

Airline Parts Manufacturer Lands Great Opportunities

Canonical: <https://northmoregordon.com/case-studies/airline-parts-manufacturer-lands-great-opportunities-eeoa/>

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Case-study summary

This historical case study records the project, delivery approach and reported results behind Airline Parts Manufacturer Lands Great Opportunities . 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 manufacturer over 2021 to complete an Energy Efficiency Opportunities Assessment 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.

The Client

The Client has been established in Singapore for many years, with several large manufacturing operations. The operation involves high-precision parts machining, custom treatment, finishing, and final inspection. It is supported by utilities including compressed air, air conditioning and large chiller systems, centralised lubrication systems, and cooling towers.

The Project

To meet the requirements of the Energy Conservation Act, Singapore sites that use over 54 TJ per annum must undertake an Energy Efficiency Opportunity Assessment.

The upgrades recommended included compressed air efficiency, shutting off unnecessary operation of equipment, and more efficient cooling for the machine-centre oil cooling system.

Key Facts

EEOA-RC completed in line with regulation

Annual Savings Estimates

Energy: 1,900 MWh

Carbon Abatement: 780 tCO₂e

OPEX: ~\$180,000

Project Details

CAPEX: ~\$460,000

Payback: ~2.5 years

Challenges

Competitive pressures to provide high quality service whilst minimising operating costs

Energy bills represent a substantial cost the operations

There are global targets for energy and water efficiency

Ageing equipment and production pressures mean savings measures cannot impact reliability

Additional Benefits

More stable air pressure is expected

More stable operating temperatures

Lower maintenance costs on pumps through reduced running hours.

Our Role

Northmore Gordon worked very hard to complete the work to the standard

required by the NEA in the timeframe. This included working through the difficulties of restrictions that occurred in 2020 due to

Covid lockdowns. The work included installing temporary metering, reading of on-site meters, development of a detailed energy balance, analysis of the data, 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.

A long-established Singaporean manufacturer producing high-quality precision components in clean-room environments for specialised industrial and commercial applications.

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

Energy audits

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Government schemes

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Commercial lighting

Energy optimisation

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Why did this Singaporean airline parts manufacturer need to conduct an Energy Efficiency Opportunities Assessment?

Under Singapore's Energy Conservation Act, industrial facilities consuming more than 54 TJ annually must appoint an energy manager, report energy use, and conduct an Energy Efficiency Opportunity Assessment (EEOA). This manufacturer's high-precision machining, clean-room operations, and extensive utility systems—including compressed air, air conditioning, chillers, and centralised lubrication—placed it above this threshold, making the EEOA mandatory. We provided the assessment required by Singapore's National Environment Agency (NEA), navigating the complex regulatory requirements and submitting the compliant report on schedule despite Covid-related disruptions.

What specific energy efficiency opportunities did Northmore Gordon identify at the manufacturer's facility?

The assessment identified three key improvement areas aligned with the facility's operational profile. Compressed air efficiency improvements addressed leakage and unnecessary operation in a system supporting precision machining. Equipment shut-off recommendations targeted unnecessary running during non-production periods. More efficient cooling for the machine-centre oil cooling system targeted a significant load supporting the precision-finishing operations. These recommendations reflected the facility's specific utility demands and operating constraints rather than generic measures, making them technically and commercially credible for implementation.

What were the quantified benefits projected from the recommended upgrades?

The assessment forecast annual energy savings of 1,900 MWh and carbon abatement of 780 tCO₂e, generating approximately \$180,000 in annual OPEX savings. The estimated capital expenditure was approximately \$460,000, yielding a payback period of approximately 2.5 years. Beyond financial returns, the upgrades offered operational benefits including more stable air pressure for precision operations, more stable operating temperatures supporting clean-room requirements, and lower maintenance costs on pumps through reduced running hours—outcomes relevant to production quality and asset longevity.

How did Northmore Gordon work within Singapore's regulatory framework to complete this assessment?

We demonstrated expertise in Singapore's specific regulatory environment by understanding NEA's EEOA-RC requirements and the Energy Conservation Act's application to qualifying industrial facilities. The engagement involved temporary metering installation, on-site meter reading, detailed energy balance development, data analysis, and completion of NEA's prescribed report template. We achieved stakeholder sign-off and timely submission to the regulator, demonstrating the practical knowledge needed to satisfy Singapore's energy-management obligations while delivering commercially useful improvement opportunities to the client.

What operational constraints did Northmore Gordon need to understand for this precision manufacturing facility?

Precision aerospace-parts manufacturing imposes strict operational requirements that energy assessments must respect. Clean-room environments demand consistent air conditioning and humidity control; high-precision machining requires stable compressed-air pressure and clean supply; machine-centre oil cooling must maintain precise temperatures for component finishing quality. Our recommendations addressed these utility needs rather than simply reducing consumption, recognising that operational performance—component quality, precision tolerances, and production schedules—cannot be compromised. This approach ensured that energy improvements remained

compatible with the facility's primary mission.

What delivery challenges did Northmore Gordon overcome in completing this Singapore-based project?

The assessment was completed in 2021 during Covid-related lockdown restrictions that typically restricted site access and affected data collection and stakeholder engagement. We worked through these operational difficulties to deliver a comprehensive EEOA meeting NEA's standard and timeline requirements. The engagement required coordinating temporary metering installation, managing on-site measurement under access constraints, developing accurate energy balances from partial data, and securing client sign-off for regulatory submission—demonstrating practical project-delivery capability in a constrained environment.

How does Northmore Gordon's Singapore energy-efficiency assessment capability serve manufacturers with regulatory obligations?

We offer energy-efficiency assessments specifically designed for Singapore's industrial sector, addressing both regulatory compliance and commercial improvement objectives. The airline parts manufacturer case demonstrates this dual focus: completing a mandatory NEA assessment while identifying capital projects with credible financial returns and operational benefits. For manufacturers subject to Singapore's Energy Conservation Act, we provide the technical expertise to satisfy registration screening, energy-manager requirements, and opportunity assessment obligations while delivering actionable investment cases that improve operating performance and reduce energy costs.