MISTAKES IN INNOVATION SUBMISSION
7TH September 2017

By: Ir. Ng Yong Kong
GENERAL REMARKS:

1.) If going green results in 'cheaper' costs, then the green agenda is achieved.

2.) Do not adopt technology of insignificant advantage for application in Malaysia but yet costly.

3.) Do not offer the excuse “it is a GBI requirement”: eg. when redundant meters or sensors are installed.
To minimize exposure of building occupants to ETS

- **Prohibit Smoking** in the building, with signage.
- **commonly referred to as Secondhand smoke.**
- Tobacco smoking is prohibited in many public area as stipulated under control of Tobacco Product Regulations 2004.
  
  - **Locate exterior designated smoking areas at least 10 m away from entries, outdoor air intakes or operable windows**
Recycling Fire Fighting Water System

Applicable only for Fire Sprinkler system during regular testing. Applicable for Wet Riser system but only if proven to be practical. Not applicable for Hose Reel System.

Probably one of the more economical and innovative credit.
Recycling Fire System Water (Sprinkler system) during regular testing

MISTAKES:

DA Submission:
1.) Submission for Wet Riser System only but not the sprinkler system.

CVA Stage:
1.) Piping not connected.
2.) Wrong piping connected.
3.) Recycling of only the 20mm dia sprinkler flow switch test pipes- this is encouraged but is not the main required pipe.

NB: Piping to be recycled should be the 65 mm dia. pipe incorporating the flowrate meter when testing the sprinkler water flow through the alarm gongs.
Fire Sprinkler recycling pipe

This is the correct pipe for recycling
IN1: Herb and/or Food Garden (Landed-25% of landscaped area. Low-rise and High-rise-10% of landscaped area or 20m² whichever is the larger)

MISTAKES:

DA — i.) NOT MEETING THE PERCENTAGE OR AREA REQUIRED.
ii.) FAILED TO PROVIDE A LIST OF HERBS, FRUITS OR VEGETABLES PLANTS.

CVA — i.) NOTHING WAS PLANTED.
ii.) GRASS PLANTED.
iii.) NOT MEETING THE %age OR AREA.
IN1: INNOVATION IN DESIGN AND ENVIRONMENTAL DESIGN INITIATIVES

- Charging Station for Hybrid or Electric Car (5% of the total parking spaces provided, up to a maximum of 20 nos)

PROVIDE 40A TPN ISOLATOR (Electric Socket Outlets)
IN1: INNOVATION IN DESIGN AND ENVIRONMENTAL DESIGN INITIATIVES

- Charging Station for Hybrid or Electric Car (5% of the total parking spaces provided, up to a maximum of 20 nos)

MISTAKE: DA – SUBMITTED

CVA – i.) NOT PROVIDED
   ii.) NOT ENOUGH TO MEET THE CRITERIA
RNC IN1: INNOVATION USING HIGH VOLUME LOW SPEED FANS
RNC IN1: INNOVATION USING HIGH VOLUME LOW SPEED FANS

- OPEN PUBLIC FUNCTION AREA
- CHILDREN PLAYGROUND
- OPEN TADIKA
- OUTDOOR GYM – YOGA/AEROBICS
LOCATION OF HIGH LOW SPEED FANS
IN1: Regenerative Lift (50% of installed lifts)

MISTAKES:
DA SUBMISSION:
1.) OUT OF 10 LIFTS, ONLY 1 -2 LIFTS ARE REGENERATIVE TYPE WHILE 8 OTHERS ARE NOT – NOT MEETING THE CRITERIA.
2.) INSTALLED FOR 5 STOREYS AND BELOW.
3.) No lift installation details (such as lift schematic diagram) to show total no. of lifts provided and no. of floors served.

NB:
1.) Regenerative lifts are eligible for innovation point for applications with more than 5 stops and lift speed above 1 m/s; and at least 50% of the lifts must be of regenerative type.
2.) Regeneration is most cost effective for heights exceeding 80m at 2.5 m/s and above.
3.) Most effective for 20 storeys and above buildings.
• Real time energy and water usage display and educational facilities
DYNAMIC EDUCATIONAL GREEN DISPLAY

Serves to encourage and create awareness of going green and to educate the public on the importance of Green Building.

MISTAKE: NOT DYNAMIC
Water Metering & leak detection system

WE5 : NRNC ( 2 points )

i.) 1\textsuperscript{st} Point – No major issue.

ii.) 2\textsuperscript{nd} Point – \textbf{BIG PROBLEM}

- RNC : Innovation for large water usage that has significant impact.
MISTAKES:

WE5

DA SUBMISSION:

1.) No installation details to show usage covered and no. of water meters used.
2.) Too many meters used.
3.) Using “high end” meters

CVA: 2nd Point – cannot interface with BMS m3 or m3/Hr. ???

What was the problem?
MISTAKES:

WE5 : CVA MISTAKES

1.) Plumber bought and installed the Mechanical or Pulse or Digital Water meter that cannot interface with BMS for 2nd point.

WHY? – Not Specified.

2.) System Integrator do not provide Pulse Card or Controller.
Third party High Level interfacing

Modbus_RTU Interface

High Level Interfacing

*Building Automation system
*Utilities Metering System
*Energy management System
System Diagram

AMR – Automatic Meter Reader
MISTAKES:

1.) SENSORS INSTALLED WRONGLY
2.) TOO FEW OR TOO MANY SENSORS
3.) SENSORS NOT ABLE TO COMMUNICATE WITH BMS AND VSDs
IN1: Condensate water recovery (accounting for at least 50% of total AHUs/FCUs) for use as cooling tower make-up water or other suitable application;

NRNC: **MISTAKES**

- CALCULATIONS DONE WRONGLY RESULTING IN NO USAGE OF POTABLE WATER FOR LANDSCAPE IRRIGATION & COOLING TOWER MAKE-UP WATER.
RNC:

• Provide only 5-Star Energy Efficient Appliances approved by KeTTHA (ST), e.g. Air-Conditioner, Refrigerator, Fan, Television etc.
MISTAKES: DA
- Provision of 5-star appliances - Fans only.

MAJOR POWER USAGE EQUIPMENT LIKE AIR CONDITIONING AND REFRIGERATOR, TV...
NRNC/RNC : DA

• Provision of Bicycle Racks

MISTAKES :

i.) No Bicycle Tracks

ii.) No Shower Facilities
MISTAKES

DA SUBMISSION – PROVIDED

CVA STAGE – NOT INSTALLED.
MISTAKE: REFRIGERANT LEAKAGE DETECTION ONLY
MISTAKES

i.) Provision of refrigerant detection system only without the storage cylinders for recovery does not qualify.

ii.) Detection must be Automatic and not by manual.

iii.) Location of refrigerant SENSOR installed wrongly – 1.2 m HEIGHT.
Auto Refrigerant Leakage Detection & Recovery System
NRNC:

- Advanced air filtration technology (serving at least 50% of the GFA)
Advance Air Purification Systems

1.) Using HEPA Filters (X)
2.) Germicidal Ultra Violet Germicidal Irradiation Lights (UVGI) or UVc
3.) Magnetized Air Media Filtration
4.) Cold Plasma Bi-Polar Ionization
5.) Photo-Catalytic Oxidation
6.) Electrostatic Precipitation, EAC (Electronic Air Cleaners)
Advanced Air Filtration System

Electrostatic Air Filters

- Particles sizes down to 0.01 micron
- Minimal clogging
- Low pressure drop
- Low maintenance cost
MISTAKES

DA SUBMISSION – PROVIDED

CVA STAGE – NOT INSTALLED or
NOT MEETING THE PERCENTAGE.
DBCV – Dynamic Balancing Control Valves
PICV – Pressure Independent Control Valves

.MISTAKE:
CVA: No schematic provided to show the provisions of valves.
Automatic Flow Switch Testing System used in Wet Sprinkler Fire Fighting System.

According to NFPA 25, quarterly test is mandatory, whereas Factory Mutual Global (FM) insured, testing is required monthly.

Malaysia-MS 1910:2006 section 19.3.2 – Flow switches required to be tested quarterly.
Conventional test:
How do we test the flow switches?

Approximately 320 litres (86 US Gallons) of Water per water flow alarm test.
Automatic Flow Switch Testing System used in Wet Sprinkler Fire Fighting System.

MISTAKES

1.) Installed wrongly
2.) Wiring all same color and connected wrongly
Innovation in Green Buildings

Vacuum Degasser in Chilled Water Piping System (Closed Loop System)
Water Cooled Chiller System

Airside Loop (AHU & Air Duct) → Chilled Water Loop (CHWP, Piping & Cooling Coil) → Refrigeration Loop (Water-cooled Chiller) → Condenser Water Loop (CWP, Piping & Cooling Tower)

- 80°F (26.7°C) → 54°F (12.2°C) → 50°F (10°C) → 97°F (36.1°C)
- 55°F (12.8°C) → 44°F (6.7°C) → 41°F (5.0°C) → 87°F (30.6°C)
- 41°F (5.0°C) → 100°F (37.8°C) → 110°F (43.3°C) → 100°F (37.8°C)
- 110°F (43.3°C) → 100°F (37.8°C) → 97°F (36.1°C) → 100°F (37.8°C)
- 97°F (36.1°C) → 87°F (30.6°C) → 54°F (12.2°C) → 97°F (36.1°C)
Vacuum Degasser cleaning system for Chilled Water Piping System

MISTAKES:
1.) Installed out of working pressure range
2.) Installed in an open loop system.

Note:
1.) Vacuum Degasser must be installed with a Closed Loop Hydro pneumatic expansion Tank.
2.) Not necessarily expensive is better
GBI M&E Green Cost Items

Common MISTAKES IN INNOVATIONS

GENERAL REMARKS:

- do not adopt technology of insignificant advantage for application in Malaysia but yet costly: eg variable speed chillers.

- Vacuum Degasser c/w closed loop tank & other fancy items installed with electronic controls.
MR 7 – Refrigerants & Clean Agents  (Non-Residential)

INTENT

• Use environmentally-friendly Refrigerants and Clean Agents exceeding Malaysia's commitment to the Montreal & Kyoto protocols

REQUIREMENTS

• Use zero Ozone Depleting Potential (ODP) products: non-CFC and non-HCFC refrigerants/clean agents; (1 point)

• Use non-synthetic (natural) refrigerants/clean agents with zero ODP and negligible Global Warming Potential. (1 point)

Total = 2 Points
## Refrigerant Types

<table>
<thead>
<tr>
<th>CFC</th>
<th>HCFC</th>
<th>HFC</th>
<th>HFO</th>
</tr>
</thead>
<tbody>
<tr>
<td>• R-11</td>
<td>• R-22</td>
<td>• R-134a</td>
<td>HFO1234fy</td>
</tr>
<tr>
<td>• R-12</td>
<td>• R-123</td>
<td>• R-404A</td>
<td>HFO1233zd(E)</td>
</tr>
<tr>
<td>• R-13</td>
<td>• R-401A</td>
<td>• R-407C</td>
<td>HFO 514a</td>
</tr>
<tr>
<td>• R-500</td>
<td>• R-401B</td>
<td>• R-410A</td>
<td>HFO 1223</td>
</tr>
<tr>
<td>• R-502</td>
<td>• R-402A</td>
<td>• R-507</td>
<td></td>
</tr>
<tr>
<td>• R-503</td>
<td>• R-402B</td>
<td>• FM200</td>
<td>Natural Refrigerant</td>
</tr>
<tr>
<td></td>
<td>• R-408A</td>
<td></td>
<td>R-290 ( HC 290 )</td>
</tr>
<tr>
<td></td>
<td>• R-409A</td>
<td></td>
<td>CO2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NH3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Water</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>N2 Clean agent</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Argon Clean agent</td>
</tr>
</tbody>
</table>
REFRIGERANT TYPES

HFO

- HFO 1234 fy
- HFO 1223zd
- HFO 514a (74.7% R-1336mzz(Z)
  25.3% R-1130(E))
- HFO 1234ze (E)

Natural Refrigerant

- R-290 (HC 290)
- CO2
- NH3
- Water
- N2 Clean agent
- Argon Clean agent

Zero ODP & Low GWP but they are **synthetic refrigerants**
And not **Natural Refrigerants**.
NON-RESIDENTIAL NEW CONSTRUCTION (NRNC)
INNOVATION (IN)

IN2  GREEN BUILDING INDEX FACILITATOR  1 POINT

INTENT
To support and encourage the design integration required for Green Building Index rated buildings and to streamline the application and certification process.

DESCRIPTION
Encourage and promote green technology service providers.

REQUIREMENTS
Support and encourage the design integration required for Green Building Index rated buildings and to streamline the application and certification process, where:
At least one principal participant of the project team shall be a Green Building Index Facilitator who is engaged at the onset of the design process until completion of construction and Green Building Index certification is obtained. Name of the GBI Facilitator shall be inserted in GBI Application & Registration Form.
MISTAKE:
1.) DA OR CVA STAGE

GBIF CERTIFICATE – NOT CURRENT OR RENEWED
IN2 - MISTAKES:

1.) Proof of Letter of Appointment of named GBI Facilitator (GBIF).

2.) Proof of the GBI Facilitator’s Current Registration.
THIS IS TO CERTIFY THAT

HAVING SATISFIED THE REQUIREMENTS OF THE

GBI ACCREDITATION PANEL

HAS BEEN DULY REGISTERED AS

GBI FACILITATOR

DATE
21 SEPTEMBER 2010

CHAIRMAN, GBIAP
This is to certify that

NG YONG KONG

Having satisfied the requirements of the
GBI Accreditation Panel

Has been duly registered as

GBI Facilitator

REGISTRATION NO.
GBIF/0025

DATE
20 JULY 2009

Chairman, GBIAP
THIS IS TO CERTIFY THAT

HAVING SATISFIED THE REQUIREMENTS OF THE
GBI ACCREDITATION PANEL
HAS BEEN DULLY REGISTERED AS

GBI FACILITATOR

DATE
1 APRIL 2016

REGISTRATION NO

DATE
1 APRIL 2016
GBI FACILITATOR

REGISTRATION NO.
GBIF/0064

DATE
1 JANUARY 2017

CHAIRMAN, GBIAP

THE VALIDITY OF THE CERTIFICATE AND REGISTRATION EXPIRES ON 31ST DECEMBER 2017

2017

HAVING SATISFIED THE REQUIREMENTS OF THE GBI ACCREDITATION PANEL HAS BEEN DUEY REGISTERED AS

REGISTRATION

DATE
1 JANUARY 2017
Thank You

By: Ir. Ng Yong Kong, email: nyk@nyk.com.my
Tel: + 6012 201 9319