

Spending “Green” to “Go Green”

Tips for Investing in Your HVAC Company’s Environmental Sustainability

The HVACR industry is focused on reducing its environmental footprint, and quickly. The concern is valid, and is the result of changing regulations and global pressure to become more eco-friendly. In this industry, a business’s viability is now tied to its environmental sustainability. But the reality for business operators is that it takes spending some “green” to “go green.”

With finite resources, operators everywhere should be spending smartly to enhance the “green” sustainability of their operation. The best way to do that? Reduce total carbon emissions per dollar spent (-CE/\$) as much as possible.

Many operators are grappling with this complex challenge. The tips below can help:

START WITH MAINTENANCE AND LEAK REDUCTION

Preventing leaks is the easiest and most cost-effective way to reduce the environmental impact of your HVAC&R operations. Remember: the “P” in GWP stands for “potential.” The refrigerant cannot impact the environment if it is kept in the system. Through preventive maintenance, monitoring and detection, and robust service practices, the retail food industry is significantly lowering its 25 percent historical leak rate—even reaching single digits in some cases. Reducing the leak rate directly reduces carbon emissions (CE) and benefits your bottom line—fewer leaks means lower cost on replacement refrigerant.

FOCUS ON EXISTING VS. NEW SYSTEMS

We all like shiny new toys, but focusing only on the eco-benefits of new systems is a mistake. In almost all cases, there are better solutions that will optimize your -CE/\$. Back-of-the-napkin math: for the cost of one new transcritical CO₂ system, a retailer could convert approximately ten existing conventional systems to lower GWP alternatives, resulting in a ~70 percent reduction in direct emissions. This explains why the number of new refrigeration systems in any given year is just a fraction of the total installed base. Your resources are better spent improving your existing operations.

CONSIDER A REFRIGERANT CHANGE-OUT

Speed matters. The environment and the industry are relying on operators to improve their systems quickly. Second only to reducing leaks, the fastest way to reduce emissions is to convert conventional systems running on legacy high-GWP refrigerants to operate on lower-GWP alternatives. Refrigerant change-outs can be executed at any time, are completed quickly, and cause minimal business disruption. The same can't be said for installing a totally new system. Refrigerant change-outs will lower your carbon emissions quickly and, as an added benefit, reduce your energy consumption by 8-12 percent.

DON'T OVERTHINK IT

The simplest solution is often the best one. When it comes to refrigeration, that solution is transitioning conventional systems to use more sustainable refrigerants. Lower-GWP HFO and HFO/HFC blends are compatible with conventional systems, which have been optimized over decades and are familiar to technicians everywhere. By contrast, many new architectures, such as transcritical systems, are relatively complex. And their added complexity comes at a cost: new hardware, extra components, engineering and administrative controls to mitigate safety hazards—and a limited supply of technicians trained to service these new systems. These added costs result in sub-optimal -CE/\$.

MAXIMIZE ENERGY EFFICIENCY

Do everything possible to choose solutions that maximize energy efficiency—even if that means using a slightly higher GWP refrigerant. Energy is king and will continue to be king. Future system designs will look to solve leak rate challenges. With leaks contained, the “green” impact of future systems will be measured by its energy efficiency. Total equivalent warming impact (TEWI) and Life cycle climate performance (LCCP) are well established metrics that help operators gauge the total environmental impact of their system—both direct emissions (leaks) and indirect emissions (energy consumption). Historically, indirect emissions vary between 60 percent and 90 percent of total system emissions.

AVOID HIDDEN COSTS

Operators using so-called “natural” refrigerants are hit with a number of hidden costs. Those using complex transcritical CO₂ systems are forced to hire expensive, hard-to-come-by technicians with specialized training. By contrast, technicians who can service conventional systems are much more readily available. Propane systems come with hidden costs as well. A large retailer recently reported on a new store using propane systems. The decision to use propane was based on its low GWP, but after several years, the store reported a 40-50 percent energy consumption increase compared to expectations and a high number of compressor failures. These hidden costs limit -CE/\$.

TRUST IN DATA, NOT MARKETING HYPE

Refrigerants and HVACR systems are not immune to marketing hype. To cut through the noise and maximize your -CE/\$, stick to sound engineering principles and data. Many system “additives” and “surface treatment” products claim to offer extraordinary energy saving benefits. Those claims are largely empty. Tried and true conventional systems have been expertly engineered and manufactured to maximize performance—off-the-shelf “additive” products do not deliver significant added benefits.

It’s an exciting time to be part of the HVACR industry. We all have a part to play in transitioning to a more sustainable future. And with these tips, you can start spending your “green” to “go green.”

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