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The Impact Of Temperature Change On Dry Pipe Systems

In different types of climates and in various types of buildings, facilities and venues, the standard type of sprinkler systems are simply not a possibility. The typical wet system has water present in the pipes on an ongoing basis. While this is ideal for areas where there is a constant temperature, such as an office building or a home, it becomes problematic in unheated areas or when refrigeration systems are in place.

The Basics of a Dry Pipe Sprinkler System

In these types of applications, a dry pipe sprinkler system is the ideal option. This type of system uses pressurized air in the pipe, or sometimes nitrogen, which provides the necessary pressure in the pipe to keep the check valve closed. This is not a standard check valve, but rather a specialized direct differential dry valve. This valve, which has a larger valve clapper air on the airside of the system as compared to the waterside of the system, is only triggered to open when the air pressure drops due to the opening of a sprinkler somewhere in the system.

The drop in pressure opens the valve and allows the water to flow into the pipe and to the open sprinklers for fire suppression. The valve is typically not equipped with either a latching mechanism or a side chamber, which means that changes to the system are immediately reflected in the opening of the valve. This sometimes leads to incidents where the valve is seen to have tripped in error. In fact, this type of tripping of the valve may be a direct result of changes in temperature across the system.

Air Issues and Temperature

As water moves into the pressurized system, there is some air that is trapped in various areas of the pipe in air pockets. These air pockets can be somewhat addressed with venting options, but they still occur in different parts of the system based both on the ambient temperature and the subsequent changes of internal pressure.

For example, in the winter in an unheated building, the system contracts slightly, the necessary pressure adjustment naturally occurring. During the day, as the system heats up with exposure to the sun, the pressure increases. Over time, with the air pockets in the system, this pressure change increases, which can result in the tripping of the valve between the two parts of the system. Relief valves can be installed to regulate this pressure change.

Another issue that can occur is when the water on the wet side of the system heats up and expands. There is limited air in this side of the system, so the expansion pushes against the valve, creating a peak that is higher than the pressure of the air on the dry pipe side, causing the valve to trip and the water to flow into the dry pipe.

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Did You Know?

When shuffling a deck of cards, the number of possible arrangements is approximately 8×10^{67}. That's more than the number of stars in the observable universe.

The full name of the famous *Chuck E. Cheese* mouse is Charles Entertainment Cheese.

The British Pound is the world's oldest currency and is still in use 1,200 years later.

When we're born, the only innate fears we have are the fear of falling and the fear of loud sounds. All other fears are learned.

Berries are simple fruits stemming from one flower. This means that pineapples, bananas, watermelon, pumpkins and avocados are berries.

All the paint on the Eiffel Tower weighs the same as ten elephants. It gets repainted every seven years without closing to the public.

J.K. Rowling's original *Harry Potter* pitch was rejected by 12 publishers before finally being accepted.

There are more than 6,000 known species of grass.

Canada eats more macaroni and cheese than any other nation in the world.

—from *The Fact Site*

Smooth The Integration Of New Hires

New hires represent an investment of time, money and resources that you can't afford to squander. That means planning their transition from new hire to employee with lots of care. Set up (and review) your onboarding process with the right objectives in mind:

- **Your organization.** What do new employees have to know about your organization, its history and your industry?
- **First impressions.** What do you want new employees to say about your organization at the end of their first day? Boring them with forms and videos won't get them excited about working for you.
- **Policies.** It will take time for new employees to get familiar with all your rules and procedures. But what do you want them to know on Day One? That will tell them a lot about your organization's priorities.
- **Supervisors.** What role should the employee's direct supervisor play in the orientation process? Managers are busy with daily activities, but their involvement can help the new hire grow comfortable with your organization, and his or her job, more quickly.
- **Goals.** What do you want the employee to be able to do at the end of the first day? The first week? The first 30–90 days?

Can You Hear Me Now?

Convinced that his elderly mother was losing her hearing, a man took her to see a specialist. "I'm really worried," the man said to the doctor. "She never responds when I call out to her, and other times I can be seated next to her and I swear she hasn't heard a thing I've said."

"We'll run a few tests and figure out what's going on," the doctor said. "Why don't you go to the cafeteria and grab a cup of coffee while you wait?"

The man returned a short time later to find his mother engaged in a lively conversation with the doctor and the nurse.

"I have good news, and I have not-so-good news for you," the doctor said. "The good news is there's nothing wrong with your mother's hearing. The not-so-good news is she just doesn't listen to you."

Keep Your Older Workers Safe

Millennials may be taking more and more jobs, but you've probably still got a significant segment of your workforce that's on in years. Keeping them safe as they advance in years is a manager's responsibility. The *Safety + Health* website offers this advice for watching out for older workers:

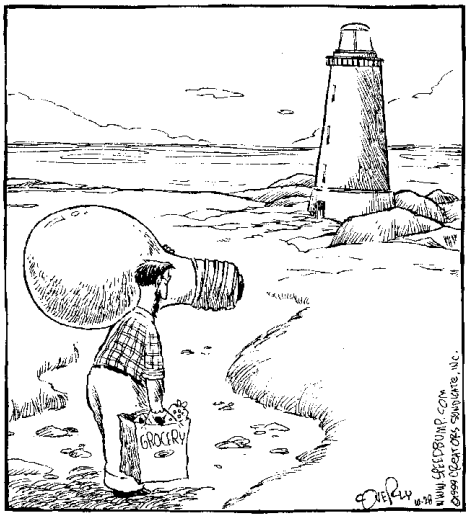
- **Discuss the issue.** Without being condescending or patronizing, talk to your older employees about their challenges and concerns. Ask them about problems, and discuss solutions that will let them feel safe on the job.
- **Promote fitness.** A wellness program can help employees stay in shape. Set the example by exercising, watching your diet, and talk about how maintaining good health overall will help older employees avoid injuries, knee and back pain, and other health issues.
- **Limit physical demands.** Find out what your older workers do every day, looking for activities that may cause undue strain. Ask them about their limitations. Assign heavy work to younger employees who can perform it with less risk.
- **Create a safe workplace.** Look for—and take care of—anything that might make work difficult and unsafe for older employees (tripping hazards, for example). Issue the right protective gear so they feel safe and can do their jobs without fear of injury.

Enhance Your Career With Networking

You're good at your job, but you know it takes more than talent to rise in your industry. As they say, it's not what you know, but who you know. With that in mind, check out these networking tips from the *Kangan Institute* website:

- **Start with people you already know.** Ask your friends and co-workers to introduce you to new people. Don't be nakedly opportunistic, but do be honest: "Hey, I'd like to get to know some more people in the industry. Anybody you could connect me with?"
- **Use social media.** Don't just post vacation pictures or display what you ate for lunch. Use your social media profile to highlight your skills and potential. Search for and connect with people in your industry who may have something to offer—and who you can help in return. Keep your profiles updated so people always see what's new in your career.
- **Be concise.** Whether you're at a cocktail party or emailing new contacts, don't take up too much time. Introduce yourself, mention some shared interests, offer some useful information, then suggest keeping in touch.
- **Don't talk—listen.** Learn to ask questions and then shut up. Showing genuine interest in the other person is the best way to build rapport and forge a connection.

SPEED BUMP **Dave Coverly**



Don't Fall For These Safety Mistakes

If you're a manager, you know your workers' safety is a top priority. Still, many managers fall prey to misconceptions about workplace safety—and pay a steep price if someone gets injured, disabled, or worse. Watch out for these myths, as described on the *OSHA Education Center* website:

- **Investing in safety training is too expensive.** The expense may seem high, but the costs related to workplace injuries can be even steeper, especially if a lawsuit is filed.
- **Accidents will happen despite precautions.** Don't duck your responsibility to eliminate hazards. Safety is a never-ending effort.
- **All my employees take proper safety precautions.** Are you sure? Don't take safety for granted. Make sure your workforce is trained thoroughly, and check to make sure they're taking care of themselves.
- **Offices don't have safety hazards.** People can trip and fall in an office as easily as they can in a manufacturing facility. Ergonomic issues are also present in a typical office workspace.

Responding To Adversity

Once upon a time, a daughter complained to her father that her life was miserable. She was tired of fighting and struggling all the time. It seemed that just as one problem was solved, another soon followed.

Her father, a chef, took her to the kitchen. He filled three pots with water and placed each on a high fire. Once the three pots began to boil, he placed a potato in one pot, an egg in the second pot, and some ground coffee beans in the third pot.

After 20 minutes he turned off the burners. He took the potato out of the pot and placed it in a bowl. He pulled the boiled egg out and placed it in a second bowl. Then he ladled the coffee out and placed it in a cup.

"What do you see?" he asked.

"A potato, an egg, and some coffee," she replied.

"Look closer," he said, "and touch the potato." She did and noted that it was very soft. He then asked her to take the egg and break it. After pulling off the shell, she observed the hard-boiled egg. Finally, he asked her to sip the coffee. Its rich aroma brought a smile to her face.

"But what does this mean?" she asked.

"The potato, the egg, and the coffee beans all faced the same adversity—boiling water," her father explained. "But each one reacted differently. The potato went in strong and hard, but in the boiling water, it became soft and weak. The egg was fragile, with its thin outer shell protecting its interior. In the boiling water, the inside of the egg became hard.

"However, the ground coffee beans were unique. After they were exposed to the boiling water, they changed the water and created something new.

"Which are you?" he asked his daughter. "When adversity knocks on your door, how do you respond? Are you a potato, an egg, or a coffee bean? "

In life, things happen to us, but the only thing that truly matters is how we respond.

"There are no secrets to success. It is the result of preparation, hard work, and learning from failure."

—Colin Powell

Warm-Ups Are Not Only For Baseball

The Importance Of The Steam Warm-Up Valve

Operating a steam system requires the right equipment, parts, and components for reliability and long duty cycles. The startup of the steam system can be a particularly problematic time in the operation as there are high levels of both condensation as well as expansion in the system due to the presence of steam.

To address these issues and to protect the system as a whole for the startup process, a steam warm-up valve is an essential component to have in place. The use of this valve is to control the presence of steam in the pipe to allow for safe thermal expansion and to reduce condensation when the hot steam hits the cold piping.

How the Warm-Up Valve Works

The warm-up valve is a relatively small valve that actually works in conjunction with an isolation or PRV (pressure reducing valve) in the system. Just as the name implies, the warm-up valve

continued below

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Warm-Ups... *continued from above*

operates first, allowing small amounts of steam into the system for a gradual warming of the pipes and components. At the same time as this warming is occurring, there is also a pressure normalization that happens on the inlet and outlet side of the isolation or PRV.

This pressure normalizing or equalizing on both sides of the much larger PRV or isolation valve helps to reduce wear and tear on the big valve. Without this equalization factor, the opening of the large valve could result in water hammer, erosion, or scoring to the seals or seats of the valve through the wire drawing process.

It is vital to select the warm-up valve for the given application. They are most commonly used on pipes that are at least three inches or larger, and the longer and larger the pipe, the larger the warm-up valve needs to be. It is also possible to use two warm-up valves in the system, one for warm-up and one for isolation with large pipes and steam systems.

Extending the Duty Cycle of the System

The vast majority of the valves used in steam systems as the isolation valve are gate valves. This is an ideal option as they offer extremely limited flow restriction when in the fully open position, and they are also a reliable option for fully closing and sealing.

The use of the warm-up valve in the system provides the equalization of pressure on both sides of the gate. This allows the valve to operate automatically and without the need for external, manual operation.

In those systems that are using the quarter turn shut off valves, including ball and butterfly valves as isolation valves, the warm-up valve also allows for control of the gradual pressure and heating of the system that would not be possible through the use of the butterfly or ball valve on its own.