PJM SEASONS

Quarterly HVAC News

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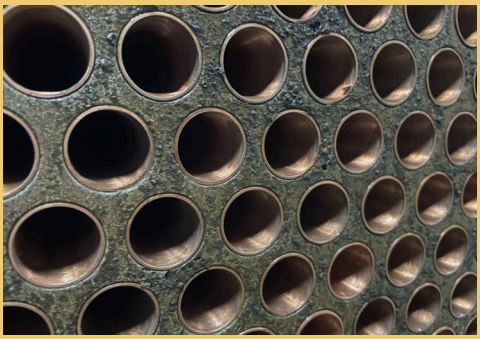
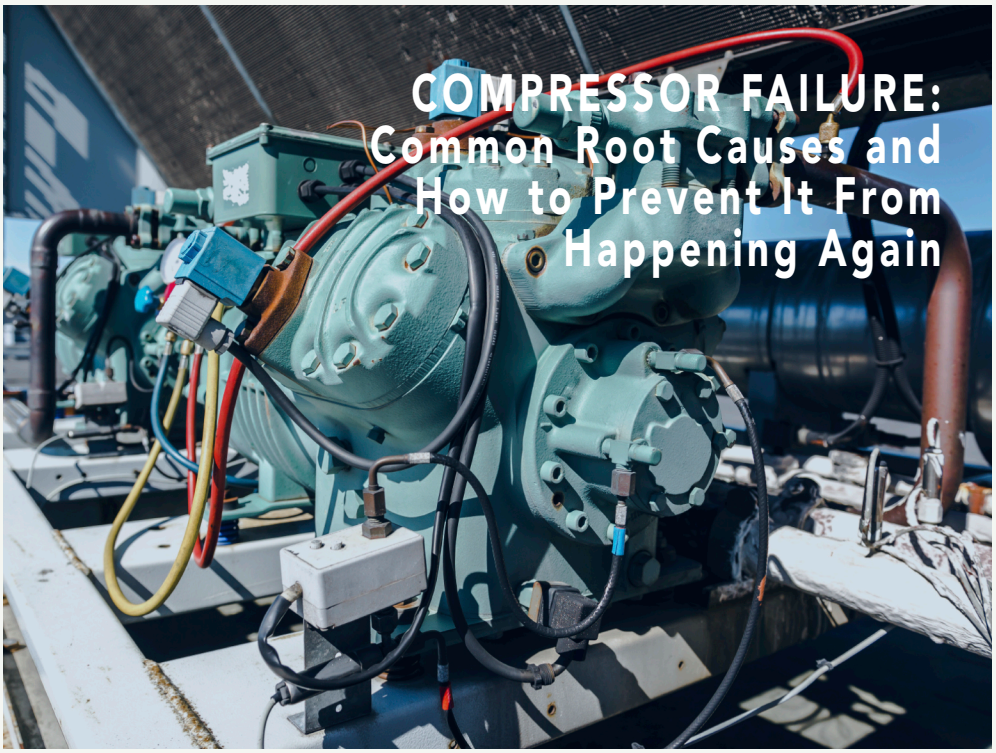


A new customer was experiencing a gradual loss of temperature in a reheat hot water system. An investigation revealed **calcium buildup on the steam-to-water heat exchanger** and several strainers, the result of a water softener bypass valve being left wide open. Upon removing the buildup and closing the valve, temps returned to normal.

PJM was called to a large office building when a **50,000 CFM main air handling unit failed to restart** after a routine filter change. A check of the control wiring traced the problem to a fire damper limit switch that was not working due to an obstruction preventing the damper from opening all the way. We removed the obstruction, checked all other dampers, and restored the system to normal operation.



COMPRESSOR FAILURE: Common Root Causes and How to Prevent It From Happening Again

There really are no two ways about it: failed compressors can be expensive to replace. But if a failed compressor is replaced without first correcting the root cause of failure, be prepared to repeat the process again because the new compressor will likely fail as well. Nine times out of ten, compressor failure is a direct result of issues originating elsewhere in the system.

There are a number of common causes of compressor failure, number one being lack of lubrication. This can occur when oil has degraded due to overheating or contaminated by liquid migration, blocked from reaching the bearings, or if there is loss of oil in the system. Poor pipe design on split systems is a common reason for lack of lubrication, as it can trap oil and prevent it from returning to the compressor. Suction lines must be large enough to minimize pressure drop, but small enough to maintain required velocity for oil return. Likewise, liquid lines must be large enough to minimize pressure drop and small enough to avoid undercharging the system.

Flood-back is a problem that occurs during the running cycle when large volumes of liquid refrigerant return to the compressor through the suction

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The High Cost of Neglecting HVAC Preventive Maintenance

Have you been neglecting maintenance of your HVAC system? If your purpose is to save money, you may want to think twice, because overlooking preventive maintenance inevitably costs more in the long run, no matter how you slice it.

HVAC accounts for two-thirds of all primary energy consumed in commercial buildings, and lack of proper PM can have a considerable impact on utility costs. According to the Department of Energy, buildings with HVAC systems that undergo regular PM typically use 15% to 30% less energy than those in which systems are allowed to deteriorate. Equipment failure is another consequence of maintenance neglect. On average, corrective repairs cost two to four times more than the upfront costs of a good maintenance program. This doesn't even include the expense of downtime when neglected systems fail, not to mention the discomfort of building occupants and loss of business due to production interruptions. Lack of preventive maintenance also degrades indoor air quality, and poor IAQ has been shown to significantly impact employee health and productivity. According to the World Health Organization, 20-30% of building occupants will suffer from symptoms ranging from minor respiratory symptoms and headaches to serious medical conditions due to pollutants that are allowed to accumulate in poorly maintained HVAC systems. Perhaps most importantly, neglected PM can significantly shorten equipment life.

PJM offers preventive maintenance programs that can be custom-tailored to our customers' specific needs. Our highly trained and experienced service technicians have extensive knowledge in HVAC, refrigeration, and controls systems, enabling us to easily diagnose and repair existing problems and recognize potential issues.

UV-C a Low-Cost Solution for Saving Energy and Improving Indoor Air Quality

Damp, humid conditions typically present in evaporator coils, air filters, ductwork, and drain pans provide the perfect breeding ground for mold and microbial growth that, left uncontrolled, can impede airflow and emit odors and contaminants into a conditioned space. ASHRAE recognizes ultraviolet light as an effective way of controlling microbial growth in air handlers, improving IAQ, reducing maintenance costs, and increasing system efficiency, and has published recommendations for UV-C treatment.

The two basic types of UV-C systems, coil and in-duct, can be used alone or in tandem for increased benefit. Coil systems are generally more effective and can effectively restore as much as 40% of system capacity. UV-C is fairly inexpensive, and a system can pay for itself in as little as six months.

Compressor Failure; continued from page 1

pipe during the running cycle, washing oil from bearing surfaces. The resulting dilution can lead to excessive wear in bearings, pistons, cylinders, rotors, and stators. Causes include low evaporator loads, oversized equipment, faulty evaporator fans, and evaporator oil logging, among others.

A flooded start is a problem that can occur when refrigerant migrates and condenses in the crankcase oil during the off cycle. On start-up, pressure falls rapidly and refrigerant explodes out of the oil into the crankcase, washing lubricant from bearings, journals and rods. Causes include system overcharge, long off-cycle times, crankcase temperatures lower than the evaporator, and faulty crankcase heater.

Slugging occurs when a mass of liquid refrigerant, oil, or mixture of both returns to the compressor, usually on start-up. Compressors are designed to compress gas, not liquid, so slugging usually results in damaged components that lead to equipment failure.

Please contact PJM at (609) 496-8696 for assistance with compressor failure or for more information.