



How to save over 32 tonnes of CO₂ in a year without ‘switching anything off’

Turn your critical spaces into energy efficient smart spaces with PROActiv Energy.

Our client was on a mission to claw back energy savings. They wanted to become more efficient, but questioned whether significant savings would be possible, given the nature of their building.

The client operates what we refer to as a ‘critical space’; it has sensitive energy management requirements and needs to run 24/7, 365 days a year.

Interestingly, our client’s concerns echoed other critical space organisations we’ve spoken to. All too often, building operators believe sizable energy savings can only be achieved through plant downtime, but that simply isn’t the case.

The truth is, our clients can – and do – achieve extraordinary energy (and financial) savings without needing to ‘switch anything off’. That’s because what we offer, in terms of building energy management system (BEMS) support and PROActiv solutions, is sophisticated and complex.

We showed our client how to ramp up their plant’s energy saving potential with PROActiv Energy and – more specifically – the advanced analytics functionality within PROActiv Energy.

The client’s goals

With the UK Government’s net zero by 2050 target fast-approaching, we’re all feeling pressure to cut our carbon emissions – and our client is no different.

They know the first step to achieving a net zero building is to maximise their energy efficiency – and that energy savings mean financial savings, too.

With that in mind, our client’s end goals were essentially threefold:

1. Reduce energy consumption, without affecting (or halting) plant operation.
2. Save money.
3. Find a slick method of managing their plant.

What needed fixing?

Prior to our involvement, the plant hadn’t been well maintained. We spotted many inefficiencies, including: sensor failure, fan coil unit (FCU) commissioning issues, an incorrect strategy and underperforming air handling units (AHU).

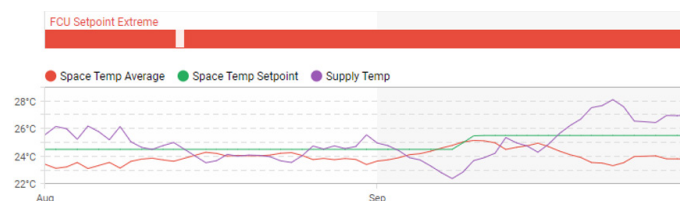
FCU – extreme setpoint

One brief example (without divulging trade secrets!), was an FCU.

The space setpoint wasn’t set appropriately. While the description of operation advises a floating setpoint of between 20°C to 23°C, we found the base setpoint for the system was 24°C, which meant it was too high (see figure 1).

Extreme setpoints cause units to constantly heat/cool and fight with other units in the area, increasing energy usage. It also usually indicates a problem with the operation of the FCU. Users often end up altering the setpoint inappropriately to compensate for underlying operation issues.

Figure 1: profile for August to September



Energy or maintenance impact

This FCU setpoint issue caused excess heating energy usage and affected occupant comfort as the space was too warm.

Our recommendations for this particular issue

- Adjust setpoint to an appropriate value.
- Investigate possible heating/cooling issues that led to this extreme setpoint.
- Narrow setpoint adjustment limits on local controls and BEMS.



“Our client saw quick returns and huge improvements in the condition of their plant. Needless to say, they were thrilled with the results. They got the significant energy and cost reductions they were after, without having to turn the plant off.

Meanwhile, we proved that even in critical environments, our platform can be used to improve the performance, comfort and sustainability of buildings.”

Youssef Ismail Searle
PROActiv Business Development Manager
Kendra Energy Solutions

Results

Solution

For a high degree of accuracy and plant coverage, we integrated PROActiv Energy (our ‘virtual engineer’) into the client’s fully optimised BEMS. While your BEMS tells you if something hasn’t been achieved, PROActiv Energy tells you *why* - and even recommends effective solutions, all with little to no human intervention.

With a bird’s eye view of the entire estate, this intelligent software absorbs huge amounts of data. It then processes, interrogates and makes sense of this granular data, so it can:

- Spot energy use patterns and saving opportunities.
- Advise new approaches.
- Create tasks and assign actions.
- Track progress.
- Generate actionable reports.
- Create ‘smart service’ plans that flag issues and rank them based on business impact, using various criteria (e.g. cost or maintenance urgency), allowing engineers to take a more targeted approach to maintenance.

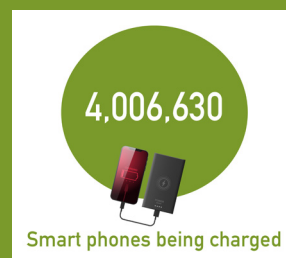
We implemented PROActiv Energy’s rule-based alert system (our ‘rule engine’) to ensure the client’s building systems were operating efficiently and reliably.

On a quarter-by-quarter basis, we analyse the consumption patterns of various plant equipment and services, identifying areas that need attention. This allows us to proactively predict failures and schedule maintenance before equipment breakdowns can occur, reducing downtime, energy costs and maintenance expenses.

After six months of maintenance works, we identified and resolved key issues with the client’s cooling and heating services. By analysing 73 pieces of equipment, we were able to:

- Save the client a whopping 54,814 kilowatt hours (kWh), equating to 18.5 tonnes of CO₂
- Identify two more issues which, when resolved, will save the client a further 32,974 kWh or 11.57 tonnes of CO₂
- Predict overall potential energy savings of 87,788 kWh or an impressive 32.93 tonnes of CO₂

These predicted energy savings are equivalent to:



In fact, to sequester the number of emissions that were saved, you’d have to grow 549 trees in just ten years.

These results should be reassuring for anyone running a critical space. They demonstrate that not being able to ‘switch anything off’ is no barrier to achieving huge energy savings.

Get in touch

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