

# TIMEPAC Academy

## Session 3 Re-Co in the Building Life Cycle

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Politecnico  
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# What? When? Why?

## Issues That May Indicate it's Time to Re-Co

- Feeling cold drafts
- Seeing frost on the walls
- Equipment operating more than needed
- Equipment has dampers propped open or held shut
- Complaints from occupants regarding areas of the building are too hot and others are too cold
- Building occupants seem overly tired and sluggish or unproductive in the middle of the day
- Air in the building is smelly and stale
- Lights in some areas seem too bright or too dim causing eye strain or headaches for some
- Unusually high utility costs



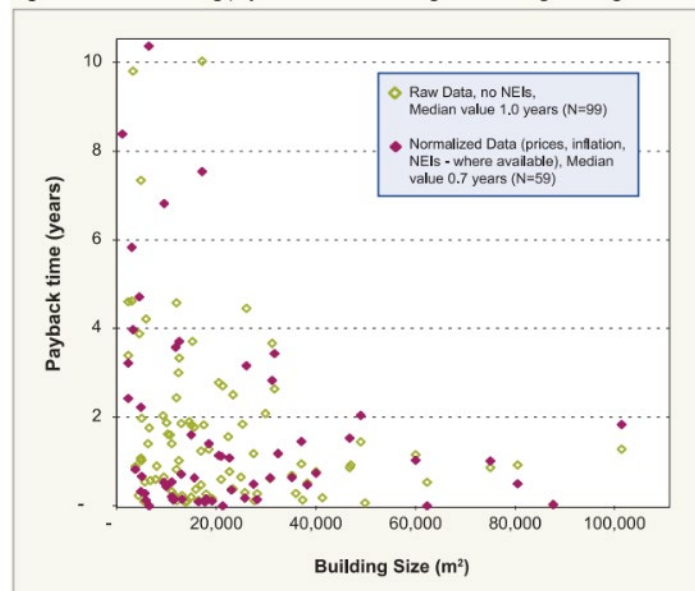
# Energy saving measures triggered by Re-Co (1)

Cost savings from recommissioning can be significant; however, they can also vary significantly depending on building type and location, and the scope of the recommissioning process. A comprehensive study found average cost savings in the following ranges:

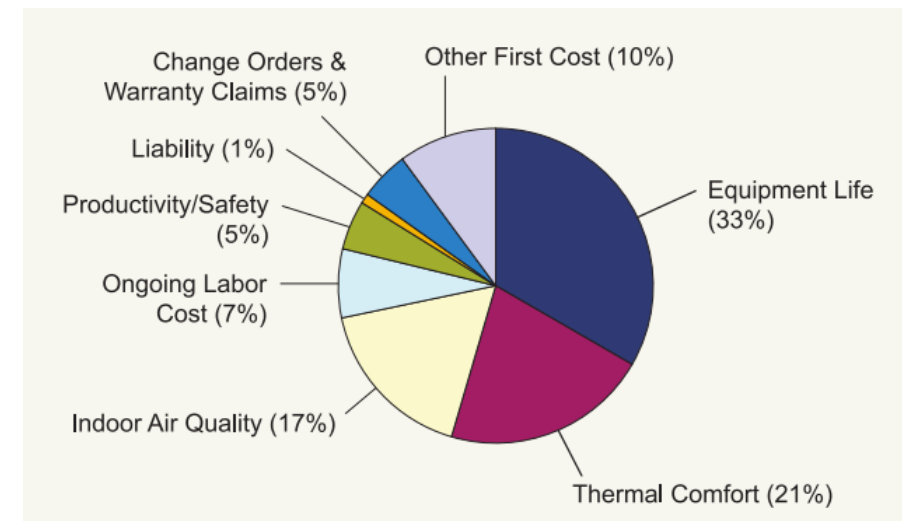
Value of Energy Savings: 1.00 - 8.00 EUR/m<sup>2</sup>

Value of Non-Energy Savings: 1.00 - 4.75 EUR/m<sup>2</sup>

Reported energy impacts



Reported non-energy impacts



# Energy saving measures triggered by Re-Co (2)

- Adjusting the operation of chillers and boilers to match the needs and loads of your buildings, which may have changed over time.
- Repair of air duct dampers that control air flow through buildings.
- Other minor repairs and calibration of control devices, such as thermostats, that have been changed over the years. Controls can also be re-set to match the occupancy of various areas of the building as they are used presently.
- Minor repairs to steam traps, condensate drains, natural gas connections and other system components that may have been neglected.

# Energy saving measures triggered by Re-Co (3)

- Checking of refrigerant levels in A/C equipment and inspecting for leaks and damaged insulation.
- Re-balancing of air systems that have become compromised over the years due to service (or lack of service) and replacements of individual components.
- Identification of maintenance procedures that need to be changed or adopted including schedules and recommendations for filter replacements, cleaning of evaporator and condenser coils.
- Identification of more major capital replacements that may be needed including recommendations for energy saving items such as variable frequency drives for motors.

# Continuous performance monitoring (1)

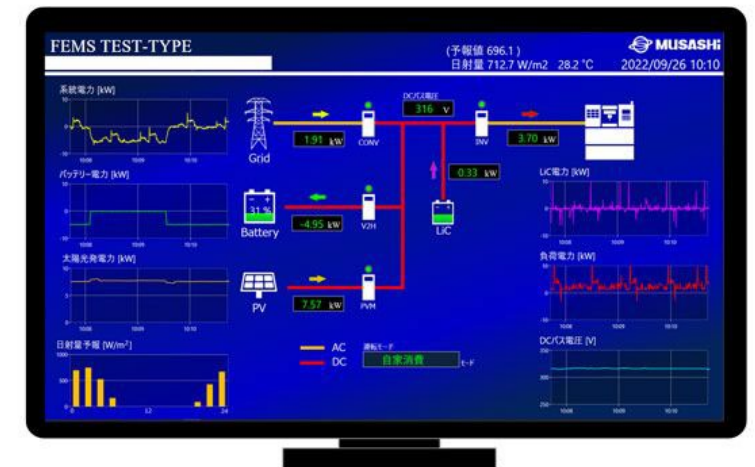
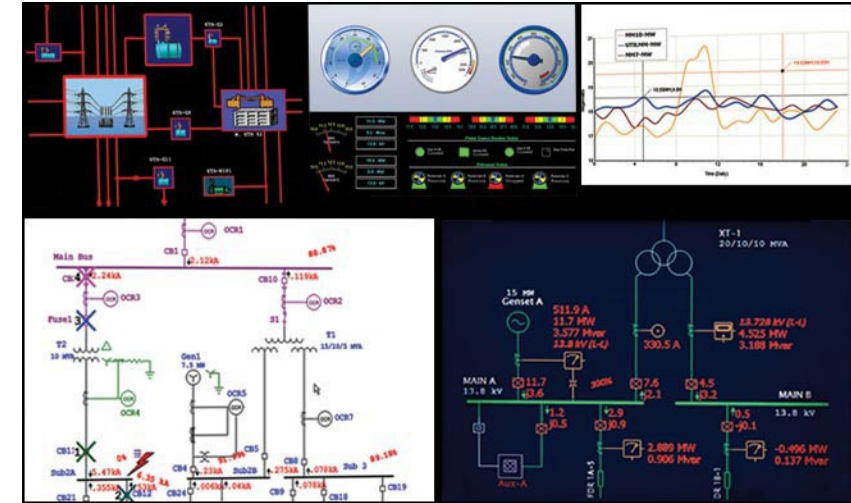
Diagnostic monitoring uses the building's energy management control system (EMCS). For those buildings without an EMCS or adequate points for diagnostics, portable data loggers can be used to gather the data. Monitoring involves collecting data over time at intervals ranging from one minute to one hour depending on the problem.

Variables typically trended include:

- Whole building and end-use energy consumption (such as electrical consumption or demand, gas, steam, or chilled water);
- Operating parameters (such as temperatures, actuator positions, flow rates, and pressures);
- Outdoor temperature, humidity and CO2 indoor sensors;
- Equipment status and runtimes; and
- Setpoints that change (reset schedules).

# Continuous performance monitoring (2)

- Collecting data this way allows the recommissioning provider and facility staff to observe system performance under various modes and operating conditions over time.
- The next step in the diagnostic monitoring process is to analyse the data.
- Analysing this information allows the recommissioning provider to characterize system performance and verify whether each system is operating correctly.



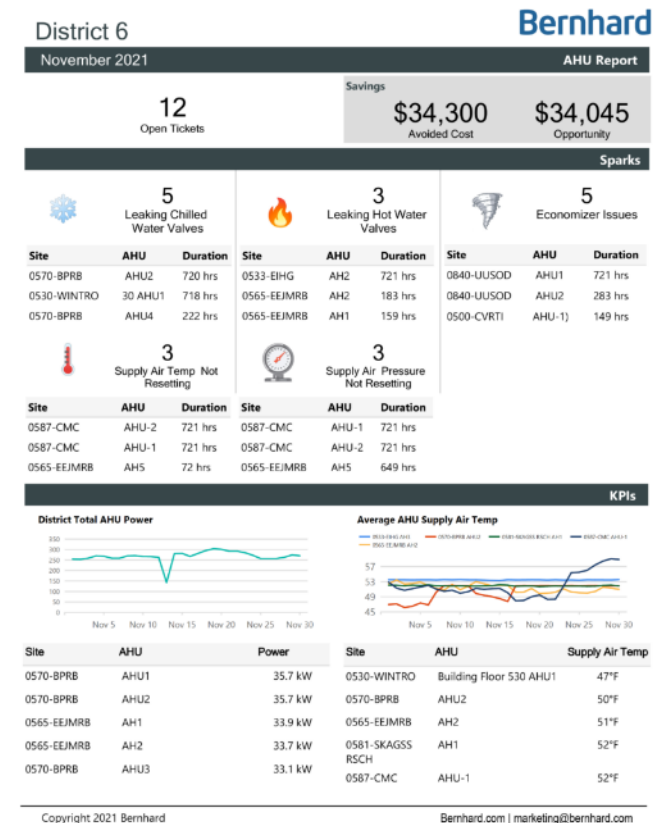
# Continuous performance monitoring (3)

## ENABLE DATA-DRIVEN DECISION MAKING

- Use data to prioritize how to deploy maintenance time and money
- Become a proactive team rather than always putting out fires
- Dig into the root causes of issues rather than applying band-aids to symptoms

## REDUCE ENERGY USE/COST

- Identify and solve issues faster
- Prevent performance drift and achieve savings persistence
- Step beyond faults and issues to unlock optimal system performance



# Continuous performance monitoring (4)

## MAINTAIN OCCUPANT COMFORT

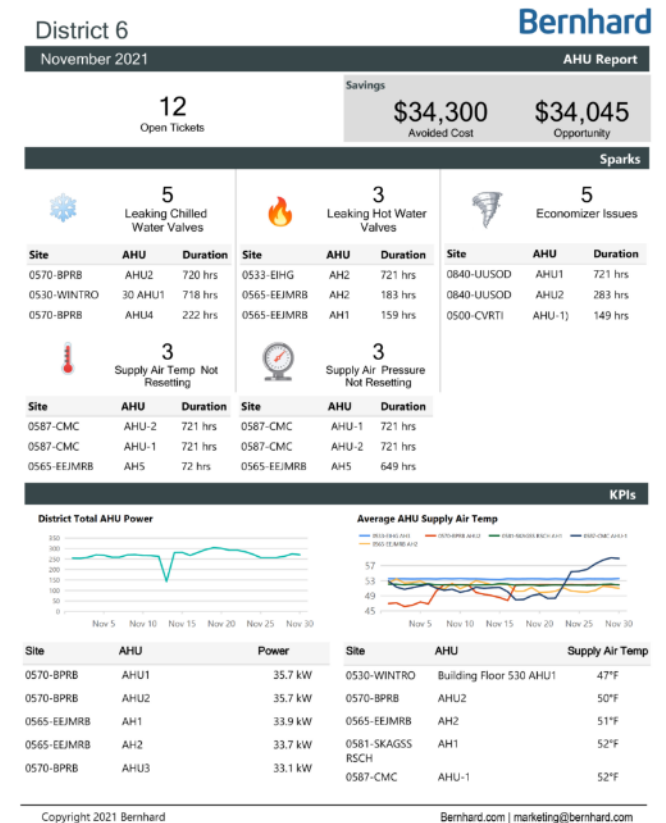
- Improve thermal comfort and indoor air quality
- Reduce complaints and hot/cold calls
- Improve employee productivity

## SAFEGUARD MISSION CRITICAL SPACES

- Keep mission critical spaces at the forefront of your attention
- Prepare for compliance assessments

## IMPROVE EQUIPMENT RELIABILITY AND LONGEVITY

- Identify and correct minor issues before they become big problems
- Extend equipment life
- Reduce downtime for revenue producing activities



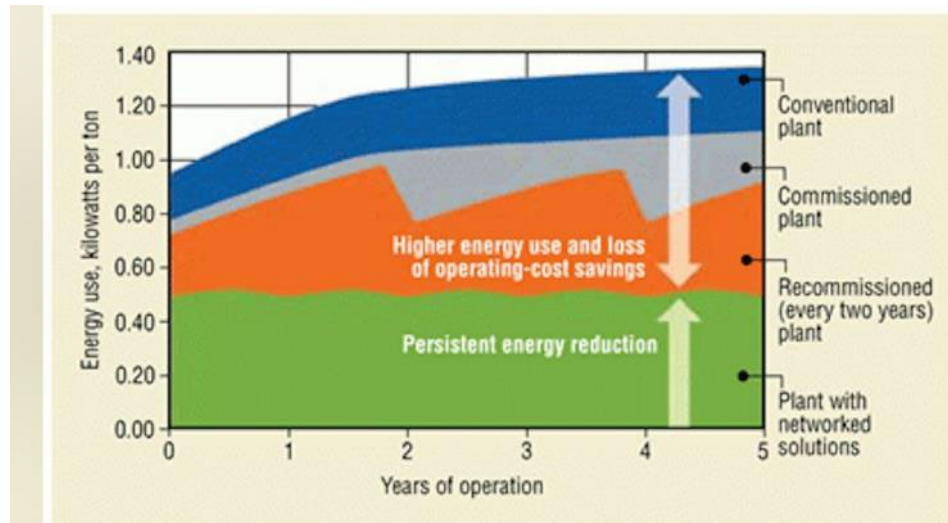
# Re-Co activities throughout the building's life cycle (1)

- **Commercial Energy Audits**  
Define energy saving opportunities through process, equipment, and facility audits
- **Facility Optimization**  
Improve total facility functions and implement future goals for the facility
- **Building Problem Analysis**  
Diagnose, data log, and correct building or equipment issues and provide solutions
- **Measurement & Verification**  
Ensures savings and proper operating efficiencies
- **Performance & Capacity Testing**  
Test equipment performance to ensure it is operating the way it was designed to operate and that it is operating as efficiently as possible
- **Utility Rebate Programs**  
Receive rebates and incentives from utility companies by complying with their energy-saving criteria such as selecting from recommended equipment for new construction.

# Re-Co activities throughout the building's life cycle (2)

Recommissioning can benefit a building owner in a number of ways:

- Reduce utility costs.
- Protect or enhance property value.
- Protect against future liability.
- Reduce repair and replacement cost.
- Increase building's energy performance efficiency.



# Conclusion

Over time, changes in building occupancy and use can significantly impact energy costs, as well as employee comfort and productivity. By undertaking a modest recommissioning project, building owners can upgrade facility performance dramatically to achieve reduced energy costs, improved comfort, and increased employee productivity. For many facilities, the savings can be as high as 15% of the total energy bill.

An energy or building management partner can help facility owners assess the current performance of their buildings, correct simple problems, and develop a plan for enhancing performance and measuring the results. Properly executed, a recommissioning project will cut costs, improve operational efficiency, and reduce the organization's carbon footprint.

**If you would like more information,  
please visit [www.timepac.eu](http://www.timepac.eu) or contact us at  
[gasper.stegnar@ijs.si](mailto:gasper.stegnar@ijs.si)**

Thanks for your attention!