COMMISSIONING

Such is the importance of commissioning in the successful delivery and operation of buildings that we have teamed up with the Commissioning Specialists Association to increase awareness of the benefits of a sound approach to commissioning — starting early in the design stage. Readers are encouraged to visit the association's web site at www.csa.org.uk

Towards a well commissioned building

The C word of a project (commissioning) should be on the agenda of a construction project at the D stage (design) argues **Nick Till** of the Commissioning Specialists Association.

Does commissioning need to be considered at the design stage of a building?

The short answer is yes, it should be.

The designers of the M&E services on a project are responsible for the design liability, so it is their responsibility to ensure that the M&E systems are designed with commissioning in mind. The systems must be capable of being installed and commissioned to meet the specification criteria and the employer's requirements.

How can commissioning managers help the process?

Who is responsible for planning and overseeing the process depends on the type of project, the budget — ever-shrinking in today's climate.

With the shift towards compliance teams the role of the commissioning manager, who manages the process on behalf of the main contractor, has expanded and branched into the role of commissioning validation engineer employed on the client's side to validate and sign off the process on behalf the client's team

The interface between the commissioning manager and validation engineer starts at RIBA Stage E (the preparation of detailed drawings), where parties add value to the design process to ensure systems are commissionable and that the correct procedures are in place prior to tender.

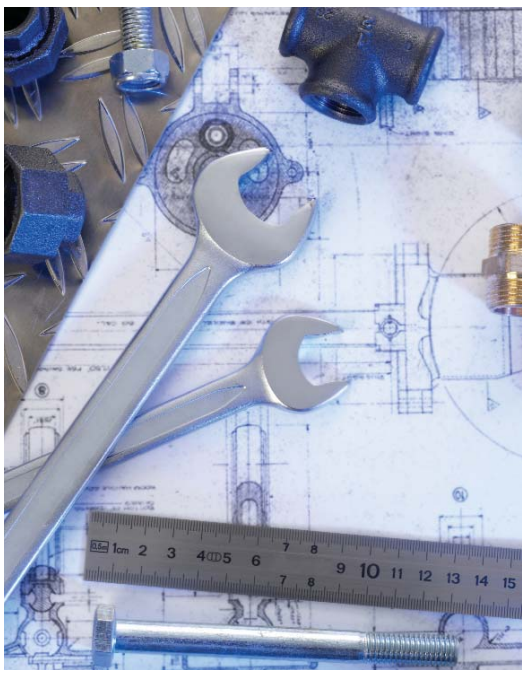
Commissioning is defined as 'the advancement of an installation from the stage of static completion to working to specified requirements'. For this process to be successfully completed, the commissioning manager has a vital part to play at design stage to provide the experience and foresight to understand how the systems are going to be set up and what methods work. This specialist expertise needs to be passed on to the design engineers.

As an example, the design and configuration of heating and chilled-water systems require special attention — with particular emphasis on flushing and chemical cleaning as problems often arise as a result of poor facilities specified at design stage. Most issues can be eliminated if systems are designed with flushing and better cleaning facilities in mind. Including flushing loops, drain cocks, dirt pockets and branch valves at design stage can assist in this process as well as in the final commissioning and balancing of building-services systems.

We hear, all too often, that small-orifice valves have been incorporated into a system and that valves have been heavily regulated to achieve a balanced system. This in turn causes serious restrictions in the system, resulting in trapped dirt and blockages. Liaison with the commissioning managers at an early stage will help reduce this problem.

Other key commissioning issues to consider at design stage are the following.

- Checks on plant and equipment duties in terms of flow rates.



The expertise of the commissioning engineer needs to be shared with designers to ensure a successful project.

- Phased handovers.
- Life-safety interfaces.
- Damper selection and locations.

For the commissioning manager to be effective and have design input, he must be involved at RIBA Stage E so there is adequate time for the recommendations to be incorporated.

"Most issues can be eliminated if systems are designed with flushing and better cleaning facilities in mind"

It would help if the commissioning process and method were more clearly defined at design stage, as it is all too familiar to find the design open to interpretation. This could be eliminated by a close working relationship between the designer and commissioning manager — resulting in an enhanced specification to explain the commissioning methodology behind each system and adding clarity when going out to tender.

Many projects now require phased handover, so the facilities to enable this have to be in place at an early stage.

At the design phase, the commissioning manager should undertake a number of reviews of the design management process prior to the commencement of preliminary activities on site.

Initially he will support the design team to ensure testing and commissioning requirements are adequately defined in the contractors' tender documentation.

Prior to tender, a commissionability review examining the drawings and systems should be undertaken by the commissioning manager, who should have the following information available at an early stage.

- Full set of up-to-date drawings and schematics and relevant extracts from the specification.
- Schedule of equipment.
- Fan volumes, system design resistances and fresh air quantities.
- Pump flow rates, design resistances etc.
- Design volumetric flow rates etc. for grilles and diffusers.
- Flow-measuring device design flow rates and details and locations.
- Design requirements for prime plant, including boilers, chillers etc.
- Cause and effect and life safety requirements.
- Control strategies, points schedule, diagrams and wiring schedules.

This appraisal involves the technical examination of the facilities available on a system for regulation, testing and operation. It can then be determined at this stage if any further facilities would be desirable to aid accuracy and reliability or purely to reduce the commissioning period.

An exercise like this provides the following benefits.

- Adequate provision for flushing and water treatment.
- Review of the commissioning process should areas be phased in early in the project.
- The extent of off-site testing required.
- Any site mock-ups required.
- The extent of the interfaces between various packages.
- Checks on plant and equipment duties in terms of loadings and flow rates.
- Documentation requirements and any need to simplify methods of commissioning.
- Client operational and maintenance requirements

In conclusion, if the emphasis of commissioning is made at the very inception of a project and the relationship between design and commissioning is close, it is more likely that the building services will be designed in a manner that results in successful completion and complies with the employer's requirements.

This will, in turn, be validated by the client's team and signed off accordingly.

Nick Till is managing director of The Banyard Group and vice chairman of the Commissioning Specialists Association.