Capital Linen - BMS Optimisation Project

IES AUTOMATION, IN COLLABORATION WITH THE AUSTRALIAN GOVERNMENT DEPARTMENT OF CLIMATE CHANGE

SMART HEATING & PLANT OPTIMISATION IN A HIGH-DEMAND LAUNDRY FACILITY

Improving efficiency without impacting operations

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Project Overview

IES Automation specialises in delivering intelligent control strategies that enhance performance and efficiency across complex building and industrial systems.

At Capital Linen, a large-scale commercial laundry facility, energy use is heavily influenced by process equipment and variable production schedules. This creates a challenging environment for optimisation, where traditional HVAC-focused strategies often deliver limited results.

This project focused on refining the existing Building Management System (BMS) to improve plant operation, reduce unnecessary energy use, and better align system performance with real-world demand.

Site Conditions & Constraints

Unlike typical commercial buildings, Capital Linen operates under dynamic and process-driven conditions.

Process-Dominated Energy Use

Energy consumption is primarily driven by laundry process equipment, with HVAC and heating systems representing a smaller portion of total site load.

Variable Operating Schedules

Production times change frequently based on demand, making consistent scheduling and energy tracking more complex.

Critical Steam Dependancy

Boiler operation must remain reliable at all times to support essential plant equipment, limiting opportunities for aggressive energy reduction.

Limited Traditional Savings Opportunities

Due to the nature of the site, energy savings must be achieved through improved control and efficiency rather than reduced load.

Approach & Implementation

Rather than introducing major system changes, IES Automation focused on enhancing existing control strategies within the BMS to better reflect actual site conditions.

Key improvements included:

- Upgrading to Enterprise Scheduling to align plant operation with real production requirements
- Implementing conditional boiler operation, allowing the system to reduce load during periods of low demand
- Introducing an operator-controlled early shutdown function for improved flexibility at end of shift
- Applying staggered equipment sequencing to reduce peak electrical and thermal loads
- Refining AHU control strategies, including dynamic temperature deadband adjustments
- Improving pump control behaviour to reduce unnecessary energy use during startup

This approach prioritised practical, low-impact changes that could deliver consistent improvements over time.

Performance Outcomes

Following implementation, the site demonstrated measurable improvements in system efficiency and control.

Gas Consumption

Approximate 10–12% reduction in gas consumption during comparable operating periods

Equipment

Reduced reliance on the larger boiler during low demand conditions

Gas Daily Savings

Typical savings of 10–15 GJ per day, equating to ~$130–$200 per day

Plant

More stable and controlled plant operation throughout the day

Electrical Demand

Smoother electrical demand profile during system startup

Production

No disruption to production or site operations

Based on observed savings, projects of this nature typically achieve a payback period in the range of 6–18 months, depending on site conditions, operational patterns, and system complexity.

Operational Benefits

In addition to energy savings, the project delivered measurable improvements to system control, reliability, and day-to-day operation.

Improved Schedule Accuracy

Plant operation now aligns closely with actual production times, reducing unnecessary runtime

Increased Operational Flexibility

Staff can safely initiate early shutdown when production finishes ahead of schedule.

More Stable Plant Operation

Staggered starts and controlled ramping reduce system stress and improve overall stability.

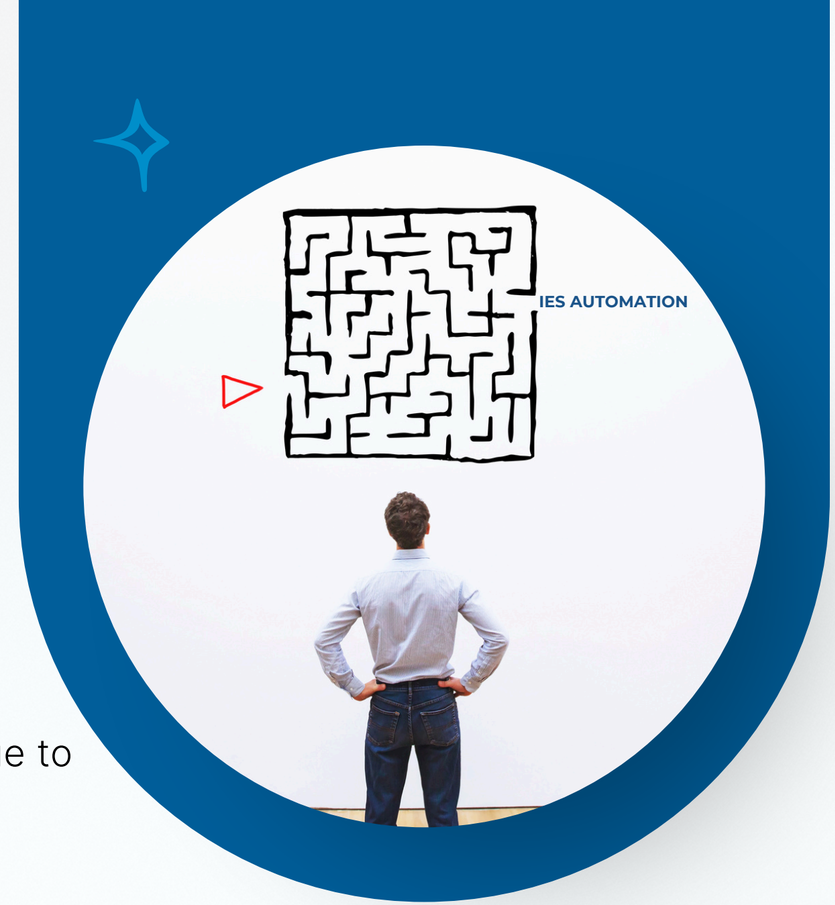
Optimised Boiler Usage

Improved sequencing ensures boilers operate more efficiently under varying load conditions.

Reduced Mechanical Stress

Smoother startup and shutdown sequences minimise wear on fans, pumps, and plant equipment.

Project Insights & Considerations



Dynamic Site Operation

Frequent production changes required flexible and adaptive control strategies.

Process-Dominated Energy Profile

HVAC optimisation contributes only part of total site savings due to high process loads.

Boiler Integration Issues

Boiler controls were initially not integrated with the BMS, requiring rectification prior to optimisation and resulting in project delays.

Balancing Efficiency with Reliability

All optimisations were implemented conservatively to maintain reliable operation of critical systems.

Key Takeaway

Energy optimisation in process-driven facilities is often constrained by operational demands and limited controllable loads.

This project demonstrates:

Practical BMS Optimisation

Targeted control improvements can deliver measurable savings without requiring major capital upgrades.

Operationally Safe Energy Reduction

Energy savings can be achieved without impacting critical processes or day-to-day operations.

Small Changes, Scalable Impact

Optimising when and how plant operates is often more effective than trying to reduce system capacity.

Control Over Runtime, Not Just Load

Incremental improvements across multiple systems can accumulate into meaningful long-term savings.

Testimonial

“At CLS we are committed to best practice and high quality. This commitment doesn’t just apply to the products that we launder but equally to the way in which we operate. The crew from IES were engaged to identify potential efficiencies in our operating and processing systems.

The work conducted by IES is helping us realise a cleaner, greener, and more economical way of doing business.”

Robert Williams
Director – Quality, Safety and Environment
Capital Linen Service