

VFD - Northmore Gordon

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Details:

[Home](#) › [Glossary](#) › [VFD](#)

VFD

VFD stands for Variable Frequency Drive. It is a type of motor control technology that adjusts the speed of electric motors based on demand, rather than running them at constant speed. This variable-speed operation reduces energy consumption during partial-load conditions, making VFDs a common component in energy efficiency upgrades for HVAC systems, pumps, compressors and other industrial equipment.

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What does VFD stand for?

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How do VFDs contribute to energy savings in building systems?

VFDs reduce energy use by matching motor speed to actual system demand. In HVAC applications, for example, a VFD-equipped chiller or fan adjusts its output as building cooling needs change throughout the day. Since energy consumption from motors typically follows a cubic relationship with speed, even modest reductions in operating speed can produce significant energy savings. This makes VFD retrofits particularly attractive in commercial buildings with variable occupancy or production loads.

Where has Northmore Gordon applied VFD technology in documented projects?

Variable-speed-drive upgrades were implemented at Aurora Place, a commercial building in Sydney with more than 70 tenants. The upgrades were combined with HVAC and chiller replacements as part of an energy efficiency project. The company-reported figure for this project indicates 309,000 kWh of annual energy savings. However, measurement basis, project period and whether savings are estimated or realised should be confirmed before using these figures in a new project context.

What distinguishes VFD upgrades from standard equipment replacement?

VFD upgrades specifically add variable-speed-drive control to existing or new equipment, whereas standard replacement simply installs new equipment at nominal efficiency. VFDs allow motors to operate efficiently across a range of loads rather than at a single design point. This flexibility is particularly valuable in applications where demand varies, such as pumping systems, refrigeration compressors, and HVAC fans. The investment in VFD technology must be evaluated against the operating duty and load profile of the specific application.

How should VFD projects be assessed for energy savings claims?

VFD energy savings require careful measurement and verification. The savings depend on the actual load profile, operating hours, control strategy and interaction with other systems. We recommend establishing a clear baseline of pre-upgrade conditions, defining the measurement boundary, specifying operating variables to be tracked, and agreeing on the data quality and adjustment approach before implementation. A modelled payback based on assumed loads should be kept separate from verified operating results.

Can VFD upgrades qualify for environmental certificates or funding?

VFD installations may be eligible for environmental certificates under schemes such as Victorian Energy Upgrades (VEU), the NSW Energy Savings Scheme (ESS), or equivalent programmes, depending on the activity, equipment, premises and applicable method requirements. However, technical merit alone does not establish eligibility. The exact scheme, activity specification, measurement approach and evidence requirements must be verified before relying on certificate proceeds in an investment case. Timing of project stages and prior commitments can affect available pathways.

What operational factors should be considered when installing VFDs?

VFD installation requires attention to electrical infrastructure, control system compatibility, motor capability, and integration with existing building management systems. Operating constraints such as minimum flow requirements, equipment protection needs and staff training must be documented during project assessment. VFD control strategies should be designed to maintain required service levels—such as HVAC comfort or process pressure—while capturing efficiency gains. Our energy optimisation services include feasibility assessment and project management to address these interdependencies.

How do VFD upgrades fit into Northmore Gordon's broader energy optimisation approach?

VFD retrofits are typically part of a staged energy optimisation programme that may include audits, feasibility studies, measurement planning and implementation. Our six-stage delivery approach—Assess, Build the Case, Capture Value, Deliver, Procure and Perform—helps structure VFD projects within broader site improvement strategies. Early measurement planning, baseline establishment and identification of funding pathways help preserve eligibility for incentives and ensure credible savings documentation.