ADVANCED ROOFTOP UNIT CONTROLS NEWSLETTER ARTICLE

Note for Utilities: This newsletter content is designed to promote advanced rooftop unit controls to end-users. Content may be edited for length and used in a print or email utility newsletter.

ADVANCED ROOFTOP UNIT CONTROLS: SAVING ENERGY STARTS AT THE TOP

If heating, cooling and powering your commercial building is making a dent in your operating budget, now is a good time to look for ways to reduce energy waste. Investments in energy efficiency upgrades and practices will enhance building performance and improve building comfort for your employees and tenants.

Controls improve system performance

Your building's HVAC system is a great place to begin, and the rooftop is where to start. HVAC systems are most often selected based on low upfront cost rather than lifecycle cost. Manufacturers are therefore driven to include only basic controls on most of the rooftop HVAC units (RTUs) they offer to keep the initial cost as low as possible. While the lower price of new equipment is appealing, those savings come with increased energy costs over the life of the equipment.

Approximately 42% of the commercial HVAC systems in use today are packaged RTUs[1] and most of these have basic controls. Basic controls on an RTU means that, while it provides heating and cooling year-round, it does so by using one fan speed. Unfortunately, this means the fan runs full blast regardless of conditions, and often when no heating or cooling is required at all, wasting energy and adding to your energy costs. Running the fan full blast can have other unwanted consequences: temperature swings at lower loads, loud operation, and additional maintenance.

Luckily, there are Advanced Rooftop Unit Controls (ARC) solutions. You'll reduce energy consumption and maintenance by converting constant speed fans to multi-speed, which allows the fans to run at lower speeds when appropriate.

Improve energy savings and much more

ARC has been on the market for years, and a multitude of rooftop HVAC units (RTUs) have been successfully retrofitted with advanced controls packages. This relatively inexpensive, simple to install retrofit, can improve system performance, controllability, energy efficiency, indoor air quality, and occupant comfort. ARC often includes remote control, monitoring, and alarming, which makes managing multiple RTUs a breeze.

When does it make sense to install ARC on your RTUs? ARC is recommended if you have a single-speed RTU that is at least five tons, is in good shape, and is not a candidate for replacement in the near future. ARC can improve the performance of your existing RTUs to modern standards by enabling the fan speed to vary with the load of your building.

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[1] EIA 2017: https://www.eia.gov/consumption/commercial/data/2012/bc/cfm/b40.phpv

Your HVAC contractor can advise you if your building is a good candidate for an ARC solution. They'll consider several factors including remaining equipment life, capacity, schedule, and building type. Certain commercial building types within the market are more likely candidates for applicable equipment, such as retail spaces, offices, and warehouses, because they are often served by multiple large tonnage RTUs with higher than average run hours.

Incentives for two ARC options

We provide incentives for ARC solutions in two different tiers—ARC-Lite and ARC-Full. The primary energy saving feature of both is adding a variable frequency drive (VFD) or multi-speed motor along with a controller to convert the unit's supply fan from single-speed to multi-speed. While this is the lone criteria for ARC-Lite, ARC-Full includes additional features and functionality, including improved economizer control and demand control ventilation.

Adding a VFD to the supply fan will result in decreased wear and tear on the fan, motor, bearings, belts, and filters, effectively extending the life of the unit. ARC also enables demand control ventilation, which saves energy and ensures high indoor air quality. The controls integrate the unit's economizer in order to maximize free cooling opportunities. Additional functionality offered by some manufacturers includes a web-based interface that helps with remote control and scheduling of the unit, remote monitoring of operation, economizer fault detection, and alarming.

Finally, ARC can contribute to improved building comfort for tenants and employees. Reduced fan speeds directly lowers noise in the space, lowers airflow out of diffusers, and reduces temperature swings by limiting over-cooling or heating of the space.

To learn more about eligible ARC solutions and incentives, and how it can work for your property, contact your HVAC contractor or call us for more information.

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