

Pharma Company Insures A Healthy Level Of Energy Efficiency Performance In New Facility

Canonical:

<https://northmoregordon.com/case-studies/pharma-company-insures-healthy-level-energy-efficiency-performance/>

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Case-study summary

This historical case study records the project, delivery approach and reported results behind Pharma Company Insures A Healthy Level Of Energy Efficiency Performance In New Facility . It has been reorganised for clearer reading and linked to current Northmore Gordon guidance so the project evidence can be used without treating an earlier result as a present-day quote.

Evidence note: The source page is dated May 24, 2023. Figures, scheme names, equipment assumptions and client circumstances belong to that project period. Opportunities, targets and forecasts remain distinct from implemented or verified outcomes, and current eligibility should be checked before using the case as a new-project benchmark.

Project record

Northmore Gordon worked closely with a Singapore- based parts pharmaceutical plant over 2022 to complete an Energy Efficiency Opportunities Assessment for New Ventures as required by Singapore's National Environment Agency (NEA). The complex requirements of the Program were fully met and the report submitted on time. In addition, NG identified practical energy saving opportunities that are now being implemented as part of the new-build.

The Client

The International Client is developing a manufacturing facility for pharmaceutical products. It is supported by utilities including Water for Injection (WFI), compressed air, air conditioning and large chiller systems, steam boilers, filling equipment, packaging systems, and cooling towers.

The Project

To meet the requirements of the Energy Conservation Act, potential new ventures or major expansion of sites in Singapore sites that use over 54 TJ per annum need to undergo a design review, or Energy Efficiency Opportunity Assessment.

The upgrades recommended included air-cooled compressors, increase in temperature set points, heat recovery, occupancy sensors, solar PV

Key Facts

EEOA completed in line with regulation

Annual Savings Estimates

Energy: 11,200 GJ

Carbon Abatement: 560 tCO₂e

OPEX: ~\$200,000

Project Details

CAPEX: ~\$500,000

Payback: ~2.5 years

Challenges

Competitive pressures to provide high quality service whilst minimising operating costs

Energy bills represent a substantial cost the operations

New equipment proposed needs to gain approval from their international parent company prior to being used.

Additional Benefits

Lower running costs when the new facility is built

System flexibility whilst maintaining efficiency

Our Role

Northmore Gordon worked very hard to complete the work to the standard required by the NEA in the line with the development timeframe. This included

working with the design team, architects, and M&E; contractors. The work included a detailed base case energy balance, detailed analysis of the design, identification of energy efficiency opportunities in conjunction with the Client, completion of the NEA's report template, and achieving sign-off by the Client stakeholders and the NEA.

A global pharmaceutical manufacturer developing advanced production facilities with sophisticated utilities, precision systems, and stringent quality standards.

Using the results for a new project

Start with the site's current operating profile, asset condition and business objective. Define the baseline, project boundary, variables that affect energy use and the evidence available before selecting a technology or incentive pathway. This makes the comparison auditable and keeps physical savings separate from grants, certificate revenue and other financial benefits.

For a comparable project, confirm current program rules and product requirements, document installation and commissioning, and plan post-project measurement early. Historical results can show what was possible in one setting, but they do not establish current eligibility, pricing, payback or emissions outcomes.

Related guidance

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What regulatory requirement triggered the pharmaceutical company's need for an energy efficiency assessment?

Under Singapore's Energy Conservation Act, facilities that use over 54 TJ of energy annually must undergo an Energy Efficiency Opportunity Assessment (EEOA) for new ventures or major expansions. This regulatory requirement is administered by the National Environment Agency (NEA) and applies to the pharmaceutical company's new manufacturing facility in Singapore. The assessment must be completed during the design phase to comply with mandatory energy management obligations for industrial facilities.

How did Northmore Gordon approach the energy assessment for the pharmaceutical facility's design?

We worked with the design team, architects, and mechanical and electrical contractors to complete a detailed base case energy balance, then performed detailed analysis of the design to identify energy efficiency opportunities. The company worked in conjunction with the client to develop recommendations, completed the NEA's required report template, and secured sign-off from both the client's stakeholders and the regulatory body. This collaborative approach ensured recommendations were technically sound and commercially acceptable to the client's international parent company.

What types of energy-consuming systems were identified in the pharmaceutical facility?

The facility requires multiple utility systems to support pharmaceutical manufacturing: Water for Injection (WFI), compressed air, air conditioning, large chiller systems, steam boilers, filling equipment, packaging systems, and cooling towers. These diverse systems represent significant energy demands typical of pharmaceutical operations. Understanding how each system operates and interacts was essential to identifying cost-effective efficiency improvements that would maintain the facility's required operational standards while reducing energy consumption and costs.

What commercial outcome did the recommended energy upgrades provide?

The recommended upgrades were estimated to reduce annual operating expenses by approximately \$200,000 with a capital investment of approximately \$500,000, yielding a payback period of approximately 2.5 years. Beyond regulatory compliance, this financial case demonstrated that efficiency improvements delivered lower running costs during the facility's operational life while maintaining the service reliability required for pharmaceutical manufacturing. The combination of environmental benefit (560 tCO₂e annual abatement) and operational cost reduction strengthened the investment case for stakeholder approval.

How did competitive and organizational pressures shape the energy efficiency recommendations?

The pharmaceutical company faced pressure to deliver high-quality manufacturing while minimizing operating costs, with energy bills representing a substantial operational expense. Additionally, any new equipment required approval from the client's international parent company before implementation. These constraints meant recommendations had to balance energy savings with proven reliability, existing supplier relationships, and operational compatibility. Our assessment addressed both the regulatory requirement and the practical business need to demonstrate that efficiency gains would not compromise product quality or introduce unproven technologies.

What specific energy efficiency measures were recommended for the pharmaceutical facility?

Recommended upgrades included air-cooled compressors, increased compressed-air temperature set points, heat recovery systems, occupancy-based lighting sensors, solar photovoltaic generation, improved perimeter lighting efficiency, heat pump technology for heating needs, and optimized boiler

sizing. These measures addressed the facility's major energy-consuming systems and were selected to reduce the estimated 11,200 GJ annual energy consumption by targeting both equipment efficiency and operational controls. Each recommendation balanced energy savings potential with the facility's strict operational and pharmaceutical manufacturing requirements.

How does Northmore Gordon's Singapore service differ from its Australian operations?

We offer Singapore Energy-Efficiency Assessments specifically for facilities operating under Singapore's regulatory framework. In Singapore, the National Environment Agency administers mandatory energy management practices for industrial facilities, and the Energy Conservation Act establishes a 54 TJ energy-use threshold for requiring detailed assessments. Our Singapore service scope includes completing design-phase evaluations required by NEA and working with local design teams and contractors to ensure recommendations meet both regulatory requirements and the operational standards of facility owners and their parent organizations.

What was the estimated carbon abatement benefit of the recommended upgrades?

The recommended energy efficiency improvements were estimated to reduce annual carbon emissions by 560 tCO₂e. This carbon benefit reflects the annual energy reduction of 11,200 GJ across the facility's systems. For pharmaceutical manufacturers operating in Singapore or other jurisdictions with carbon reporting obligations, demonstrating carbon abatement alongside operational cost savings can support compliance with emissions reporting requirements and corporate sustainability commitments while improving the investment case for efficiency upgrades.

Why was system flexibility important alongside efficiency in this pharmaceutical facility assessment?

Pharmaceutical manufacturing requires reliable, controllable systems to maintain product quality and meet regulatory standards. The assessment identified that recommended upgrades could provide system flexibility—the ability to adjust operations in response to varying production demands or operational conditions—while maintaining efficiency. This balance between energy optimization and operational control is particularly important in pharmaceutical manufacturing, where production schedules may vary and equipment reliability directly affects manufacturing capability and product compliance.

What role did energy balance modeling play in the pharmaceutical facility assessment?

We completed a detailed base case energy balance to establish a comprehensive understanding of the facility's energy flows across all systems before analyzing efficiency opportunities. This modeling provided a transparent foundation for assessing how changes to individual systems (such as compressor types, boiler sizing, or recovery systems) would affect overall facility performance and energy use. The detailed energy balance was essential for credibly estimating savings from each recommended upgrade and ensuring the NEA-required report accurately reflected the facility's energy profile and improvement potential.