

EnergyWise for Your Business

Lower Your Operating Costs with VFD Technology



Powering Your Every Day.

Dominion Energy South Carolina (DESC) offers financial incentives for commercial, industrial and agribusiness customers who install energy-saving controls known as variable frequency drives (VFDs). Power for electric motor-driven systems accounts for almost one-third of the electrical energy consumed in commercial buildings and much more in industrial facilities.¹

Variable Frequency Drives

Take Control of Costs

Keep facility operations running smoothly by adding variable frequency drives to heating, cooling and industrial processes. VFDs allow motor-driven devices such as fans, pumps and automation equipment to vary the rate of speed at which they operate to match system demands. Use what you need, when you need it, and reduce energy expenses by as much as 30-40%.²

Reap the Benefits of Quick Paybacks

Drives installed on motors not previously equipped with VFDs qualify for incentives from the EnergyWise for Your Business Program. Due to the cubed speed relationship with power consumption, reducing rotating shaft speed (flow) by 20% can reduce input power requirements by up to 50%.³

VFD Benefits

Reducing energy is among the many reasons to install VFDs. Both easy to install and simple to maintain, VFDs offer superior control and provide a host of operational benefits:

- Extend motor life by reducing motor wear and tear
- Prevent voltage sag, the unexpected dimming of lights and shutdown of equipment
- Avoid damage to machinery by adjusting torque limits
- Adjust operating speeds for optimal efficiency
- Control acceleration and deceleration
- Integrate with programmable operating controls
- Minimize demand-based expenses
- Eliminate maintenance costs for mechanical drive components



Incentives for VFDs

Through the Custom Program, HVAC Program and Agriculture Program, DESC offers incentives for VFD installations that accompany the permanent removal or disabling of any throttling devices in equipment including:

- Grain bins and well pumps
- Air-handler and cooling tower fans
- Chilled water and heating hot water pumps
- Non-HVAC industrial process motors
- Refrigeration system compressors

¹ <https://www.epa.gov/energy/electricity-customers>

² <https://www.energy.gov/sites/prod/files/2014/02/f8/Motor%20Energy%20Savings%20Potential%20Report%202013-12-4.pdf>

³ Adjustable Speed Drive Part-Load Efficiency (energy.gov)

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How VFDs Reduce Energy Use

Electric motors that drive equipment like pumps and fans normally operate at a constant speed. Fluctuations are usually adjusted by some form of mechanical throttling, such as valves or louvers, to control water or airflow speed and volume. A VFD handles fluctuations in demand without wasting energy by varying the current and motor speed.

VFDs optimize energy use when motors start up. VFDs can decrease motor current to about 1.5 to 2 times operating current. This "soft starting" feature dramatically reduces electrical system impact from each motor start.

Soft starts typically allow a motor to develop 150% of its rated torque while the VFD is drawing less than 50% of its rated current. The controlled start-up also helps to extend motor life and to reduce maintenance costs.⁴

Typical Applications for VFDs

Agricultural Applications: VFDs on grain bins provide precise moisture and temperature control while decreasing energy costs, and VFDs on irrigation systems can reduce inches per-acre input cost and provide the ability to control gallons per minute (GPM) applied to each field or section of field.

HVAC Equipment: Apply VFDs on pumps and fans to provide the precise airflow and pressure for maintaining desired heating or cooling levels. In a typical building, maximum HVAC capacity is required for only 10% of the week, and on average, buildings need only 40-70% of maximum energy.³

Air Compressors: Maintain exact and constant air system pressure levels by matching pressure to demand. At times of reduced demand, a VFD reacts to rising air pressure by reducing speed and output. Conversely, as system pressure falls, the VFD is prompted to increase output.

Domestic Water Pumps: Control pump speed while meeting building demands. VFDs can adjust pump speed and resulting pressure levels without the need to throttle valves. Optimizing motor power to meet water demand can save 30-40% of motor energy.⁵



Other Applications: Use VFDs in cooling tower fans, industrial and process equipment, exhaust fans, refrigeration and dust collection systems.

Contact us today!

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EnergyWise for Your Business incentives are limited, offered on a first-come/first-serve basis and are subject to project and customer eligibility and funds availability. For each program year (December 1–November 30), EnergyWise for Your Business incentive payments are capped per Customer Federal tax ID number at \$150,000 per project type. Project types include Lighting, HVAC & Mechanical, Food Service, Agriculture and Custom.

Most projects require pre-approval prior to ordering, purchasing and installing equipment. Please check program requirements with the EnergyWise for Your Business team.

Available exclusively to eligible Dominion Energy South Carolina non-residential electric customers.

⁴ Campbell, Sylvester J. (1987). *Solid-State AC Motor Controls*. New York: Marcel Dekker, Inc. pp. 79–189. ISBN 978-0-8247-7728-9.

⁵ https://library.e.abb.com/public/d3c711ec2acddb18c125788f002cf5da/ABB_Technical_guide_No_4_REVC.pdf