



# Adaptive Frequency™ Drives



# Improve efficiency without sacrificing comfort



Ask an energy expert. For most commercial buildings, the single largest energy user is the chilled water system. Now there is a way to improve chilled water system efficiency without sacrificing comfort. This is accomplished by using the Trane Adaptive Frequency™ drive on your Trane centrifugal chiller.

## How it works

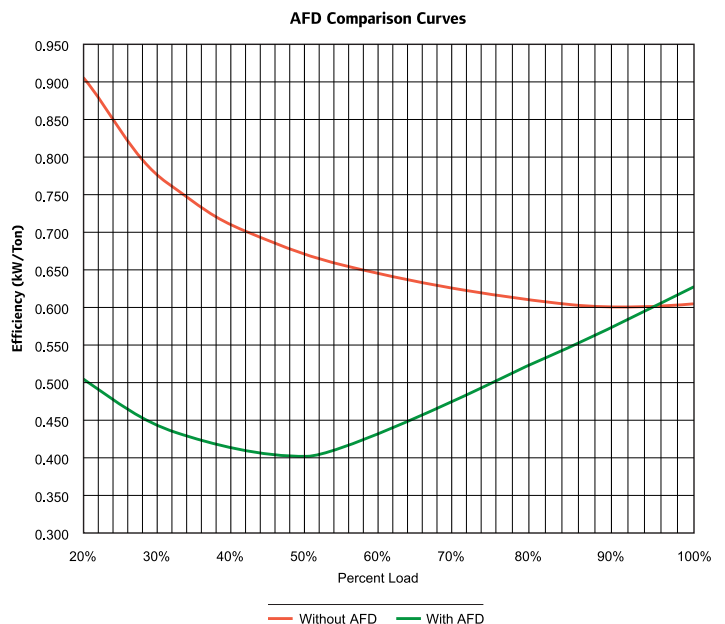
Centrifugal chillers are designed to operate most efficiently at full building cooling load. In reality, many chillers frequently operate at reduced loads. This can be due to normal load swings, oversizing of chillers, or simply less cooling demand. This results in decreased chiller efficiency.

For building owners who have Trane CVHE and CVHF chillers, we offer Trane retrofit Adaptive Frequency drives (AFD) which can reduce energy consumption by 15 to 25 percent.

An AFD allows the chiller compressor to operate at reduced speed. Thus, the compressor remains fully loaded even at part load conditions. This saves energy when compared to chillers that operate at a constant compressor speed.

## Energy savings

Electric service bills have a direct effect on your bottom line. Trane AFDs can reduce electric bills by improving chiller efficiency during part load operation that a variable speed compressor provides in conjunction with condenser relief. This reduces both energy consumption and electrical demand charges. Typical savings are 15 to 25 percent of the total chiller energy usage. This graph shows the efficiency of a typical chiller compared to that same chiller with a Trane retrofit AFD.



## Operational savings

Operational savings are derived from reducing the cost to operate a chiller plant. Trane AFDs can contribute in many ways:

- Allow the chiller to unload to lower capacities which can decrease the number of starts and stops
- Reduce startup current by up to 85 percent, which can avoid stress and heating to the chiller motor
- Provide the chiller motor with conditioned power which can prevent motor damage caused by utility phase loss, phase reversal, or over and under voltage
- Quiet chiller operation which can potentially increase the usability of nearby spaces.

## Benefits

Trane retrofit AFD projects have favorable paybacks of less than three years when properly applied. This unit maximizes chiller efficiency and reduces power consumption by adapting the motor speed to the chiller's operating load. AFDs can also improve quietness and enhance facility operations. The Trane AFD is designed for your specific system, delivered by factory trained experts using tools available only to Trane Service Personnel and offers maximum protection at minimum price, all backed by Trane.



AFDs are suitable for applications in schools, hospitals, hotels, arenas, office buildings, and other facilities.

## Accurate analysis

Trane provides a quick and accurate means to estimate the savings potential for your facility. Our estimates are based upon Trace 700 algorithms using your building's location, conditions, and load profile. Common savings for AFD retrofits are:

### Typical savings by region

Region	Savings
Atlanta	15% to 21%
Boston	20% to 27%
Chicago	18% to 23%
Columbus	18% to 24%
Denver	24% to 32%
Greensboro	16% to 23%
Los Angeles	20% to 25%
Minneapolis	19% to 26%
New York	18% to 24%
Phoenix	19% to 23%
San Antonio	13% to 18%
Seattle	22% to 30%
Tampa	12% to 17%
Washington	12% to 18%



## Recommended applications

The Trane retrofit AFD is best for facilities such as schools, hospitals, hotels, arenas, office buildings, and facilities with the following:

- Many run hours at part load with condenser relief available
- Ice-making or heat-recovery chillers running at comfort conditions
- Chillers experiencing frequent start/stop routines
- Chillers that are oversized for their current applications and run
- Single chiller plants where chiller staging is not an option
- Areas that offer local utility rebates
- Areas with high utility rates

## Your next step

We will work with you to provide an AFD upgrade savings analysis for your Trane CenTraVac® chillers. Our analysis is customized to your location, building type, equipment, and utility rates. Understanding your potential savings is the first step to performing an AFD upgrade.

In addition, we can evaluate savings calculations of other chiller plant upgrade options, such as cooling tower fan speed controls, Tracer chiller plant optimization, and even complete chiller replacements. We will work with you to determine which upgrade option is best for you.

Trane AFDs are integrated to work with Trane controls such as AdaptiView. These units are Trane designed both for unit-mounting or remote mounting and all come with Trane standard parts warranty and technical support.

If you have questions, or for more information about Adaptive Frequency Drives, please contact your local Trane office.

Learn more at [trane.com](https://trane.com)



Trane – by Trane Technologies (NYSE: TT), a global climate innovator – creates comfortable, energy efficient indoor environments through a broad portfolio of heating, ventilating and air conditioning systems and controls, services, parts and supply. For more information, please visit [trane.com](https://trane.com) or [tranetechnologies.com](https://tranetechnologies.com).

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