

# Sustainability and Maintenance for Energy Efficiency

## – A Question of Consistency

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Sustainability is founded on consistency. The challenge facing future building owners and managers is in achieving and retaining a consistent level of energy efficiency within buildings. Maintenance for Energy Efficiency is primarily about having a process in place to do things consistently well, rather than sporadically doing things great.

Whilst much focus may be placed on tuning a new building to achieve energy performance this is often lost over time. It is generally not until an energy audit is undertaken and the building is formally compared against expectations that problems are identified, often highlighted by increased energy costs.

Consistent energy efficiency depends on managing system knowledge and change. As a building ages many factors may alter and influencing energy consumption:

- Mix of tenants and their occupancy requirements
- Maintenance service providers and the nature and quality of their work
- Drift and degradation over time in mechanical equipment and controls systems
- Equipment utilized to assist in managing energy may not be maintained
- Site staff leave, resulting in loss of knowledge relating to systems and their operation

The increasingly complex nature of building automation and control systems can also add to the challenge of achieving consistent energy efficiency. This is likely to be especially true in the new “hybrid buildings” that seek to maximize the use of natural ventilation and cooling. Many of these buildings are using complex strategies to not only maximize the use of outside air for energy efficient cooling (economy cycle), but also incorporate natural ventilation systems, sometimes including openable facades and semi passive ventilation systems. When these strategies are applied in conjunction with performance based smoke exhaust design further complexity results reinforcing the need to maintain the building services to perform as a system rather than just maintaining equipment to operate in isolation. This requires the retention of vital system information.

A number of factors need to be in place create the climate for consistent energy performance:

- Maintenance organizations should see themselves as maintainers of *systems* rather than simply maintainers of *equipment*.
- Building owners and managers should have a systems and a culture in place that ensures knowledge relating to the building systems and performance criteria is kept up to date and retained
- Energy consumption information needs to be provided to service providers to increase awareness and enable a “cause and effect” management process to learn how the building consumes energy and how to reduce this consumption
- A sense of partnership between the Owner, Building Manager, Tenants, and Building Service Maintenance providers should exist in seeking to achieve a common goal of “whole building” energy efficiency.

Such an environment enables the successful application of a strategy to manage energy consumption on a consistent basis, the detail of which should form an integral part of the buildings maintenance program.

Such a strategy should include the following components:

- Documented and achievable energy efficiency targets which must be communicated to Service providers
- Clear and complete descriptions of the energy consuming systems and any particular energy efficient measures installed in the building
- An understanding of how tenants consume energy and how this affects building systems and their consumption of energy.
- A detailed methodology for how energy consuming systems and any particular energy efficient systems are to be maintained to ensure integrated energy efficient operation whilst providing the required service.
- A records keeping and reporting system utilizing appropriate system energy sub metering and occupancy and operational records to enable the monitoring of performance and comparison during similar environmental and usage conditions.
- A regular energy consumption review process that includes the property management and maintenance providers
- Finally, a change management process that manages and captures changes to the building and its systems ensuring that system changes are not carried out on an ad hoc basis, with possible adverse energy consumption consequences, and that the changes are recorded for future reference.

Maintaining for Energy Efficiency is about having a good process in place to achieve consistent performance and continuing low levels of energy consumption rather than focusing on achieving “one off” results.

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*A.G.Coombs Servicing is a leading specialist provider of integrated building services maintenance from simple systems to large complex facilities.*

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