Sustainability: From beginning to end.

When choosing a chiller, there's more to reducing emissions than the choice of refrigerant. Here's what you need to know about chillers and new, low-GWP (Global Warming Potential) refrigerant alternatives.

3 THINGS TO KNOW ABOUT SAFETY.

1. **Some refrigerant alternatives are mildly flammable.**
   All high-pressure refrigerant alternatives have some degree of flammability. To use these alternatives safely, there are significant implications on product configuration, installation cost and overall risk.
2. **The use of mildly flammable refrigerant is new in commercial chiller applications.**
   Safety standards and building codes must be finalized so customers know how to safely install and use the equipment. These standards still need to be finalized to minimize risk.
3. **When given a choice, select non-flammable.**
   The position of Johnson Controls is to utilize A1 (lower toxicity and non-flammable) refrigerants, especially in YORK® chillers where there are alternative, non-flammable solutions that achieve similar performance and capacity.

3 THINGS TO KNOW ABOUT COST.

1. **Next generation refrigerants are more expensive.**
   Today, chemically complex refrigerant alternatives like HFO blends are more expensive than HFCs, and it is expected that even years from now they will still be 4-6 times more expensive than today's HFC prices.
2. **These refrigerants can drastically impact equipment costs.**
   Some refrigerant alternatives negatively impact capacity and efficiency when dropped-in. To overcome these impacts, costly changes to equipment must be made, like increased compressor size, increased condenser size and/or increased refrigerant charge.
3. **Additional expenses are associated with the use of mildly flammable refrigerants.**
   Even if applied safely, these fluids require special handling, training and insurance, which all add cost.

3 THINGS TO KNOW ABOUT REGULATIONS.

1. **Johnson Controls is heavily involved in refrigerant regulation discussions.**
   Working closely with refrigerant producers, government regulators and other equipment manufacturers provides an opportunity for practical transitions with appropriate investments.
2. **HCFC refrigerants have phase-out dates.**
   The Montreal Protocol mandated HCFC phase-out is proceeding per plan to globally prohibit the use of R-22 and R-123 in new equipment, and will eventually prohibit its production.
3. **The Kigali Amendment has identified phase-down goals for HFC refrigerants.**
   In some regions, refrigerants like R-134a and R-410A will start to be used less frequently in new equipment. But complete elimination or a phase-out of HFC refrigerants is not being discussed.

3 THINGS TO KNOW ABOUT ENVIRONMENT.

1. **Drop-in replacements can increase energy usage.**
   Some refrigerant alternatives have a negative impact on energy efficiency. Systems that are not optimized perform less efficiently, increasing overall operating cost and fossil fuel usage.
2. **The refrigerant properties address the smallest part of a chiller's potential emissions.**
   Total building efficiency – including chiller plant optimization – has the most significant impact on global warming potential.
3. **Total Equivalent Warming Impact (TEWI) is a more complete measure of environmental progress.**
   The TEWI standard considers both the direct impact (refrigerant) and the indirect contribution (energy consumption) to greenhouse gases. More than 95% of total greenhouse gas emissions are attributable to the burning of fossil fuels versus the impact of refrigerant leakage. For example, a modest 1.6% improvement in chiller efficiency is enough to completely offset direct R-134a refrigerant emissions.

At YORK®, we make business decisions based on your business – the best refrigerant solution depends on the application.

YORK® chillers have been, and continue to be, the best at operating efficiency in real-world conditions – reducing emissions, improving your environmental impact and protecting your financial bottom line – now, and in the future.

YORK® INSTALL CONFIDENCE

Johnson Controls