

# Borg Manufacturing Dryer Fan Energy Upgrade

Canonical:

<https://northmoregordon.com/case-studies/borg-manufacturing-modernise-plant-through-energy-savings/>

## Details:

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Borg Manufacturing planned to modernise a main dryer fan at its Mayfield North plant. Northmore Gordon provided the upfront engineering, measurement and verification, and certificate work needed to assess a variable speed drive and support the capital decision.

Evidence note: The source case study was published on 28 March 2019. Its dollar, certificate and abatement figures are historical project results; current NSW Energy Savings Scheme eligibility, methods and certificate prices must be checked for a new project.

### ## Project context

Large industrial fans can consume more power than required when flow is controlled by throttling or when the motor runs at full speed across variable production demand. A variable speed drive can reduce motor speed, but the business case depends on the actual load profile, control strategy and operating hours.

### ## Northmore Gordon's role

Defined a baseline and measurement plan for the dryer-fan system.

Supported the VSD project with engineering and measurement and verification expertise.

Prepared the evidence needed for NSW Energy Savings Certificate creation.

Combined operating savings and certificate revenue in a documented capital case.

The project addressed both technical uncertainty and scheme complexity. That matters in industrial settings, where production levels and process conditions can change the fan load independently of the upgrade.

### ## Reported project results

Equipment: main dryer fan with a variable speed drive

Reported annual energy-cost saving: \$150,000

Reported certificate value: \$300,000

Reported payback: 12 months

Reported ten-year abatement: more than 15,000 tCO<sub>2</sub>-e

The case study reports that certificate revenue paid for the fan and VSD upgrade.

The plant reduced ongoing energy costs while modernising critical equipment.

Measured evidence supported both the incentive claim and the internal investment decision.

## ## What this project shows

Industrial motor projects should begin with duty, control and production data rather than a generic VSD assumption. The baseline must account for variables that drive demand, and the post-project period must show that production and service requirements were maintained.

Scheme revenue can materially change payback, but it should remain a separate line in the business case. Eligibility, creation timing and certificate price are not the same as recurring energy savings.

## ## Related guidance

Industrial energy audits

Measurement and verification

Government schemes

Environmental certificates

Motor-driven systems and compressed air

More case studies

Discuss a comparable energy, carbon or certificate project with Northmore Gordon .

## ### What is a variable speed drive (VSD) and why did Borg Manufacturing install one on its dryer fan?

A variable speed drive (VSD) is technology that allows equipment to operate at different speeds based on demand, improving energy efficiency by avoiding running at full capacity when less output is needed. Borg Manufacturing installed a VSD on its main dryer fan to optimise the fan's energy performance, reducing unnecessary energy consumption during periods of lower drying demand. This type of equipment upgrade is a common opportunity in manufacturing facilities where fans, pumps and compressors operate continuously but at variable load. Installing a VSD can significantly reduce energy costs while maintaining the operational performance the manufacturing process requires.

## ### How did Northmore Gordon help Borg Manufacturing develop and validate its energy project business case?

We provided upfront consulting services to help Borg Manufacturing develop a robust business case justifying the capital expenditure for the dryer fan VSD upgrade. Our role included measurement and verification planning and certificate assessment to quantify the project's financial benefits. By clarifying the annual energy savings (\$150k), certificate value (\$300k), and the 12-month payback period, we provided the evidence and financial analysis management needed to approve the investment. This approach connected the technical improvement with commercial viability, allowing Borg Manufacturing to move confidently from concept to implementation.

## ### What is an Energy Savings Certificate (ESC) and how did Borg Manufacturing benefit from certificate creation?

An Energy Savings Certificate (ESC) is a tradeable certificate created under the NSW Energy Savings Scheme where each ESC represents one notional megawatt hour (MWh) of verified energy savings. For Borg Manufacturing, the VSD upgrade generated \$300k in certificate value, which directly paid for the dryer fan equipment and installation costs. This certificate revenue fundamentally changed the project economics: instead of the company bearing the full capital cost and waiting for utility bill savings to recover the investment, the certificates provided upfront financial benefit. Our certificate creation services ensured the project met scheme requirements and the certificates could be issued and monetised.

### Why is measurement and verification important for industrial energy projects like Borg Manufacturing's VSD upgrade?

Measurement and verification (M&V;) establishes credible evidence that an energy improvement actually delivers the claimed savings under real operating conditions. For Borg Manufacturing, M&V; was essential because the dryer fan upgrade needed to create tradeable Energy Savings Certificates, which require documented proof of savings to be issued. M&V; also protects the investment case by distinguishing between modelled forecasts and verified outcomes, ensuring the business can rely on the actual performance. Our M&V; services included establishing measurement boundaries, baseline conditions, and monitoring protocols to confirm the VSD's energy reduction performance over time.

### What made the Borg Manufacturing project commercially attractive despite the upfront capital cost?

The Borg Manufacturing project achieved commercial attractiveness through a combination of three factors: annual energy bill savings of \$150k from reduced fan energy consumption, certificate revenue of \$300k from the NSW Energy Savings Scheme, and a 12-month simple payback period. The certificate value was significant because it covered the installation cost of the VSD upgrade, allowing the project to pay for itself quickly while the ongoing utility savings (\$150k annually) provided continued financial benefit. This structure made the capital investment resilient—management could approve the project with confidence that the payback horizon was predictable and short, and that ongoing operational savings would extend value well beyond the initial recovery period.

### How does the Borg Manufacturing case demonstrate Northmore Gordon's manufacturing sector expertise?

The Borg Manufacturing project illustrates our ability to work across the manufacturing sector's practical challenges: identifying energy opportunities in production equipment, navigating the NSW Energy Savings Scheme for industrial applications, and translating technical improvements into commercial outcomes. We provided consulting to help a manufacturing business understand certificate eligibility and funding pathways that were initially unfamiliar. The project also demonstrates our integrated service model—combining engineering assessment of the VSD upgrade with M&V; planning and certificate creation—that connects technical decisions with financial results. This approach aligns with our stated capability to serve manufacturing through metering, measurement, feasibility studies and funding pathway assessment.

### What longer-term benefits did Borg Manufacturing achieve beyond the 12-month payback?

Beyond recovering its capital investment in 12 months, Borg Manufacturing achieved sustained annual energy cost reductions of \$150k and cumulative CO<sub>2</sub> emissions abatement of over 15,000 tonnes CO<sub>2</sub>e across 10 years. These ongoing savings represent significant operational and environmental benefit: the company reduced its energy spending for a core production process while lowering its carbon footprint. For a manufacturing facility, sustained cost reductions improve competitiveness and support business resilience. The environmental outcome—15,000+ tonnes CO<sub>2</sub>e avoided—reflects the substantial energy intensity of industrial fan operations and demonstrates how a targeted equipment upgrade can deliver material emissions reductions alongside financial returns.

### What steps should other manufacturing facilities take to identify similar energy savings opportunities?

Manufacturing facilities should start by conducting an energy audit to identify major energy-consuming equipment like fans, pumps, compressors and heating systems. The audit should document baseline conditions, operating patterns and production-related demand variations to reveal opportunities for efficiency improvements. Once promising upgrades are identified, facilities should assess relevant funding pathways—such as the NSW Energy Savings Scheme for industrial projects—and determine eligibility before committing capital. Our approach involves combining engineering assessment with

measurement and verification planning and certificate pathway analysis to validate whether an upgrade meets scheme requirements and what financial benefits are achievable. This systematic approach transforms energy data into justified investment decisions, reducing risk and improving the likelihood of project approval and successful execution.