

MECHANICAL COMMISSIONING STRATEGIES

Introduction

This TECHnote discusses alternative mechanical balancing and commissioning strategies. Balancing and commissioning have a significant impact on the performance and energy consumption of mechanical services. To be effective, balancing and commissioning aim to arrive at a reliable set of results reflecting the installed state of the mechanical systems. The issue is how best to make sure that this is achieved. Ultimately, success is dependent on the diligence, competence and facilities of the people undertaking the commissioning.

See also NATSPEC TECHnote GEN 020 for whole building commissioning generally.

Options for commissioning

When selecting a mechanical commissioning approach, consider the competence of likely contractors, complexity and criticality of the installation, principal's budget and risk management strategy. Decide which strategy to apply well before tenders are called. The following is a summary of three possible strategies:

NATSPEC's approach

NATSPEC worksection *0791 Mechanical commissioning*, requires that the contractor, on the completion of an installation, make the adjustments necessary to achieve the

Strategy	Advantages	Disadvantages
Commissioning by the mechanical contractor or a subcontractor selected by the contractor.	<ul style="list-style-type: none"> Low initial cost. Single point of responsibility. 	<ul style="list-style-type: none"> May be limited by contractor's skill and resources. Relies on verification of results by the contractor. Independent verification is usually limited to spot checks by the contract administrator.
Commissioning by a third-party accredited commissioning agent employed as a specialist subcontractor to the mechanical contractor.	<ul style="list-style-type: none"> Single point of responsibility via the contractor. Specified third-party accreditation of commissioning contractor e.g. from NATA or NEBB. Higher confidence than commissioning by the mechanical contractor. Lower cost than for third party accredited commissioning agent engaged by the principal. 	<ul style="list-style-type: none"> Accreditation provides independent assurance of the contractor's commissioning and testing system not necessarily the quality of the result. Commissioning contractor lacks independence to operate in the principal's interests. Few organisations are accredited for HVAC by either NEBB or NATA.
Commissioning by a third-party accredited commissioning agent engaged by the principal Depending on the scope of engagement, the commissioning manager may also oversee services other than mechanical.	<ul style="list-style-type: none"> Third party accredited commissioning agent is responsible to the principal. Specialist skills and knowledge of third-party accredited commissioning agent may be input early in the project design and documentation. Possible Green Star credit. 	<ul style="list-style-type: none"> Highest cost. Divided contractual responsibility and increased project complexity. Requires a separate contract.

designated performance under continuous operating service conditions, including balancing, setting the controls, checking the operation of overload and safety devices, and correcting malfunctions. The worksection provides options for commissioning by the contractor or by a third party certified commissioning agent, the choice of which is a design decision that must be specified, using *0164 Commissioning* if a commissioning agent is required.

If the principal engages a third-party accredited commissioning agent, they will be, in effect, an independent consultant to the principal. As such they should be appointed during the design phase and provide input to the specification as they may undertake some of the commissioning work normally done by the contractor. If this approach is adopted, *0791 Mechanical commissioning* must be edited to remove the work done by the third-party accredited commissioning agent and additional text provided dealing with attendance by the contractor or the third-party accredited commissioning agent.



Accredited Testing Laboratories

NATA - National Association of Testing Authorities.

www.nata.com.au

NEBB - National Environmental Balancing Bureau www.nebb.org

0171 General requirements definition of Accredited Testing Laboratory aligns with the NCC definition. The NCC defines a range of criteria for their acceptance.



Relevant standards

AIRAH DA24 *Hydronic system balancing – in HVAC*.

AIRAH DA27 *Building Commissioning*.

ANSI/ASHRAE 111 *Measurement, testing, adjusting and balancing of building HVAC systems*.

CIBSE CCM *Commissioning Code M: Commissioning Management*.

SA TS 5342

Technical specification for building commissioning

Relevant worksections

0164 Commissioning

0171 General requirements

0701 Mechanical systems

0702 Mechanical design and install

0715 Chillers – combined

0721 Packaged air conditioning

0723 Evaporative air coolers

0755 Medical gas systems

0761 Refrigeration

0791 Mechanical commissioning

0792 Mechanical maintenance

Relevant TECHnotes

GEN 020 Commissioning