



# Variable Frequency Drives: smarter motor control for energy savings

## What are Variable Frequency Drives (VFD)?

A VFD controls the speed of electric motors based on demand, rather than running at full power all the time. This smarter motor control reduces energy use, improves performance and extends equipment life.

## Think of it like a car

A standard HVAC motor runs like a car with only two speeds: off or full throttle. A VFD acts like a gas pedal, adjusting speed based on need, saving energy and reducing stress on the system.

## Why VFDs matter

- Save energy: reduce motor speed to cut energy use by up to 49%
- Lower costs: decrease utility bills and demand charges
- Reduce noise: minimize sound from fans and pumps
- Extend equipment life: limit wear on motors and components
- Improve comfort: maintain smooth temperature and better indoor air quality

## Savings & ROI

- Energy reduction: 20–50% less electricity use
- Payback period: often under three years, sometimes less than one year, with scheduling strategies that can boost ROI
- Incentives: available to help reduce the upfront cost of installing VFDs

## Ideal retrofit candidates

- Rooftop units (RTUs) less than 10 years old, with installation on a standard RTU typically completed in under four hours by two technicians
- Fans and pumps in HVAC systems
- Compressed air systems with varying loads and system needs
- Facilities with variable occupancy or climate conditions

## Maintenance matters

Regular maintenance ensures optimal performance. Common issues can include:

- Motors running at full speed due to bypassed VFDs
- Sensor or control issues affecting speed regulation



## Is a VFD right for your building?

VFDs are ideal for:

- Commercial buildings with central HVAC systems or RTUs
- Facilities with fans, pumps or compressors
- Businesses aiming to reduce energy costs and improve comfort

## Get started

Talk to your HVAC professional about:

- Retrofitting existing equipment with VFDs
- Using VFDs with economizers and demand-controlled ventilation (DCV) to maximize savings on RTUs
- Exploring available rebates and incentives

## About Efficiency Works

Efficiency Works is a regional utility collaboration that provides guidance and resources to enable customers to use energy more effectively, work toward a noncarbon energy future and build strong, resilient communities for customers served by Platte River Power Authority and its owner communities of Estes Park, Fort Collins, Longmont and Loveland.

