

# SUCCESS STORY

## CONTROLLING SEVERAL AIR HANDLING UNITS WITH ONE VFD

### INFORMATION

**Industry**

Building Automation

**Application**

HVAC Unit

**Product**

Yaskawa HV600 VFD



### THE VFD APPLICATION

A large commercial building in the heart of major Midwestern city was designed to offer premium office spaces with state-of-the-art facilities. To maintain an optimal indoor environment, the building relied heavily on multiple air handling units (AHUs) to regulate temperature, humidity, and air quality across all the floors. The customer sought a reliable and efficient solution to control the external air cooled chillers for these AHUs, ensuring that the system could adapt to varying demand while minimizing energy consumption.

### APPLICATION CHALLENGES

Air cooled chillers, often called Fan Coil Units (FCUs), are a very common way to produce the chilled water which is pumped around the building to the AHUs. They are usually located externally, either up on the roof or at ground level, because they do not use cooling towers. Instead, they dump their heat into the ambient air and therefore require a lot of fresh air.

In the case of this large building, there were multiple FCUs each with many fans to move the air through the heat transferring coils. These large chillers needed to operate efficiently and in sync with the AHUs inside the building. HVAC best practice isn't to alter the flow of the chilled water and that leaves the best source of optimization with the coil fans.

### THE YASKAWA SOLUTION

There are many advantages to using a VFD for AHUs including the ability to lower energy usage and increase control. That increased control allows maximization of comfort for each floor or zone of a building. Much in the same way, there is an advantage to using a VFD to control the fans on the FCUs of the HVAC system. After evaluating several options, the customer chose the Yaskawa **HV600 Fan Array Package** for an FCU upgrade due to its superior performance and versatility in HVAC applications..

Each **HV600 Fan Array Package** was able to be installed to control sets of 8 individual fan motors on each chiller. Previously these motors were started across the line (ATL) causing large inrush currents and they always ran at full speed utilizing full power even when the AHU did not require it. This upgrade generated tremendous energy savings every time the units cycled on by reducing inrush current up to 80%.

*A Yaskawa HV600 VFD effectively controlling several AHUs and maximizing energy savings.*

# YASKAWA

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With algorithms optimized for fan and pump applications, all 8 motors now had precise control and the drive package's individual motor overloads expanded fault coverage with the ability to shut down if even one motor had a problem. The new ability to ramp up and down in a controlled manner reduced the wear and tear on the belts and drive system.

When cooling demands were low, not only could the AHUs throttle back energy usage, but so could the FCUs. In rotating systems, the power required is proportional to the cube of the speed. With both systems working in tandem, the energy savings were dramatic. Using the **HV600 Fan Array Package** to control multiple motors kept the cost of the project down and allowed a fast return on investment all while improving the environmental conditions on each floor of the large building.

### 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!