



GBI
PROFESSIONAL
SERIES 2016



Commissioning: Global & Local Development, GBI CxS Submission Compliance & BAS Impact

13th to 15th Apr 2016
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Paper 14: Integration or Disintegration of BAS with CxS

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UBBL Amendments on EE

(OSA until 27th Dec 2012)

(First mooted and drafted for gazetting in year 2001)

UBBL 2012 Amendment on EE

38A. Energy efficiency in buildings.

(1) New or renovated non-residential buildings with air-conditioned space exceeding 4,000 square metres shall be –

a) designed to meet the requirements of MS 1525 with regards to the Overall Thermal Transfer Value (OTTV) and the Roof Thermal Transfer Value (RTTV); and

b) provided with an Energy Management System.

UBBL 2012 Amendment on EE cont'd

(2) The roof for all buildings (residential and non residential) shall not have a thermal transmittance (U-value) greater than—

a) 0.4 W/m²K for Light (under 50 kg/m²) weight roof; and

b) 0.6 W/m²K for Heavy (above 50 kg/m²) weight roof,

unless provided with other shading or cooling means.

States that have gazetted Bylaw 38A

- 1) Selangor (Dec 2012)
- 2) Terengganu
- 3)

Time for BAS players to deliver

- The law is in place
- Business is assured
- But the BAS players are not delivering
- Designers (aka Consultants) are at wit's end
- Owners and End Users are shortchanged
- The environmental benefits are not realised
- Time to identify and resolve the problems to move forward and at double quick time!

The Power of BAS

- When designed and utilised for its full potential, BAS will not only be instrumental in ensuring effective use of energy, but will also aid in fire control and operation which may become indispensable in modern day Mega structures including Supertall and Megatall buildings
- Whilst we already have Supertall buildings, at least one Megatall building is already underway and as such we can ill afford to let the local BAS installation and performance lag behind any longer

The Power of BAS

- Even in the mid 80's, a shopping mall in KL had already utilised BAS for its smoke control 'push and pull' strategy
- Thereafter there was effort to convince Bomba to permit the use of BAS to replace the conventional addressable Fire Alarm Supervisory and Control panel, and at least one BAS brand was actively promoting that idea
- Yet more than 3 decades later, that same brand and the rest have failed miserably to convince the industry that BAS can even successfully fulfil its standalone function let alone crossing over to encompass fire safety control - how sad!

Common BacNet Protocol

- In the early 80's when BacNet was mooted to provide a common platform for all BAS players, ACEM held a meeting with all the then major players in town
- Apart from finding out the culprits resisting or sabotaging the move towards adopting BacNet, that meeting remains the only time the consultants had attempted to lift the BAS players towards a more professional and responsible platform
- Amongst the proposals eagerly accepted by those present, was the creation of a common pool of trained BAS operators for end users to rent as there was lack of such employees then which resulted in many BAS installations being left idle without operators - birth of the 'white elephants'

Common BacNet Protocol

- That was also the period of the Oil Embargo which led to a rush for Energy Efficiency solutions to mitigate against high energy cost
- Unfortunately, after the Embargo ended and oil prices receded, the fragmented BAS community (without a champion) retreated to their BAU of installing 'half-baked' BAS
- 40 years later, today we have hopefully found at least a willing Facilitator (not Champion) to unite the BAS industry to make BAS relevant before they descend into oblivion

And YES the situation is that CRITICAL!

Reality or Perception

- 99.9% of all building BAS installations are not properly commissioned!!
- At least 80% of the already poorly commissioned BAS installations are not maintained for various reasons
- BAS installations together with the associated controls and devices are treated like perpetual 'machines'!
- New BAS players come and go (fold up) and leave the end users in a lurch
- Previously performing BAS players grow big and divest into other more lucrative business and neglect their service
- Quoted costs to add missing items or replacement parts are astronomical and hence not worth implementing

Reality or Perception

- Instead of improving with time, commercial greed dictates and bad habits are skilfully infused into the system over time
- Players work with equally unscrupulous (or naive) consultants to increase cost of BAS installations by specifying ridiculous quantum of I/O points, with a MO of not requiring these points to actually function or even installed!
- With such an arrangement, cost of BAS contracts based on \$ per I/O points has on the surface plummeted by half over the last 30 years with the sad fact that there is instead additional cost and not savings to the unknowing end users.

Reality or Perception

- With such a prevalent culture, BAS installations are hurtling towards a depth of no return, if no action is taken immediately to reverse it
- It is sad to hear of accepted norm that the BAS installation which is the last to be commissioned and made operational after CCC, being made redundant or abandoned
- Fortunately, with the advent of GBI over the past few years, this sad state of affair is now exposed where more than 50% of inspected buildings have either non performing BAS or unfinished installation with the inadvertent excuse that the tender specs did not specify what GBI requires

Reality or Perception

- GBI has merely exposed this BAS shortchange which has otherwise being ignored over the past 3 decades
- With GBI, it has now dawned on end users that BAS can be operational and has so many in-built (inherent) features to transform a building into a high performance building meeting all the qualities of a green building to benefit occupants and operators
- **AND AT NO EXTRA COST OR EVEN LOWER COST!**
- There is no doubt that it takes more than two hands to clap for the BAS industry to descend to such a low depth
- And we now need the same hands to join forces to lift BAS out of this rut before it becomes irrelevant

Obnoxious Installations

- Most if not all M&E Site Staff pay scant attention to site supervision of BAS installation works and approval of BAS materials, as compared to the other traditional M&E works
- This practice may be attributed to both the need for higher technical knowledge of BAS components and also the trust entrusted to the supposedly highly technical performance required (harmonics, interference etc) and hence it would be suicidal if non compliance materials are used by the BAS contractors themselves
- Unfortunately, in recent times, some of the non performing BAS installations have been traced to the use of non compliant materials such as cabling (unshielded for shielded), non genuine modules, wrong sensors (out of range etc) and so on.

Obnoxious Installations

- In a nutshell some of these daring defaulters behave like cowboys where lawlessness rules
- The result is the non completion and abandonment of the BAS installation or at most they are used as expensive clock timers only
- It is sad to observe that even for installations where no defaults had taken place, the BAS System Integrators (SI) are not conversant with the power of BAS and as such only a small fraction of the BAS capability is utilised
- How many times have we seen beautiful BAS graphics where the SI claims every single I/O point is accounted for and tested but detail scrutiny shows the dynamic displayed results to be flawed?

Ready to revert the trend?

- It's time for the serious BAS players to acknowledge the rut and be prepared to take all the necessary drastic action
- Do this by forming an association to represent the genuine players and weed (and expose) the culprits and the frauds who have damaged the industry
- Set the template for the industry to refer to; such as giving a good guideline of building GFA versus number of I/O points
- Make each custom specified point count - what GBI has advocated
- Say no to any unscrupulous player within the chain

Ready to revert the trend?

- Conduct proper and regular classes to teach skills on installation, supervision, testing, commissioning and maintenance - team up with other organisations if necessary
- Provide an avenue for end users to complain on overcharging, non performance etc and take action!
- Train a common pool of BAS operators for users to rent in times of need or even offer permanent employment
- Provide a guide price list of standard charges
- Have regular dialogues with stakeholders to resolve concerns and earn their confidence
- Deliver the full potential of BAS, learn how to trouble-shoot with raw data extraction, enhance programming capability etc

Ready to revert the trend?

- Provide continuous education to System Integrators and license them to assure integrity in performance
- Understand the need to lead the building services contractors in terms of interfacing and integration with all of them - always remember that if you cannot or are not willing to do so then there is no need for BAS installations
- Have the necessary knowledge of the systems to be integrated ie back to the roots of the original objective and function of BAS
- Be prepared to share experience and TEACH TEACH TEACH!
- Never be left behind on continuous technical development
- Deliver the current requirements of GBI and plan for advancement to the next level in tandem with GBI progressing to Version 2.0 tools

Supporting industries to BAS

- In return, BAS players have the right to question and expose the pretenders - those half past six designers - and there are no shortage of them over the decades
- Keep members up to date with development of the relevant industry - viz Revised Registration of Engineer's Act and CIPA Act.
- Educate and highlight the use BAS for preventive maintenance, inventory control, and maximum demand limiting programming but first - train your members on these 30 year old technology!!

Progress with **GBI**

At its onset in 2009, GBI rating system became the 1st rating tool in the region to incorporate the following criteria;

- **EE6 - ENHANCED COMMISSIONING OF BUILDING ENERGY SYSTEMS**
- **EE7 - POST OCCUPANCY COMMISSIONING**
- **EE8 - VERIFICATION**
- **EE9 - SUSTAINABLE MAINTENANCE**

EE6 - ENHANCED COMMISSIONING

- Ensure building's energy related systems are designed and installed to achieve proper commissioning so as to realise their full potential and intent.
- Appoint an independent GBI recognised CxS at the onset of the design process to verify that comprehensive pre-commissioning and commissioning is performed for all the building's energy related systems in accordance with ASHRAE Commissioning Guideline or other GBI approved equivalent standard/s by:

EE6 - ENHANCED COMMISSIONING

1. Conducting at least one commissioning design review during the detail design stage and back-check the review comments during the tender documentation stage.
2. Developing and incorporating commissioning requirements into the tender documents.
3. Developing and implementing a commissioning plan.
4. Verifying the installation and performance of the systems to be commissioned.
5. Reviewing contractor submittals applicable to systems being commissioned for compliance.
6. Developing a systems manual that provides future operating staff the information needed to understand and optimally operate the commissioned systems.
7. Verifying that the requirements for training operating personnel and building occupants are completed.

EE8 – EE VERIFICATION

Verify predicted energy use of key building services:

1. Use **Energy Management System** to monitor and analyse energy consumption including reading of sub-meters, **AND**
2. **Fully commission EMS including Maximum Demand Limiting program** within 12 months of practical completion (or earlier if there is at least 50% occupancy).

(Note that this Criteria can only score either 0 or 2 points)

Note that MDL programming is dynamic and will need to be reprogrammed to suit the load profile of the building due to occupancy/usage changes

EE9 – SUSTAINABLE MAINTENANCE

Ensure the building's energy related systems will continue to perform as intended beyond the 12 months Defects & Liability Period:

1. At least 50% of permanent building maintenance team to be on-board one (1) to three (3) months before practical completion and to fully participate (to be specified in contract conditions) in the **Testing & Commissioning of all building energy services** (1 point).
2. Provide for a designated building maintenance office that is fully equipped with facilities (including tools and instrumentation) and inventory storage **AND**
3. Provide evidence of documented plan for at least 3-year facility maintenance and **preventive maintenance budget** (inclusive of staffing and outsourced contracts) (2 points).

**OVER TO THE BAS INDUSTRY
TO STRIKE BACK**



MALAYSIA CHAPTER

THANK YOU

