

Facilitator — April/May 2016



The Circle of Life

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Best practices for managing a large portfolio of aging RTUs

How often do you think about your rooftop units? How old are they, and what conditions are they in? Do you have a plan for replacing aging RTUs?

The average RTU has an effective useful service life of about 15 years. This life can extend to 20 years depending on locations and use patterns, but high-use buildings, such as restaurants, and corrosive environments can significantly reduce the service life, resulting in higher probability of failures. Many companies' RTUs average more than 10 years old, but there may not be an active replacement plan in place. Small efforts that replace only the oldest units are not cost effective in the long run and result in a risk of disaster as the RTUs age. Emergency replacements are disruptive to business, are expensive and result in missed opportunities for improved performance and long-term efficiency.

The Advanced RTU Campaign is an industry partnership sponsored by the U.S. Department of Energy (DOE) to help companies manage RTUs and raise awareness about high-efficiency solutions. The DOE understood the large opportunities for energy and cost savings that are missed when RTU efficiency measures aren't leveraged. The agency formed the Advanced RTU Campaign to develop resources to help building owners realize these savings.

What's Working

Arby's Restaurant Group Inc., an Advanced RTU Campaign partner, recently implemented a successful RTU replacement program. Arby's management team recognized their large portfolio of aging RTUs needed attention, but they could not replace all of them. As such, they developed an objective process to select which RTUs to replace. They secured dedicated funds for RTU replacement and directed the facility management team to replace as many RTUs as they could within the year and while staying on budget.

The facility management team moved quickly to identify and prioritize the RTUs that needed replacement. They worked with their asset management provider to develop an inventory and rating system for RTU condition. The rating scale starts with 100 points, and deductions are made for indicators of performance degradation, including age; physical condition of the coils, compressor and box; refrigerant leaks; refrigerant charge; refrigerant type (R22); and others.

The asset management provider developed a handheld app to streamline the inventory process, and the service technicians surveyed 940 stores in 83 days and noted the condition for every RTU. The RTU performance score allowed them to identify the RTUs with the highest risk of failure or the lowest performance. RTUs were replaced starting at the bottom of the list (there were some at zero!), and the team worked their way up the list.

Simultaneously, the purchasing cooperative worked with manufacturers to negotiate the best value (price, efficiency and system compatibility) for RTU replacements. They estimated that they could replace more than 300 RTUs within their budget and timeframe. Arby's worked with two deployment companies to streamline the process to save time and money. They also preemptively included contingency funding and time for on-demand or emergency replacements that may come up during this time period.

Unfortunately, the team ended up with more emergency replacements than anticipated (about 50), which highlights the need for a proactive replacement plan. Nonetheless, the project exceeded expectations and resulted in 378 RTUs replaced, many more than originally planned within the allocated budget and time period. Starting at zero and moving up the list to 45, the scoring allowed them to remove the high-risk and low-performing RTUs from their portfolio. The process was so successful that they are planning for more than 250 replacements in 2016. They will start where they left off: with RTUs that scored 46 and higher.

Establishing an RTU Replacement Program

Many restaurant chains and other retailers are in a similar situation. They, too, have a large portfolio of aging RTUs and no plan for replacement.

Fortunately, Arby's had a strong and innovative internal team and partners to pull off a quick replacement program, which avoided emergency replacements. Other companies can learn from Arby's. Start by reviewing the resources developed under the Advanced RTU Campaign (www.advancedrtu.org). These resources consider the tradeoffs and offer tremendous savings opportunities to help building owners and managers navigate an RTU planning and replacement project. To take advantage of

those opportunities, the campaign recommends following a streamlined RTU evaluation methodology:

1. Initial RTU inventory: Start with gathering basic information, such as the age, size, model, manufacturer, efficiency level and known maintenance issues. If possible, avoid visiting each building. If no information is available, then perform a site visit. Steps 1 and 3 may be combined in this case.
2. Preliminary screening: Organize RTUs by “retrofit,” “replacement,” “no action” or “needs further analysis” according to the results of the initial inventory.
3. Field evaluation: Conduct a field evaluation to verify physical conditions and identify faults to further refine the preliminary analysis.
4. Analysis: Perform energy and economic analyses to prioritize potential RTU improvements and to make the business case for taking action. This step may continue throughout the project planning and procurement phases, and often requires several iterations to evaluate possible combinations of manufacturers, efficiency levels, sizes, RTU configurations, utility costs and potential rebates.
5. Project planning: Develop a plan for replacements and retrofits which may involve working directly with a manufacturer, an energy service contractor (ESCO), a full-service engineering company, an HVAC contractor, program implementers and/or utilities.
6. Procurement: Prepare a procurement specification for replacement or retrofit of RTUs that includes efficiency levels, control integration and maintenance requirements. Incorporation of quality installation and quality maintenance requirements in the procurement specification are also recommended. Use this procurement specification to shop around for the best value services.
7. Measurement and verification (M&V): If M&V is desired, determine the appropriate level of M&V for the project, and develop an M&V plan.

Planning for Success

Getting ahead of the game is a winning strategy in managing RTUs. Planning ahead allows you to reduce risk, avoid costly interruptions, get the most of your budget and lock in long-term savings with higher efficiency.

Facility managers should take advantage of available experts like Arby's did and look for available resources, such as those from the Advanced RTU Campaign. Case studies and webinars describing successful implementations of RTU management programs by Walgreens, Adidas, Target and JC Penny are available on the website. The “Business Case for Proactive Rooftop Unit (RTU) Replacement” document provides an overview and a detailed approach for bringing together the wide range of costs and benefits into a comprehensive business case for proactive RTU replacement.

To get involved in the Advanced RTU Campaign, email info@advancedRTU.org or sign up at www.advancedrtu.org/join.html.

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