

# SUCCESS STORY

## VFD BOOSTS ENERGY SAVINGS FOR HOSPITAL HVAC SYSTEM

### INFORMATION

#### Industry

Building Automation

#### Application

HVAC Unit

#### Product

Yaskawa HV600 VFD



Yaskawa HV600 VFDs saving energy and prolonging equipment life on HVAC units.

### THE VFD APPLICATION

Established in 2014, this hospital is apart of an initiative by a renowned group of institutions to provide quality and affordable medical care to the community.

HVAC systems play a crucial role in hospitals, not only by maintaining comfortable climate conditions—such as temperature and humidity control—but also by ensuring a clean, germ-free environment. This contributes significantly to patient well-being and helps prevent the spread of disease. In hospitals, Air Handling Units (AHUs) are responsible for ensuring that the air inside the building is clean and purified. They achieve this by pushing the air through various filtration layers with the help of fans.

### APPLICATION CHALLENGES

For the AHUs to provide the desired climate conditions, they need to be able to vary air speed and pressure. The fans in many AHUs are operated via Across-The-Line (ATL) starters which means they run at full capacity regardless of the actual environmental requirement. When the building climate requires a change in airflow, such systems typically achieve the change by throttling an inlet vane or adjusting an outlet damper. Mechanical air throttling methods are inefficient and don't provide the degree of control modern facilities require. In these systems, the fans continue to cycle between off and full speed. The inrush current of each start combined with the fans only running at full capacity significantly increases energy consumption.

### THE YASKAWA SOLUTION

Replacing ATL starters with Variable Frequency Drives (VFDs) can address throttling and energy issues by allowing fan speed to be varied by controlling the motor's supply frequency. By maintaining a constant V/Hz ratio, a VFD can produce full torque while reducing inrush current during start-up. Since the power consumed by HVAC loads varies with the cube of the speed, operating at reduced speeds instead of mechanically throttling airflow can lead to substantial energy savings. For instance, if the system requires only 75% of full output, the VFD can reduce the motor speed accordingly and consume only 42% of its full-speed power. At 50% speed, the power consumption drops to just 13%.

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#### More HV600 VFD information:

<https://www.yaskawa.com/hv600>



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A Yaskawa **HV600 Variable Frequency Drive (VFD)** has algorithms optimized for fan and pump applications making it the choice to meet the customer's needs. In retrofit installations, the energy savings provided by the **HV600 VFD** can quickly offset the cost of the VFD, often within a year. For new systems, starting with this energy-efficient approach provides the lowest total cost of ownership when compared to other choices.

Moreover, in traditional damper-controlled systems, HVAC components like belts, pulleys, gears, pumps, and fans typically experience the most wear and tear during starts and stops. The Yaskawa **HV600 VFD** can be configured to gently ramp up to speed and down to stop, significantly reducing strain on these components. To further maintain equipment longevity, the **HV600 VFD** can be programmed to avoid speeds that are prone to resonant mechanical frequencies, which can damage equipment or cause excessive noise.

### KEY HV600 FEATURES

Yaskawa offers the **HV600 VFD**, a solution uniquely designed for HVAC building automation applications. With the **HV600 VFD**, customers can benefit from the fundamental advantages of VFDs, along with the following enhanced features:

- Reduce air handling and cooling energy cost up 20% to 70% by eliminating the need for throttling, which has traditionally been used to mechanically adjust air or water flow in a system
- Available in IP20/UL Type 1 and IP55/UL Type 12 versions, the HV600 can be mounted without the need for an expensive additional enclosure
- Intelligent electronic bypass available in enclosed and narrow packages
- Easily programmable using the onboard keypad, a mobile device via the DriveWizard Mobile app, or a personal computer. The built-in USB On-The-Go connector allows programming without the need for three-phase power
- Support of a wide range of communication protocols; including BACnet, Metasys N2, APOGEE, Modbus, and many others
- Yaskawa's award-winning 24-hour technical support department is free of charge

Contact Yaskawa today to learn more about how you can use Yaskawa AC drives to perfect your building automation industry applications!