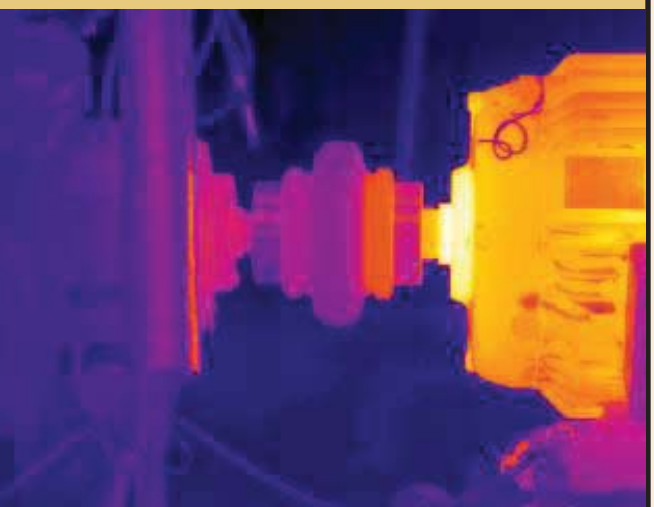
DECEMBER 2012

PJM Mechanical Contractors Publication
Phone: 609.921.1394

PJM Pipeline

NJ Plumbing Licence # 6694
NJ Fire Protection License # P00713

PROJECT PHOTOS



PJM common steam system problems

Water hammer is a troublesome but commonly-occurring issue that can plague a steam system. The most obvious symptom is the hammer-like noise it creates, but, when left unchecked, water hammer can cause serious damage to vents, traps, regulators, and piping. There are two types of water hammer. The most common type is usually due to an accumulation of condensate trapped in a portion of horizontal piping. Steam picks up the resulting water "slug" and hurls it into the nearest pipe fitting at high velocity. The second type is caused by a steam bubble forming or being pushed into a wet return line or pump discharge piping. When the bubble cools, it implodes with great force. **Some common causes of water hammer are:**

- Near-boiler piping is not up to manufacturer specs
- Bad steam quality (dirty water or high pH)
- The boiler is overfired
- Boiler line is priming or surging
- Long nipple on Hartford Loop
- Close nipple or wye fitting is too close to boiler water line
- Mains aren't properly dripped
- Clogged gravity-return line
- Motorized valves (avoid on gravity-return systems)
- Steam traps aren't working

INSIDE THIS ISSUE

The causes of water hammer are often difficult to identify, so it is oftentimes tolerated, considered to be more of a nuisance than a problem. But when left unchecked, water hammer can result in costly repairs. An experienced steam professional can identify the causes of water hammer and resolve the issue. Contact PJM's Mike Caterson at 609-921-1394 if you are experiencing water hammer, or if you have any questions.

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PJM refrigeration piping do's and don'ts

Refrigeration piping is a critical component of any refrigeration system. Whether to cut costs, because of lack of expertise, or failure to keep up with advancements in technology, inappropriate piping can cause inefficient system performance and compressor failure, and can void system warranties.

An efficient refrigeration system requires a small amount of oil to be circulated continuously with refrigerant to provide lubrication to the compressor. It is critical that refrigeration piping maintains adequate pressures and velocities so that the oil is not "lost" or trapped within the system, depriving the compressor of lubrication.

There are a number of mistakes commonly made in piping selection that can affect pressure and flow. When refrigerant piping is undersized, or if there are too many bends and fittings, pressure drops can occur. These pressure drops can result in system capacity deficit and compressor overheating. Conversely, oversized refrigeration piping does not usually affect system capacity, but causes low refrigerant velocities and poor oil return. The result: compressor failure due to lack of lubrication. Finally, if piping and line components are not properly rated, pipe work failures and splitting pipes can occur, resulting in refrigerant leaks.

Key considerations for proper refrigeration pipe selection, installation and maintenance include:

****Piping must adequately supply refrigerant** to all evaporators while ensuring positive and continuous return of oil to the compressor.
****Piping must be of sufficient size** to avoid refrigerant pressure losses.
****Liquid refrigerant must be prevented** from entering the compressor during either the running or off cycles, or during compressor start-up.
****It is important that there is no moisture** or foreign matter present. Piping must be purged with nitrogen to keep the system clean while brazing.
****Oil that is trapped** in the evaporator or suction line can form large "slugs" that can damage the compressor. Properly sized and installed piping will prevent this.
****When leaks occur,** they must be located and repaired promptly.

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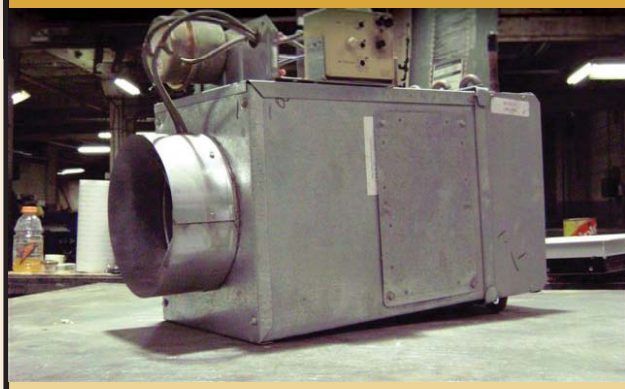

Air Volume and Temp Control. -
Variable air volume (VAV) and constant volume (CV) boxes are the workhorses behind many HVAC systems, regulating and controlling airflow and air changes through airflow stations and dampers. Reheat coils in supply boxes control local temperature. VAV boxes are also used to control critical lab exhaust systems and pressurization.

Steam PRV Stations -
Steam is oftentimes produced at higher pressures in order to deliver a greater volume of steam. Many mechanical rooms contain pressure reducing valve, or PRV, stations that regulate and lower steam pressure to 15psi for air handlers, humidifier wands, preheat and reheat skids that temper hot water for HVAC.

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PJM PROFILES

Brian Hiban, Foreman

In this issue we are profiling foreman Brian Hiban, who has been with PJM for twenty-eight years. Brian joined the company in 1986 as a plumber and was promoted to foreman soon thereafter. During his nearly-three decades with PJM, Brian has demonstrated invaluable mechanical skills and leadership on countless projects. Brian recently completed a large boiler and chiller replacement project at the Quakerbridge Mall and is currently working on a large project for the Hyatt Regency.

Brian and his wife Donna have been married for 25 years. They have two daughters, Brooke, a junior at Arcadia University in Philadelphia, and Lauren, a senior at Hopewell High School. Brian is a member of St. James Church and enjoys spending time with his family.

PJM vendor on-site safety training

There are many inherent risks in construction, and proper safety training for workers is critically important. There is a multitude of instructional resources available – OSHA courses and programs, services, online manuals, toolbox talks, DVDs and videos, seminars, etc. Some of the most effective training is provided by construction and safety equipment vendors and manufacturers.

Many vendors offer training for construction and safety equipment such as scissor and forklifts, aerial booms, lockout/tagout, rigging, and fall protection, to name a few. Some host programs at their own facilities, and many offer on-site training, where certified instructors arrive fully outfitted to demonstrate hands-on practices and procedures for equipment their company provides. Because on-site training is hands-on and occurs at the workers' accustomed workplace, this type of training is especially beneficial. With a purchase, vendors often provide safety courses at a reduced fee or no charge, depending on the type of equipment or the training required.

THE FACT IS

♦ Hurricane Sandy has devastated countless members of our community here in New Jersey and surrounding areas, many of them our own families, friends, neighbors, and associates. To do our part in lending recovery assistance to those in need, PJM has made a donation to the American Red Cross. Our thoughts and prayers go out to all those affected by the storm.