted in the submission.)**

p age 4

Total energy savings (2 page Write-up)

p age 5

Active Design (Discussion of 4 Features in max 4 pages)

* 1. Air-conditioning system (selection, layout and plant system design) \_\_\_\_\_\_\_\_ kW/ton \_\_\_\_\_\_\_\_ W/m2

|  |  |  |
| --- | --- | --- |
| Chiller Plant | Efficiency  Before retrofit  (kW/ton) | Efficiency  After retrofit  (kW/ton) |
| Chiller (A) |  |  |
| Chilled water pump (B) |  |  |
| Condenser water pump (C) |  |  |
| Cooling tower (D) |  |  |
| **System efficiency (A + B + C + D)** |  |  |

* 1. Lighting systems \_\_\_\_\_\_\_\_ W/m2
  2. Indoor air quality (thermal comfort, ventilation, \_\_\_\_\_\_\_\_ m3/hour/person, etc.)
  3. Overall energy consumption per sq.m. of air-conditioned area \_\_\_\_\_\_\_\_ W/m2
  4. Others (specify)

(**This introductory note must be deleted in the submission).**

p age 6

Active Design (Discussion of 4 Features in max 4 pages)

p age 7

Active Design (Discussion of 4 Features in max 4 pages)

p age 8

Active Design (Discussion of 4 Features in max 4 pages)

p age 9

Passive Design (Discussion of 4 Features max 4 pages)

1. Spatial organisation for various functions
2. Environmental improvement of surroundings
3. Envelope design (material, shading, fenestration, etc.)

##### Material

Heat transfer protection

Humidity protection

MRT effect

Color of envelope (exterior)

Infiltration protection and control

Etc.

###### Shading

Effectiveness of shading devices

The use of natural shading devices

The use of shading from adjacent buildings

Etc.

###### Fenestration

Fenestration design: location, nature, and size of opening

Light to solar heat gain ratio (LT/SC)

Etc.

1. Overall heat transfer through building envelope:   
   Wall \_\_\_\_\_\_\_\_ W/m2; Roof \_\_\_\_\_\_\_\_ W/m2
2. Daylighting
3. Others passive design concepts (specify)

**(This introductory note must be deleted in the submission).**

p age 10

Passive Design (Discussion of 4 Features max 4 pages)

p age 11

Passive Design (Discussion of 4 Features max 4 pages)

p age 12

Passive Design (Discussion of 4 Features max 4 pages)

p age 13

Maintenance and Management   
(Discussion of 4 Features max 4 pages)

1. Energy management systems

Building Energy Management System (BAS)

Energy consumption monitoring system

Etc.

1. Maintenance and management measures

* Manpower: \_\_\_\_\_\_\_\_\_man-hr/yr
* Maintenance contractor
* Availability of energy management engineer
* Training of maintenance workers: \_\_\_\_\_\_\_\_\_\_\_ cumulative hours/year

1. Others (please specify)

**(This introductory note must be deleted in the submission).**

p age 14

Maintenance and Management   
(Discussion of 4 Features max 4 pages)

p age 15

Maintenance and Management   
(Discussion of 4 Features max 4 pages)

p age 16

Maintenance and Management   
(Discussion of 4 Features max 4 pages)

p age 17

Environmental IMPACTS   
(General Discussion max 1 page)

1. Waste management
2. Pollution management (air, noise, visual, exhaust, etc.)
3. Green/non-toxic materials
4. Others (specify)

**(This introductory note must be deleted in the submission).**

p age 18

Building Information (Fill up details max 4 pages)

## General Information

* + - 1. Name of the building
      2. Name of owner and management company
      3. Address
      4. Tel. No./Fax No./E-mail address

**B. Building Physical Information**

* + - 1. Physical building background

- Brief history

- Single function usage or mix function usage (specify)

* + - 1. Age of building
      2. Any retrofit done? When? What?
      3. Total number of storeys
      4. Total number of basement floor
      5. Number of car park storeys
      6. Total gross floor area
      7. Surface area of the envelope including the roof to gross floor area ratio
      8. Car park area
      9. Gross lettable area
      10. Air-conditioned area
      11. Non-air conditioned area
      12. Plot ratio (total GFA / ground area)

1. **Building Design and Practice Information**
   * + 1. Plants and landscape design/ wind and natural ventilation/ water features/ daylighting/ etc.
       2. Facade and shading design

- Type of facade

- Color of facade

- Use of shading devices

* + - 1. Location of service core
      2. Shape of building
      3. Overall heat transfer through building envelope:

Wall \_\_\_\_\_\_\_ W/m2; Roof \_\_\_\_\_\_\_\_ W/m2

* + - 1. Lighting fixtures
      2. \*Lighting load \_\_\_\_\_\_\_\_ W/m2 (gross floor area)
      3. Building air-conditioner system and equipment  
          - Fresh air exchange rate: \_\_\_\_\_\_\_ m3/hour/person  
          \_\_\_\_\_\_\_\_ m3/hour/m2  
          \_\_\_\_\_\_\_\_ m3/hour  
          - Energy efficiency of aircon chiller: \_\_\_\_\_\_\_\_ kW/ton
      4. Cooling Load \_\_\_\_\_\_ W/m2 (air-conditioned area)

p age 19

Building Information (Fill up details max 4 pages)

1. **Operation Information**
   * + 1. Occupancy rate (year 2001): Minimum \_\_\_\_\_ % of total area
       2. Total number of occupants
       3. Ownership of building (occupied by owner(s), renter(s), etc.)

30. Building operating schedule

- weekdays from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

- Saturday from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

- Sunday from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

- Operating hours/ yr \_\_\_\_\_\_\_\_

31. Building indoor environment: Indoor air quality setting: temperature and RH

**E. Energy Consumption Information**

1. Peak demand (monthly)
2. Energy used (monthly)
3. Typical Load curve (weekdays, weekends)
4. \* Energy efficiency index: air-conditioned area \_\_\_\_\_\_ kWh/m2/yr

(based on 2,000 operational hours/yr)

36. Energy consumption: Electricity \_\_\_\_\_\_\_\_ kWh/m2/yr

(based on 2,000 operational hours/yr)  
 - Fuel \_\_\_\_\_\_\_\_ Liters/yr (not for electricity generation)

**F. Energy Management Information**

37. Building energy management system Connected physical points \_\_\_\_\_\_\_ (no )

38. Energy saving: Schedule programme \_\_\_\_\_\_ kWh/yr  
 Duty cycle programme \_\_\_\_\_\_ kWh/yr  
 Optimum start / stop programme \_\_\_\_\_\_ kWh/yr  
 Power demand programme \_\_\_\_\_\_ kW (mean)

* 1. **Maintenance Information**

1. Maintenance programme

* Manpower: \_\_\_\_\_\_\_\_ man-hr/yr
* Maintenance contractor
* Availability of energy management engineer
* Training of maintenance workers: \_\_\_\_\_\_ cumulative hours/yr.

p age 20

Building Information (Fill up details max 4 pages)

* 1. **Environmental Impacts**

1. Impacts of waste
2. Impacts of pollution (air, noise, visual, exhaust, etc.)  
   1. **Additional Information for Retrofitted Buildings**
3. \*Energy savings in air-conditioned area \_\_\_\_\_\_\_ kWh/m2/yr (based on 2,000 operational hours/year
4. \*Energy savings in lighting systems \_\_\_\_\_\_\_\_\_ kWh/m2/yr (based on 2,000 operational hours/year)
5. \*Retrofitted area: \_\_\_\_\_\_\_\_\_ % of total area

p age 21

Building Information (Fill up details max 4 pages)

p age 22

Drawings (A4/A3 size: typical floor plan, site layout, roof plan, and vertical cross section - max 4 pages)

p age 23

Drawings (A4/A3 size: typical floor plan, site layout, roof plan, and vertical cross section - max 4 pages)

p age 24

Drawings (A4/A3 size: typical floor plan, site layout, roof plan, and vertical cross section - max 4 pages)

p age 25

Drawings (A4/A3 size: typical floor plan, site layout, roof plan, and vertical cross section - max 4 pages)