



Technical Guidance Document

Mechanical Failures

Mechanical system failures during the winter can lead to significant property damage, system breakdowns, and increased operational costs. Common issues such as malfunctions in circulator pumps, boilers, sump pumps, and unit ventilators can disrupt building functions, especially during extreme cold.

Prior to Extreme Cold

Heating system maintenance:

- Schedule professional inspections of boilers, furnaces, and heat pumps well before the cold season.
- Inspect heating systems in advance to ensure they are fully operational for the winter months.
- Ensure that all air filters and belts for applicable devices are replaced if needed to maintain optimal airflow and system efficiency.
- Check circulator and sump pumps for functionality, particularly in unheated or less frequented areas, to prevent mechanical failures that could lead to flooding or heating disruptions.
- Inspect unit ventilators regularly, especially exterior air intakes, to ensure they are operating correctly and circulating heat properly.
- Verify that float switches in sump pumps are functioning properly to prevent water backup or freezing.
- Ensure air source heat pumps are free of ice buildup and operate efficiently in cold temperatures, as excessive frost can reduce performance and lead to heating issues.

Water and drainage systems:

- Inspect for leaks in mechanical systems, especially those prone to freezing.
- Ensure all low point drains in dry sprinkler systems are marked.

Emergency preparedness:

- Review and update emergency protocols.
- Test backup generators to ensure they are functional in case of a power outage or mechanical failure. This is typically done on a scheduled basis.
- Have spare parts on hand for critical systems to minimize downtime if failure does occur.
- For buildings without a BMS system, consider installing a temperature alarm sensor that will notify staff if the building temperature falls below a preset threshold, allowing for quick intervention.

During Extreme Cold Temperatures

Staff building walkthroughs:

- Implement staggered walkthroughs throughout an extreme cold event, ensuring staff use a detailed checklist and map to inspect critical areas, identify potential issues, and address concerns before they escalate.
- Include all areas of concern (with valuable, critical, or vulnerable assets, such as IT room) where loss may occur during an extreme cold event.
- Inspect unit ventilators to ensure they are working properly, best done with thermography.
- Check and clear vents to ensure airflow is not obstructed by snow or ice.
- Check for leaks and failures of water and drainage systems.
- Check sump and circulator pumps during extreme cold to confirm they are operating properly.

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