

Cost@Work

Integrating Capital Cost with Energy Efficiency

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Organisers:



International Co-owners:



Perception – Green is Expensive!

Incremental Cost of Going Green

GBI MALAYSIA	CERTIFIED	SILVER	GOLD	PLATINUM
GBI POINTS	50 - 65	66 - 75	76 - 85	86 - 100
INCREMENTAL CONSTRUCTION COST				
AVERAGE	2.83%	3.67%	7.92%	8.70%
CORRECTED AVG	1.18%	3.67%	6.80%	8.70%
RNC ALONE	1.20%	2.90%	3.40%	10.70%
LOWEST NRNC	1.10%			
LOWEST RNC	0.70%			
GBI RANGE	0.7 - 2.0%	2.0 - 4.0%	3.5 - 8.0%	6.5 - 11.0%
LEED AVERAGE FOR LARGE BLDG	1.0%	3.0%	5.0%	8.0%

Green Building Index Malaysia 2016

Notes: Corrected Average

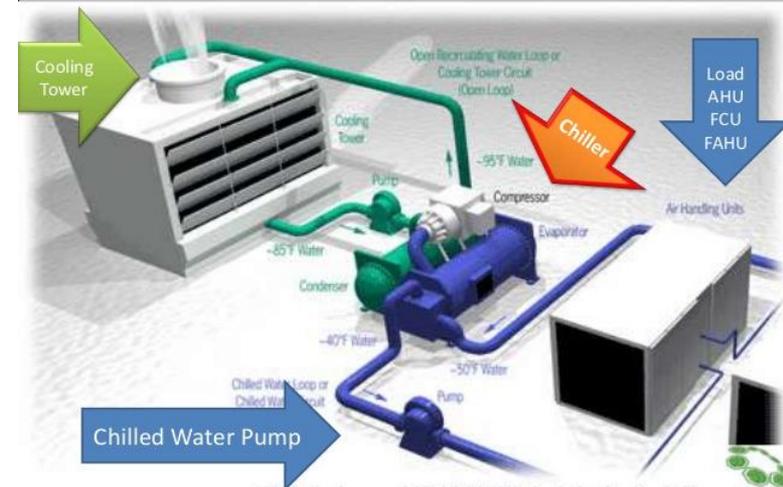
1. Omit NRNC Case Study 6 – exceptionally high EE1 cost for Gold
2. Omit NRNC Case Study 7 – exceptionally high EE1 cost for Certified

Current Industry Practice

- Total Construction Cost is 2 Separate Budgets
 - QS budget
 - M&E budget
- QS Budgets covers:
 - Civil and Structural Works
 - Architectural Works
 - Sometimes ID Works as well
 - BUT... Always Exclude M&E!



Chillers Plant-Main Components



Quantity Surveyor

- QS mainly worried only about their own budget
 - Typical Wall
 - Typical Glazing
 - Typical Roof
 - M&E?
 - Out of Scope



M&E

- ***Little*** to no ***interest*** in building materials.
- Leave it to others to specify building materials.

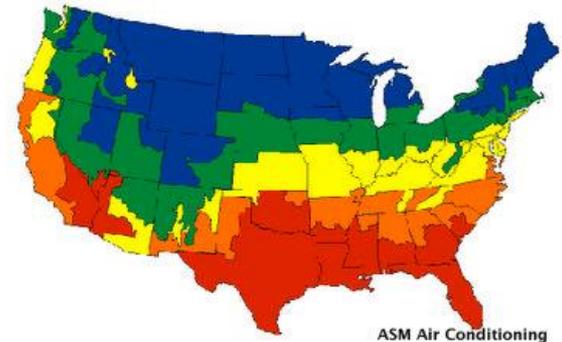


How do you size Air-Cond?

AIR CONDITIONING SQUARE FOOTAGE RANGE BY CLIMATE ZONE

	ZONE 1	ZONE 2	ZONE 3	ZONE 4
1.5 Tons	600 - 900 sf	600 - 950 sf	600 - 1000 sf	700 - 1050 sf
2 Tons	901-1200 sf	951 - 1250 sf	1001 - 1300 sf	1051 - 1400 sf
2.5 Tons	1201 - 1500 sf	1251 - 1550 sf	1301 - 1600 sf	1351 - 1650 sf
3 Tons	1501 - 1800 sf	1501 - 1850 sf	1601 - 1900 sf	1601 - 2100 sf
3.5 Tons	1801 - 2100 sf	1851 - 2150 sf	1901 - 2200 sf	2001 - 2300 sf
4 Tons	2101 - 2400 sf	2151 - 2500 sf	2201 - 2600 sf	2251 - 2700 sf
5 Tons	2401 - 3000 sf	2501 - 3100 sf	2601 - 3200 sf	2751 - 3300 sf

	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5
1.5 Tons	600 - 900 sf	600 - 950 sf	600 - 1000 sf	700 - 1050 sf	700 - 1100 sf
2 Tons	901-1200 sf	951 - 1250 sf	1001 - 1300 sf	1051 - 1350 sf	1101 - 1400 sf
2.5 Tons	1201 - 1500 sf	1251 - 1550 sf	1301 - 1600 sf	1351 - 1600 sf	1401 - 1650 sf
3 Tons	1501 - 1800 sf	1501 - 1850 sf	1601 - 1900 sf	1601 - 2000 sf	1651 - 2100 sf
3.5 Tons	1801 - 2100 sf	1851 - 2150 sf	1901 - 2200 sf	2001 - 2250 sf	2101 - 2300 sf
4 Tons	2101 - 2400 sf	2151 - 2500 sf	2201 - 2600 sf	2251 - 2700 sf	2301 - 2700 sf
5 Tons	2401 - 3000 sf	2501 - 3100 sf	2601 - 3200 sf	2751 - 3300 sf	2701 - 3300 sf



ASM Air Conditioning



Organisers:

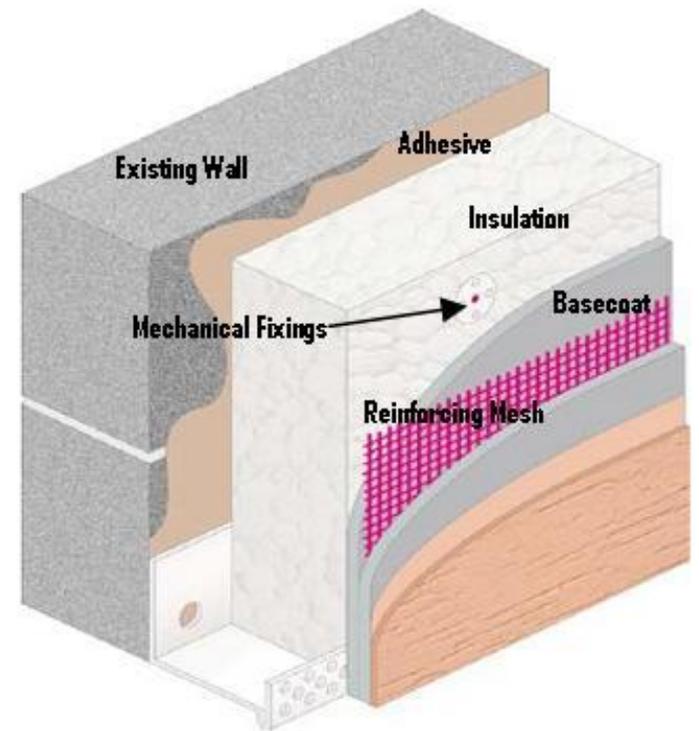


International Co-owners:



Air-Cond Sizing

- Is Dependent On:
 - Wall Insulation
 - Roof Insulation
 - Glazing Properties
 - Fresh Air Requirements
 - Additional Air Leakages
 - Lighting Qty and Types
 - No of People and Type of work done
 - Small Power
 - Type of Air-Conditioning System



So how do you know the most optimum selection for the lowest cost?

Cost@Work

Based on BEET v2.0

Provided free to the industry to estimate building energy consumption in Malaysia.

Enhancement Made

Capital Cost Optimization.

Takes account of capital cost of building material and equipment with the capital cost of air-conditioning equipment at the same time.

Integration of Architectural Design with Air-Conditioning Design to derive the most cost effective solution for the project.

Savings up to 5% of building capital cost has been demonstrated.

Energy Efficiency

Cost Efficiency

Carbon Reduction

Setting Benchmark in Industry

- Higher Efficiency
- Lower Cost
- Greater Environmental Impact

Environmental design + Capital Cost Reduction



Organisers:



International Co-owners:

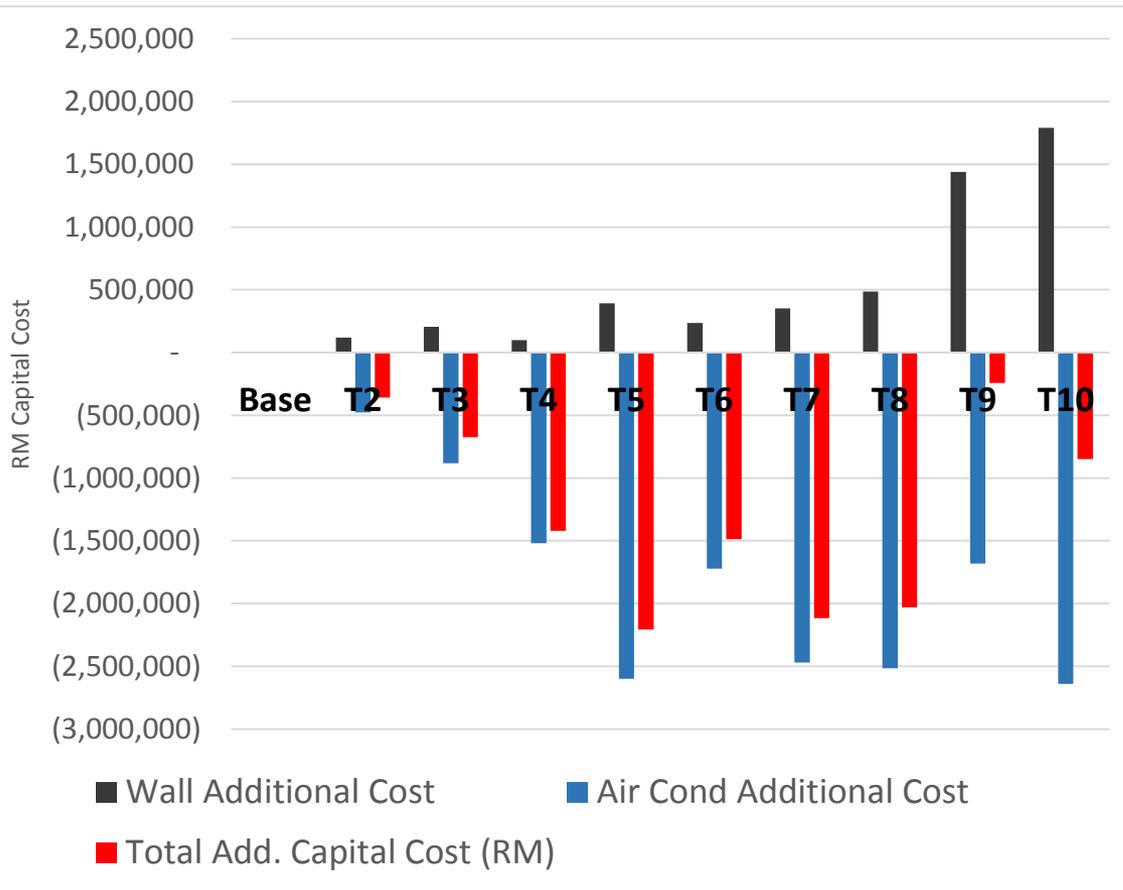


Sustainable Buildings and Climate Initiative
Promoting Policies and Practices for Sustainability



Global Alliance
For Buildings and
Construction

Typical Wall Scenario



Wall Type	Descriptions
Base	Concrete Wall 120mm
T2	Concrete Wall 200mm
T3	Concrete Wall 250mm
T4	Brickwall
T5	Brickwall with insulation
T6	AAC 100mm
T7	AAC 150mm
T8	AAC 200mm
T9	Aluminium Comp.Wall no insul
T10	Aluminium Comp.Wall insulation

Demonstration of Cost@Work

Thank you



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