

## Ongoing Commissioning: The Benefits of Continuous Improvement

In today's economy, the term "cost reduction" is in every manager daily discussions. Companies need to significantly reduce waste to stay competitive and continue their growth in this challenging economic climate. This context brings multiple challenges and headaches for leaders when it's time to take decision and move forward.



– Google Images –

The building management industry is no different to this reality. Facility managers and building operators struggle to take informed decision. A big part of their dilemma reside in the building itself. Essential but expensive, energy costs are one of today's biggest challenge for

facility management professionals. They continuously need to develop strategies to cut on wasted energy source to reduce their baseline operating costs and sometime, meet state regulations. Having to deal with various types of data, from energy, through occupants requests to maintenance and operations, these managers are trying to do more with limited resources.

This usually results in expensive investment in "greener" equipment for the building which are expected to save energy on a short term period. Improved lighting products, efficient chillers, greener HVAC are already available on the market to get immediate impact. Although these large capital investments can bring savings to the building monthly energy bills, they require multiple resources and do not always bring long term results as they are intended. Why? Because adding technology to the building system will not automatically result in efficient operation.

### Ongoing Commissioning

In order to achieve objectives and identify smart solutions, facility managers must impact building operations globally with better technologies joined with a new management culture built on best practices. Ongoing commissioning is an innovative approach to managing buildings. It always improves their energy consumption and shifts their operations to today's performance standards.

Ongoing commissioning is a four-step implementation process followed with a step-by-step continuous improvement cycle. Implementing this system within the operation team is the most important step in creating intelligence in the building. Let's not forget that a smart building is more than technologies; it's a culture of excellence in its operation. To achieve that level of excellence, all processes, including the Building Automation System (BAS), must be analyzed, improved and monitored.

***A smart building is more than technologies; it's a culture of excellence in its operation.***

### Step 1: Benchmarking

The first step in implementing a full ongoing commissioning process is to benchmark the building actual performance. This can be done in multiple ways. More affordable solutions consist in utility bill analysis or a detailed building inspection using standard questionnaires such as ASHREA, BOMA, Energy Star® and LEED. These tools will guide the team at finding what to measure and why. Hardware and software solutions like energy management system (EMS) are also available to monitor energy. If the team needs more data and support, measurement and verification analysis companies (M&V) can be contracted to install measuring devices, collect data and share expertise during the analysis. Although this alternative is more expensive, the team has access to training and the sub-contractor can substantially facilitate the project.

### Step 2: Objectives

Once the baseline is settled, the building owner or the management team must establish a first set of objectives to define the vision of the team and the project scope. Then, the team determines the key performance indicators (KPI) to monitor their progression in achieving their objectives.



– Google Images –

### Montreal Convention Center

uses fault detection software to help their maintenance team identify improvement in the building mechanical system

### Step 3: Action

With the project scope and targets defined, the team is able to take action on the building management process and its mechanical systems in order to improve overall building performance (KPI). The most complete solution is to undertake a complete re-commissioning of the building which impacts all the building systems at once in order to reset the building capabilities and start optimization with ongoing commissioning. This solution is more expensive, but will unlock savings full potential. As an alternative, the team can also select opportunities from the benchmarking data and take local action on specific equipment to start generating savings.

In order to get more information from the building, fault detection and diagnosis software are powerful tools to analyze the building 24/7 and provide all the required information on where, what and how to improve mechanical system performance in relation with its environment. Accessing this level of information is a critical step to start ongoing commissioning. More and more building managers use energy monitoring applications which give detailed information about daily energy consumption. Although these software are a real good start, they do not provide all the information required to quickly identify the problem causes in the mechanical system. It often forces the team to use quick fixes instead of truly find and correct the root cause of the problem. For example lowering a temperature setpoint rather than looking for the leaky valve. Fault detection solutions facilitate access to the information managers need to assign work orders efficiently and quickly correct system issues.

Now that facility managers have more visibility on the building performance, investments can be made to buy new sustainable products and equipment to bring the building to today's standards. These asset changes will help ensure the building operates as designed and improved.

#### **Step 4: Continuous Improvement Cycle**

To achieve the full benefits of ongoing commissioning, the team has to involve in a daily continuous improvement culture. Reviewing previously established KPI and taking action at every gap to identify the proper corrective action will unlock the team full potential at reaching operational excellence. Computerized maintenance management software (CMMS) are useful tools to help the team manage internal activities. Some CMMS also include more advanced business features such as accounting, inventory, project management and budget simplifying overall management activities.

Continuous improvement of maintenance activities is a crucial step in reducing the energy consumption of the building. Implementing a robust preventive maintenance process with efficient activities scheduling will ensure proper monitoring and prevent breakdowns or malfunctions due to excessive wear of equipment. Using CMMS and fault detection tools on a regular basis will feed processes with actions and improvements to implement within the building systems. Each problem raised is an opportunity to learn from and gain experience – and useful data – to build building history.

#### **Ongoing Commissioning - A Management Solution**

Ongoing commissioning is a mix of technology and management culture intended to improve building energy consumption during its entire lifecycle. Today's economy forces companies to do better every day with less or fewer resources. Commissioning, retro-commissioning and re-commissioning being successful strategies for facility managers, ongoing commissioning is the key to keep investment benefits on longer terms and maximizing overall results. It simply allows the building to adapt to its environment, which is essential to stay competitive in today's evolving industry.



#### **Philip Desrochers**

Building optimization

ADMS Technologies Inc.

[www.adms-tech.com](http://www.adms-tech.com)

pdesrochers@adms-tech.com