The Cold Facts

Fall 2005

Smith Dairy (a partial view) completed, up and running! Our thanks go out to Smith Dairy for the opportunity to work with them on their most recent project.

Do You Have A Problem You Don't Know About?

Recently we have seen numerous occurrences of a potentially serious problem—corrosion of steel refrigerant piping. More obvious on exposed pipe, corrosion may go unnoticed in concealed runs above suspended ceilings, behind walls, or beneath pipe insulation. As regards the latter, any break in the vapor barrier places warm, moisture-laden air in contact with pipe: a recipe for corrosion. Unnoticed, such corrosion may continue indefinitely until normal preventative maintenance measures will not save the steel wall.

Common methods of checking for pipe problems include visual examination and ultrasound testing. While most maintenance operations normally inspect pipes visually, cleaning and applying the vital corrosion-inhibiting coatings, ideally plant personnel will take special care in areas subject either to damage or to being overlooked. These may include:

- Rooftop pipes that individuals have climbed on, breaking the outer protective coating of insulation
- Rooftop pipes with low clearance, which often require inspection by a person skilled at wriggling
- Locales where the piping supports have fully or partially disintegrated, causing pipes unsupported over long stretches to eventually droop, increasing the risk of leaks or fracture
- Areas with unpainted welding connections, missing valve caps, and the like
- Hidden piping runs

Intensely scrutinizing hidden pipes, even when cumbersome, remains paramount since unchecked corrosion can ultimately cause any pipe containing pressurized refrigerant to fail. Hidden pipes often exist in older buildings where, for example, pipes were run within hung ceilings.

During inspections, a plant's maintenance personnel can routinely strip any damaged insulation and check pipes for corrosion, applying vital rust-inhibitor coatings to all steel pipe still deemed adequate. When this paint, so critical to low-temperature insulated pipes, cannot stop the corrosion process, pipe replacement becomes crucial.

In the last few years RSC has replaced thousands of feet of pipe corroded beyond the limits of safe operation. Why is the industry as a whole uncovering so many damaged pipes? First, only during the last several years have *painted* steel pipes (particularly insulated ones) become customary in piping installations. Moreover, industrial operations replace pipe only when imperative, yet both plants and pipes continue to age.

In addition, common sources of corrosion exist in a number of plants. For example, cleaning agents or chemical water treatment agents may react negatively with the insulation, the vapor barrier or the jacketing material and cause premature failure of piping (or evaporator coils).

Further, anytime dissimilar metals contact each other, a chemical reaction occurs, which may lead to thinning of the pipe walls by galvanic corrosion. Such corrosion can occur when totally dissimilar metals contact each other or when differences in the composition or surface condition of "similar" metals exist. For example, new pipeline installed in repaired older sections corrodes more rapidly than when it abuts other new pipe.

How does one address the entire corrosion issue? RSC's initial suggestions include:

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Security And The Maintenance Department

Recognizing the need for safety when it comes to refrigeration plants, as well as concerns about potential terrorism, sabotage, and vandalism, RSC now offers additional video monitoring for the engine room or other critical areas important to the maintenance department.

When integrated into a refrigeration control system, this product permits 24/7 monitoring of all the areas critical to your facility's security. The software allows viewing of either single, full-screen or multiple-camera-view, split-screen displays. Even small movements detected by a camera trigger the software to record images automatically on the computer's hard drive, which may be examined later in depth. The "fast search" mode allows quick viewing of data from only those camera frames showing movement.

To see live real-time video of any camera's view, you just select the camera location and click your mouse. (A high-speed workstation may be required to run the video features.) You can also monitor critical areas from remote locations over a high-speed phone line or Internet connection (using Symantec's pcAnywhere™) or request that the system e-mail you when it detects any movement.

Why purchase this security system from RSC? This product:

- Helps protect refrigeration and cold storage areas, as well as other facilities you wish to monitor
- Works with variously configured PCs
- Provides a easy-to-use, cost-effective means for additional security and
- Records all data in high compression MJPEG format.

Individual configuration means you pay only for the features and quantities that meet your requirements. You can choose, for example, from the following camera options:

- Single or multiple cameras
- Fixed position or pan-tilt-zoom units
- Indoor or outdoor cameras
- Cameras with infrared lighting for zero-light viewing and
- Optional audio feeds.

For more information on protecting your facilities, please call RSC today.

Problem?... *continued from page 1*

- Ensuring that visual inspection actually whenever feasible
- Watching pipes closely for corrosion indicators, including rust, scaling paint, or pitting
- Avoiding the use of incompatible materials (such as galvanized pipe) for all ammonia refrigeration facilities (See ANSI B31.5 or IIAR-2 for more information on this topic.)

During remediation, maintenance personnel will be seeking to ensure that the insulation and jacketing on all steel pipe remain in top repair, as leaks invite moisture. Initial actions may include:

- Confirming the tightness of all joints and terminations
- Looking for torn, punctured, or missing insulation, and evidence of frost or sweating on the pipes
- Checking for bulging or deformed insulation, which may indicate unseen contamination

After removing damaged insulation, inspection, cleaning and rust proofing of all piping still in reasonable shape is necessary before properly re-installing insulation to ensure re-establishment of the seals.

For more information, please contact RSC. Our experienced staff can readily guide you through inspection and remediation procedures.

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