Commission possible too?

Traditionally the domain of higher-profile projects boasting ambitious sustainability targets and budgets to match, commissioning is now regarded as being integral for any building seeking energy-efficient outcomes. But does the continued absence of an Australian commissioning standard hold us back? Sean McGowan investigates.

The role of proper and effective commissioning in projects – whether new builds or upgrades – is now widely accepted as integral in ensuring a building operates as designed and intended. Once the first item to be cast aside from the budget, energy costs and Green Star have seemingly combined to elevate commissioning from a nice-to-have to a must-have. Yet commissioning remains without an Australian Standard.

In its absence CIBSE and ASHRAE codes have been adopted here, particularly in response to Green Star requirements. Although regarded as “best practice”, many believe they fail to address some concerns pertaining to our local industry. As part of the Ecolibrium’s continuing conversation on why buildings don’t always perform as they’re designed to, we invited a number of industry members to share their thoughts on the subject.

Included as part of the panel were director of Flowtech Air Conditioning Mark Gilby, M.AIRAH; Mark Jacobson, M.AIRAH, commissioning manager – Brisbane Construction AE Smith; Air Systems engineering director Rex Brent, M.AIRAH; William Lane, M.AIRAH, director of Air-Con-Tech; Neil Caswell, M.AIRAH, national engineering manager of Engineering Commissioning Services; and Nathaniel Galindo, M.AIRAH, manager – environmental program delivery, UGL Services Beyond Green.

Ecolibrium: Does Australia need a commissioning standard, or will the CIBSE and ASHRAE codes suffice?

Gilby: The Australian industry needs this debate. We need to avoid multiple standards for the same areas, and we certainly need a base standard that is accepted across the industry.

Commissioning standards such as CIBSE and ASHRAE are now widely known across the various levels of the construction industry due to the GBCA requirements, but what we need above all else is to train our technicians and give them accreditation and/or certification.

Galindo: Although the CIBSE and ASHRAE codes are quite effective, comprehensive and have the potential to achieve great results, their best-practice methodology can potentially be seen as being too complicated and suited best to certain-sized projects that have high-grade contractors with specialist skills.

For the rest of the HVAC and building services industry, these codes have little to no bearing as they are just too complex to apply to smaller projects where the commissioning experience of the small to mid-tier contractor is somewhat limited.

An Australian Standard could potentially be a good opportunity to set the fundamentals and outline the process to achieve minimum requirements in HVAC and building services projects to ensure systems perform at a high performance and as intended in the design.

Jacobson: There are two approaches that we could take. The first would be to consolidate what information is available into a structure that can be easily referenced. The second would be to clearly define and document the Australian industry requirements into a new set of guidelines. But why reinvent the wheel when we just need a better wheel?

Lane: Yes, we need to go down the path of setting up a standard on commissioning.

As an industry we need to show we are serious about providing a quality service to our customers, who can be assured that they are receiving the product that they purchased: an air conditioning system that not only works but works as per the design intent, efficiently and correctly.

Everyone should be held accountable for the service they provide and that the methodology used is based on proven and tested methodology and not what is thought to be acceptable by the technician.

Ecolibrium: Why do we need it when these codes are already being adopted?

Caswell: The CIBSE and ASHRAE standards are very good, though primarily focused on HVAC. There can be a reluctance to accept the standards locally by the contractors, with them being seen as have some irrelevance to how things are done in Australia.

Jacobson: One shortfall with these codes is that it is too complicated for simple, smaller systems that fall into the B, C and D grade categories or even small retail outlets. For many of these property types, commissioning to CIBSE and ASHRAE is out of reach, primarily because it is cost prohibitive.

An Australian standard should address this to demonstrate that efficiencies gained through commissioning are a necessity, not a luxury. Many of these systems operate horrendously inefficiently, and this is usually the result of poor commissioning. And as these sites don’t have a dedicated maintenance resource, these systems continue to operate poorly and undetected.

Ecolibrium: What might an Australian commissioning standard look like?

Gilby: Australia will have a commissioning standard – I have no doubt about that. It will be an easy reference for government bodies, consultants and the major players.
As with AS 1668, it’s more a case of not duplicating existing overseas standards when we go down this path, but there is plenty to be borrowed.

Caswell: I don’t think we need to reinvent the process, but rather make it more Australia-specific. An Australian-ised version of the standards, cross-referencing CIBSE/ASHRAE with some specific Australian clauses would be worthwhile.

Ecolibrium: What would you like to see covered?

Jacobson: The standard should be a consolidation of what information is available from around the globe. Just as AIRAH released the Design Guide for Commissioning, maybe a new direction would be for AIRAH to consolidate the global commissioning information via the formation of a commissioning standards committee, and through industry consultation and best-practice review, produce an industry collaborative document.

Gilby: There are a number of areas and these may well require individual standards. Examples are building pressure testing, ductwork pressure testing, BMS and controls, lighting, metering, hydraulics, whole-of-building commissioning and testing and balancing.

Too many buildings get commissioned system by system in isolation. It’s whole-of-building commissioning that is the key. A central panel or board could progressively add standards to a commissioning set, as such.

Caswell: Required testing should address all of the services in a building that affect safety and/or energy consumption.

Galindo: A key focus should be to ensure systems operate as they were intended to, as per the design, and to hand over this knowledge to those responsible for its operation. There really needs to be a stronger emphasis on engaging with the facility manager such that they are involved or at least observe the commissioning process, and all relevant documentation is handed over in a well-understood fashion.

I can understand that the commissioning process is used as a mechanism for the contractor to demonstrate what’s been installed satisfies the operational requirements. But ideally a commissioning standard should consider a process that empowers the FM to maintain the system’s ongoing performance.

Ecolibrium: How would such a standard be enforced, and who would provide the necessary checks and measures?

Gilby: Good question. We certainly don’t want another layer of sign-off.

Self-certification or independent certification is probably the answer, in the form of structures such as NEBB or perhaps NATA. On new projects contractual responsibility to achieve certification would be sufficient.

Once again we need a broad-based system of certification to fall back on. The companies responsible would have to literally stamp their documents. But dispute resolution, of course, would need some debate.

Caswell: For a practical standard to be worthwhile, it needs to be included within consultant specs and become a reference document. I don’t think it is possible to legislate on the actual methods of commissioning for air systems for example, as these can be diverse. We would say that it needs to be tested and commissioned, and to provide documented evidence that commissioning has been done.
This would apply to all services. Some of these are already legislated to some extent – electrical and fire for example – but mechanical services are not.

Lane: An independent commissioning agency engaged in the overseeing and checking of work submitted as complying specification and/or the standard.

Ecolibrium: Who would have sign-off for a Certificate of Occupancy?
Caswell: This shouldn’t change from the current requirement for a PCA sign-off, but a requirement for evidence of services commissioning should be a condition of acceptance, too.

Brent: I favour the introduction of a sign-off procedure to couple to the other completion certificates necessary to gain a Certificate of Occupancy. The Plumbing Industry Commission completion certificate and an Electrical Compliance Certificate are required, signed by the responsible contractor before the project can be signed off. These certificates are usually submitted by the relevant contractor to the builder, architect or overall supervising body and are normally channelled back to the building surveyor.

Gilby: I like the CIBSE idea of the Certificate of Readiness concept to summarise the commissioning. This is signed by the contractor, the consultant and an independent commission agent (ICA) or commissioning manager. The existing structure of Certificate of Occupancy is fine but an ICA or commissioning representative would add value to that.

Jacobson: The ICA’s role could be expanded to carry out this function. Maybe a commissioning certificate could form a mandatory requirement of the Certificate of Occupancy?

Ecolibrium: How can an Australian commissioning standard be given teeth?

Jacobson: The main issue with the quality of commissioning and ongoing performance issues starts with a lack of enforcement. There are instances that if it won’t be witnessed, it won’t be done.

Consultants need to systematically inspect and interrogate the systems in accordance with the project documentation and design intent. Where this approach has been taken in the past, building performance is rarely an issue, except for fundamental design issues.

Lane: I cannot see any benefit in having a standard unless the standard is embraced by the industry, and that those who wish to create shortcuts and not comply with the standard be dealt with by the legal system and be named and recorded for future works.

To the contractor providing the budgeting in providing the service as per the standard, and being undercut in their costing by people not providing the service as per the standard, it is imperative that those non-professional people be weeded out and made known.

Caswell: If it becomes a BCA requirement, which needs the PCA to sign-off as completed, this will give some assurance that testing and commissioning have been properly carried out.

Ecolibrium: Should commissioning be made a mandatory requirement within the BCA, as has been recommended in the past?

Jacobson: Absolutely. The BCA represents the minimum acceptable practice, and given its current requirements, commissioning is inferred at best. The elephant in the room is the carbon tax, and the flow-on effect with rising energy costs. A correctly commissioned and monitored building is the best way to reduce risks associated with the inevitable cost increases and pressures on the bottom line.

Caswell: Definitely. Some recognition of the need to ensure that systems
have been commissioned to a standard would go some way to realising system potentials.

Ecolibrium: How important is training?

Lane: I cannot see the standards providing any benefit to the industry unless the technician is fully trained in the correct methodology required to perform the task at hand.

This may be an area for AIRAH to provide a service of training to the industry and assist the technician to ensure compliance with the standards. But this training will need to be more hands-on in its approach – rather than the theory aspect of commissioning – to reinforce the methodology requirements of commissioning.

Gilby: The biggest issue is training and certification of commissioning technicians.

Our training level must be fast-tracked to meet the high standards the industry expects. If a high standard of commissioning is mandatory on all projects then the number of required technicians would double overnight.

Caswell: Standards of commissioning are by no means equal across Australia, or even at state level. Training of acceptable methods, their relevance and use are paramount to increasing the skills and professionalism of the technicians.

Ecolibrium: How should accreditation be addressed? Is NEBB certification the right vehicle for this?

Gilby: NEBB is the default certification body in many states for testing and balancing. It is long established and backed by AMCA, so there is no real need to replace it as a certifying body, other than to provide an alternative.

NEBB also has the scope to offer a number of certification services such as retro-commissioning, whole-of-building commissioning, clean rooms, sound and vibration and TAB.

Caswell: It would be worthwhile addressing who can sign off on the commissioning – much as a registered electrician needs to sign off on a compliance certificate. The NEBB accreditation is appropriate for air and water balancing and the measuring of the parameters, but we cannot exclude other organisations such as the CSA, BCA and the like.

NEBB is popular in Victoria and Queensland but not referenced in New South Wales. Maybe we need to look at the standards that these organisations expect prior to certification to try and get a level playing field.

Brent: The industry requires an accredited training procedure through a training facility and for it be recognised as a proper qualification. If the balancing and commissioning is carried out by a person of that qualification who is prepared to put their professional qualification on the line, and the building surveyor’s list of required documentation includes this certification, the push by builders to finish will be a necessary completion item they can’t get around.

A proper qualification earned by the balancing technician and signing off their findings, based on a recognised Australian standard, would become a fixed procedure.

If a training program were created I would favour it to be through a recognised TAFE-type facility rather than having to be directed to compliance with NEBB or NATA training. Once the successful participant gains their qualification then they can join member organisations, allowing them to add that membership or recognition to their report or letterhead and added “in house” courses.

All electrical, mechanical plumbing or refrigeration mechanics did not gain their training through member associations. By all means, NEBB or NATA should have input in the proposed training curriculum. But the course should be availed by all through college training, with course fees only.

The need to involve a professional engineer would, in my opinion, be unnecessary, as the design documentation of projects normally nominate the air flows and other required performance data that is to be achieved.

Lane: As an ex-NEBB-qualified air and water balancing plus building system commissioning supervisor, I believe the answer is to become completely independent and not aligned with any organisation to ensure complete impartiality.

Ecolibrium: Mark, as you represent NEBB Australia on a few levels, what is it doing in this regard?

Jacobson: Currently NEBB Australia is an organisation that acts under a constitution derived from NEBB USA. This constitution is much like the BCA, in that it details current best practice. But as an organisation NEBB Australia has the flexibility to deliver the multitude of qualifications available from NEBB USA flavoured with our own industry requirements.

NEBB Australia is currently investigating a national training scheme that will deliver commissioning technician and NEBB professional qualifications, and this may serve as a platform for delivering additional industry training requirements.

Ecolibrium: So if the consensus is that an Australian commissioning standard is required, what is the next step?

Gilby: Firstly, a heck of a lot of debate would be required in terms of the areas that it would cover.

It would be interesting to see how other countries have dealt with the production of a commissioning standard. British Standards have a standard for fan testing for example, but not for other areas of commissioning that I am aware of. The UK seems to have relied on the CIBSE and ASHRAE structures.

If the quality of the standard is high enough then I believe it would be adopted quite readily by the industry. The teeth, however, would come via specifications, so the design industry would have to be comfortable with it.

Lane: In June 1973, Keith Robeson – an AIRAH member – presented a paper on air – flow measurement in air conditioning systems, to which it can be said may still be relevant in this day and age. Sad but true.

As an industry we need to set down guidelines on what is acceptable and what is not, and I am not referring to a “plus 10, minus 10 per cent-type” of thing. I am referring to what methodology we use when performing the tasks involved in the commissioning process.

Jacobson: I see AIRAH as an organisation that can help the industry overcome the issue of how to deliver
commissioning standards that will meet the requirements of each involved party.

Designers need to have confidence that it will deliver the best from their design, and the contractors need to be able to carry out and deliver the intent of this standard. The client will end up with a building that achieves their expectation and may also provide a degree of protection against future operating cost increases.

Gilby: AIRAH has been very proactive in the push for commissioning, so it is the logical body to push for standards or indeed use some of their existing publications as the basis of a standard.

Galindo: I see AIRAH being a key driver in developing an Australian Standard. There’s certainly a lot of engagement that would need to be undertaken to get the right balance between cost and tasks to achieve the right outcomes. Going back to my point earlier that maybe an Australian Standard on commissioning should outline minimum requirements, perhaps the first step is establishing exactly what outcomes we want to achieve from this standard, then we can focus on how we go about achieving it.

THE PANEL

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