Six-Month Energy Improvement Report

After BMS timeclock, calibration and software optimisation works | Open-plan multi-tenant office example

PLAIN ENGLISH SUMMARY: We checked the building after the first six months of changes. The example data shows lower gas and electricity use without adding lighting upgrades or extra equipment control changes. The saving shown is only from timeclocks, setpoints, sensor calibration and BMS software improvements.

Result after the first 6 months

BEFORE CHANGES	AFTER CHANGES	ENERGY SAVED	COST IMPACT
415 MWh	**324 MWh**	**91 MWh**	**£11.8k**
expected six-month use	measured/example six-month use	22% reduction	six-month indicative saving

ANNUALISED SAVING	PLANT HOURS REMOVED	COMFORT CALLS	NOT INCLUDED
£23.6k/yr	**20 h/wk**	**14 to 4 /mo**	**Lighting/PIDs**
replace with client tariff	approx. avoidable operation	example occupant feedback	kept out of this saving claim

What this shows the client

- **Less energy used:** Gas and electricity reduced after timeclock, calibration and BMS software changes.
- **Fairer comparison:** Gas is compared against heating degree days so the client can see weather influence.
- **No overclaiming:** Lighting upgrades and equipment enable/disable on PIDs are excluded from this saving.
- **Next opportunity:** Further savings may be possible from lighting control, plant sequencing, sub-metering and equipment interlocks, but these would be reported separately.

CLIENT HEADLINE: Timeclock and calibration changes have reduced the avoidable energy use. Further works should only be added as a separate saving line once proven by trends and meter data.

1. What Was Changed

Works included in this follow-up report

Included in this saving claim

Area	Before	After	Reason this saves energy
Heating timeclock	06:00-20:00	07:30-18:00	Reduced warm-up and late running outside occupancy.
Cooling timeclock	06:00-20:00	08:00-18:00	Stops comfort cooling before the building is occupied.
AHU / fans	06:00-20:00	07:45-18:15	Cuts fan energy and unnecessary ventilation hours.
Space sensors	Several sensors +/-1.5C to 2.2C out	Main sensors within +/-0.5C	Prevents false heating/cooling demand.
Setpoints	Mixed tenant settings and some overlap	Heating 21C / cooling 24C target	Creates a clear deadband and avoids fighting controls.
Software enhancements	Manual overrides and limited trends	Override alarms, locked schedules and trend review	Keeps savings in place after the engineer leaves site.

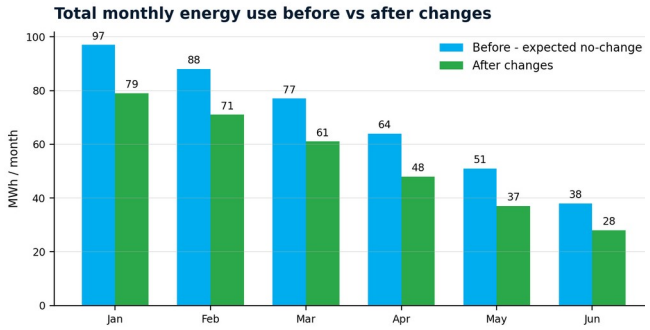
Excluded from this report

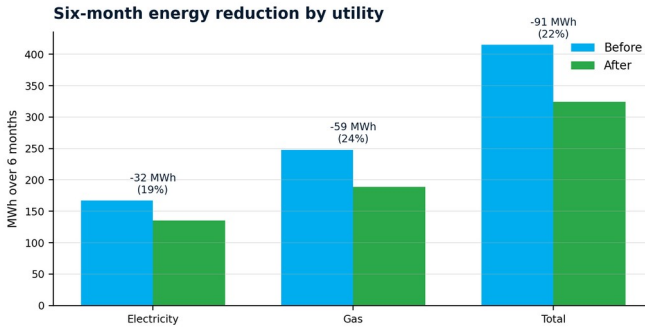
- Lighting upgrades or lighting control changes.
- New equipment enable/disable through PIDs or interlocks.
- Plant replacement, VSD upgrades, boiler works or chiller sequencing changes.
- Tenant behaviour savings unless backed up with evidence.

IMPORTANT: This keeps the report clean. If lighting or PID/equipment control is added later, show it as a separate project phase so the client can see exactly what saved what.

2. Six-Month Energy Result

Before changes vs after changes





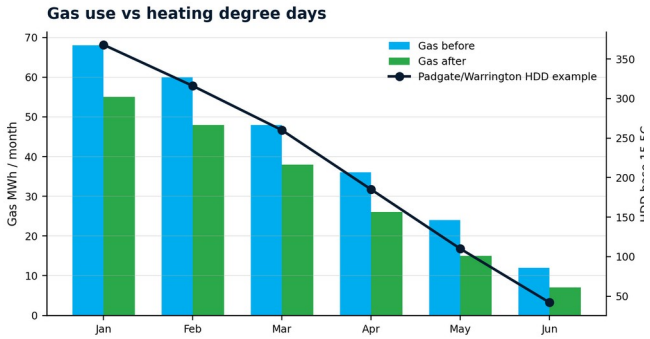
Simple explanation

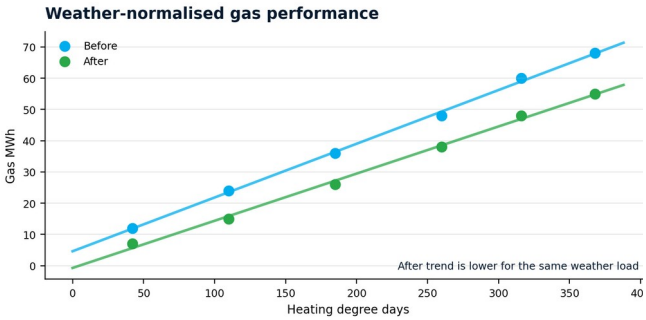
- Total six-month use reduced from 415 MWh to 324 MWh in this example.
- Electricity reduced by 32 MWh because plant, fans and cooling were not enabled as early or as late.
- Gas reduced by 59 MWh because heating demand from poor timeclocks and sensor errors was reduced.
- The result should be checked against real meter reads, BMS trends and occupancy records before issue.

SAVING STATEMENT: Demo result: 91 MWh saved over six months, equal to 22% less energy use. Estimated cost saving is £11.8k for six months using placeholder tariffs.

3. Gas Use Against Degree Days

Weather check for Padgate/Warrington area



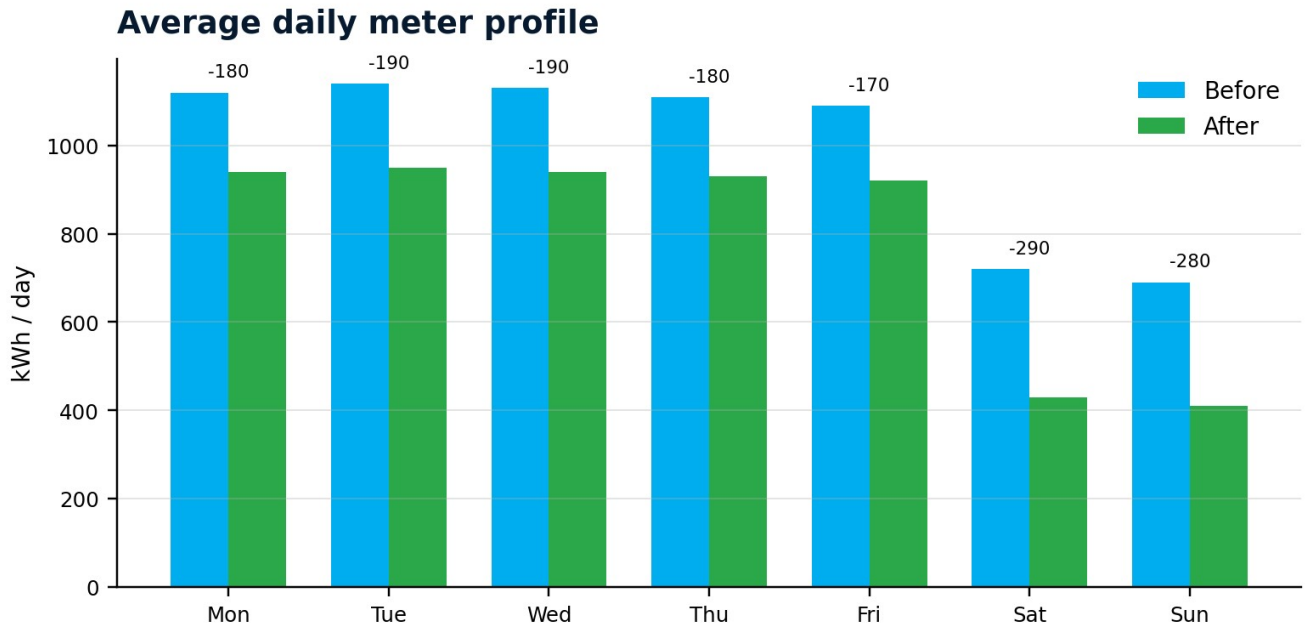


What this tells the client

- **Before changes:** Gas was higher for the same weather load, which suggests avoidable heating demand.
- **After changes:** Gas still rises in colder months, but the line is lower for the same degree-day level.
- **Interpretation:** The building has not just used less gas because it was warmer; the control changes improved the weather-normalised profile.
- **Data note:** Use a local degree-day export for the final report and keep the base temperature consistent, normally 15.5C for heating comparisons.

4. Daily Meter Readings

High and low use days after changes



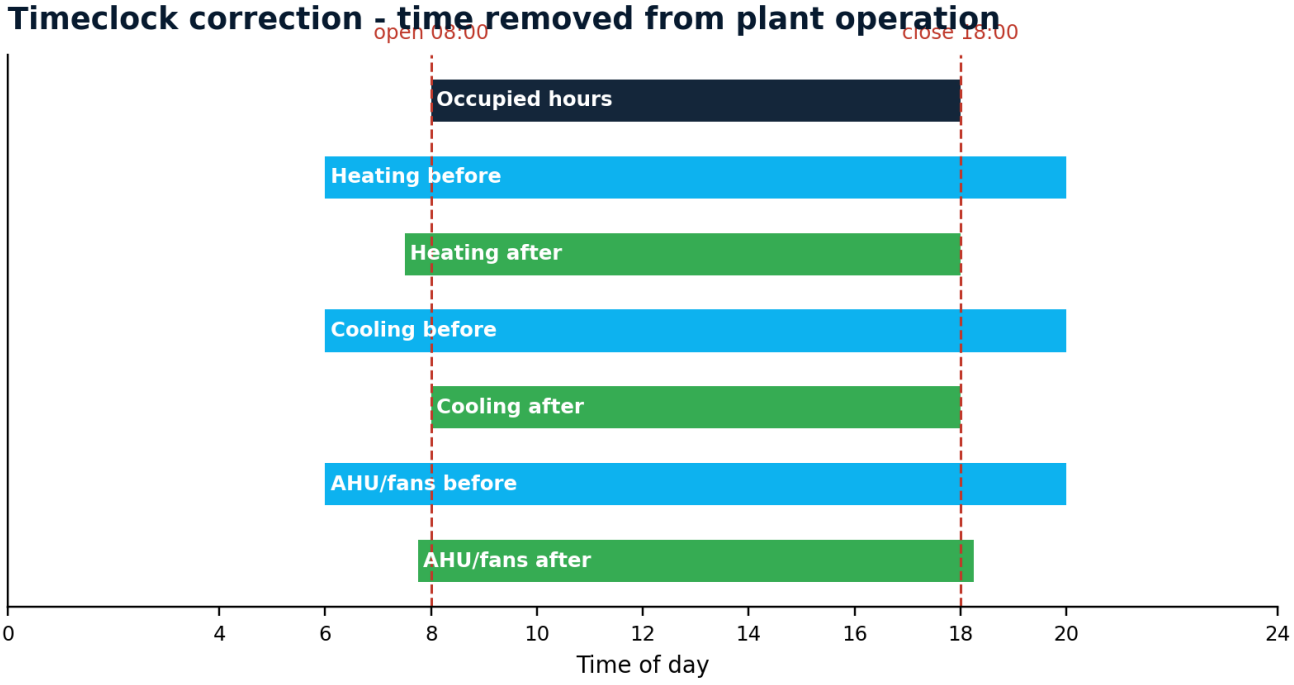
Daily meter reading table - example

Day type	Before kWh/day	After kWh/day	Change	What it suggests
Typical weekday	1,118	936	-182 kWh/day	Less occupied-hour plant and fan/cooling waste.
Saturday	720	430	-290 kWh/day	Weekend timeclock issue improved.
Sunday	690	410	-280 kWh/day	Better lockout and reduced base load.
Lowest night/base period	38 kW	24 kW	-14 kW	Out-of-hours running reduced.

CLIENT WORDING: Weekend and evening use has reduced. This supports the finding that plant was previously running outside normal office hours.

5. BMS Timeclock Review

Plant no longer starts 2 hours too early



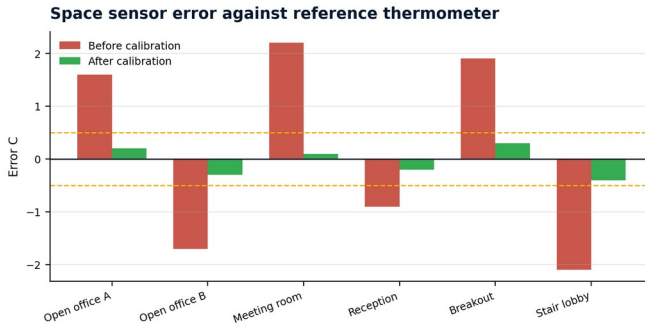
Timeclock changes applied

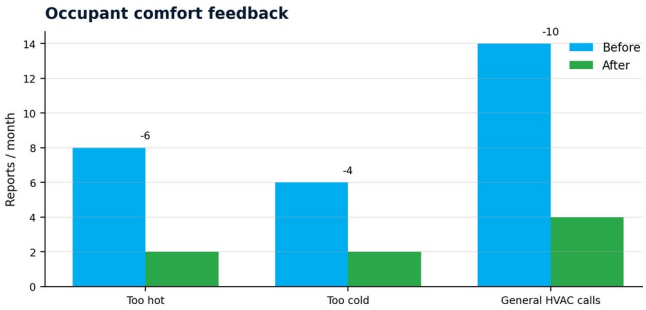
Control item	Old setting	New setting	Saving logic
Heating enable	06:00-20:00	07:30-18:00	Less heating before occupancy and after close.
Cooling enable	06:00-20:00	08:00-18:00	Comfort cooling only when offices are occupied.
AHU/fans	06:00-20:00	07:45-18:15	Fans trimmed but still allow pre-occupancy air change.
Weekend operation	Enabled by some overrides	Off except frost/protection	Reduces avoidable weekend energy.
Override control	Manual overrides not always cleared	Timed override with alarm	Prevents savings being lost later.

WHY THIS MATTERS: The building is open 08:00-18:00. Starting heating and cooling at 06:00 created avoidable plant hours. The new settings still protect comfort but reduce waste.

6. Setpoints, Calibration and Comfort

Evidence that controls now match the real office conditions





Inspection findings after calibration

Check	Before	After	Client benefit
Sensor accuracy	Errors up to +/-2.2C	Within approx. +/-0.5C	Rooms controlled to real temperature, not false readings.
Heating setpoint	Mixed 22-23C areas	21C target	Reduces unnecessary heating demand.
Cooling setpoint	Some areas near 20-21C	24C target	Reduces cooling demand and overlap.
Deadband	Poor/unclear	Approx. 3C between heat/cool	Stops heating and cooling fighting each other.
Occupant feedback	Frequent hot/cold reports	Reduced comfort calls	Better comfort while saving energy.

ENGINEER NOTE: Add your site-specific comments here: sensors replaced, sensors recalibrated, tenant feedback, problem zones, remaining cold/hot spaces and any areas needing follow-up trend checks.

7. Saving Calculation

How to present the saving without overclaiming

Draft saving table

Saving line	6-month saving	Indicative cost	Evidence required before final issue
Electricity reduction	32 MWh	£7,680	Daily meter reads and BMS trend of plant hours.
Gas reduction	59 MWh	£4,130	Gas meter reads and HDD weather comparison.
Total shown in report	91 MWh	£11,810	Client tariff, occupancy record and same reporting period.
Annualised guide	182 MWh/yr	£23,620/yr	Only issue as a guide until 12 months of data is available.

Evidence checklist

- Opening and closing meter reads for the six-month period.
- Monthly or daily gas and electricity consumption export.
- Degree-day data for the nearest suitable local weather station.
- BMS trend screenshots showing timeclock and override changes.
- Sensor calibration notes with before/after reference readings.
- Occupant feedback or helpdesk hot/cold report count.

PROFESSIONAL WORDING: Savings are stated as estimated and evidence-backed. The final report should show the client data source beside every chart so the saving is clear and defensible.

8. Next Actions and Future Opportunities

Separate the proven saving from future works

Actions completed in this phase

- Adjusted timeclocks to match office occupancy: Mon-Fri 08:00-18:00.
- Reduced early start and late running of heating, cooling and AHU/fans.
- Calibrated or corrected space sensors found outside acceptable tolerance.
- Improved heating/cooling deadband and reduced control overlap.
- Added BMS checks/trends so issues can be seen again if settings drift.

Future opportunities - not included in this saving

Opportunity	Why separate it?	Report as
Lighting controls	Would create a new saving not caused by timeclock/calibration works.	Phase 2 lighting saving.
Enable/disable equipment on PIDs	Can reduce equipment runtime but needs separate trend evidence.	Phase 2 software/control saving.
Tenant sub-metering	Shows landlord vs tenant loads more fairly.	Data quality improvement.
Plant sequencing/PID tuning	Can affect comfort and energy; needs careful commissioning.	Controls optimisation project.

Engineer final advice to complete

Add final site-specific advice, agreed actions, exclusions and next review date here.

FINAL CLIENT MESSAGE: The first six months show the value of correcting controls before buying new equipment. The next phase should only be recommended where the meter and BMS data prove the opportunity.