



THE PRESSURE NEWS

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COLD WEATHER SAFETY: PREVENT FREEZING DAMAGE AND BOILER HAZARDS

Each year, ABSA receives incident reports about pressure equipment damaged by freezing temperatures. When pressure equipment is exposed to temperatures below 0°C, fluids inside the equipment can freeze and expand, causing damage. Freezing can also damage adjacent lines and isolate equipment from its pressure relief device, which can lead to significant overpressure events.

Freezing incidents can cause significant financial losses, including property damage and plant downtime. More importantly, freezing damage can be difficult to detect. Operating affected equipment before it has been properly assessed may create serious safety risks. Equipment owners can help prevent these incidents by implementing an effective winterization program for pressure equipment.

Any equipment affected by a freezing incident must be taken out of service immediately. If freezing is suspected or observed, the equipment must not be returned to pressure service until it has undergone a proper inspection and integrity evaluation. Using damaged components in pressure service can be highly hazardous, and freezing damage is often irreparable.

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COLD WEATHER SAFETY: PREVENT FREEZING DAMAGE AND BOILER HAZARDS (cont.)

Heating plants are common sources of heat in medium- to large-sized indoor spaces. These plants include boilers and auxiliary pressure equipment, such as heat exchangers, hot water tanks, expansion tanks, and piping, that must be maintained for safe and reliable winter operation. Owners and operators should complete heating plant maintenance in summer or early fall because weather and temperature changes can happen quickly later in the season.

To support reliable operation, owners and operators should implement the following preventive maintenance measures:

- **Ensure boilers and auxiliary equipment are serviced or maintained during off-peak usage, typically during the summer months or early fall.** Service/maintenance activities include function-testing of controls and instrumentation, checking the operability of relief valves, and testing and/or cleaning of burner/combustion systems.
- **Ensure the boiler or mechanical room is adequately protected from the elements.** Airflow ducting can create problems during extreme cold weather. Inspect ducts for leaks and seal large gaps to reduce the risk of cold air entering the mechanical room, which can lead to freeze-up and combustion issues. If the heating plant has warm-air recirculation equipment, operators must ensure the coils and related components are maintained.
- **Ensure heating plant piping is in good condition.** Extreme cold can cause hot water, steam, or condensate lines exposed to the elements to freeze and rupture, especially piping near openings in the mechanical room, such as windows or outside doors. Ensure these susceptible lines are properly insulated. For steam heating plants, confirm that condensate traps are functional and replace traps that show signs of leakage or general wear.

Personnel safety should also be considered as part of an effective heating plant reliability and maintenance program. It is the owner's responsibility to ensure the safety of operators and non-operations personnel, including building or facility occupants who may not be aware of the presence of the heating plant:

- **Exhaust pipes, vents, or ducts can cause ice formations on building exteriors.** These ice formations can fall onto people during a mid-winter "warm" spell, potentially causing injuries. Areas that are susceptible to ice formation should be flagged and pathways for people to walk on that are along the susceptible areas should be re-routed. Engineering and/or administrative controls such as barriers and signage should be installed.
- **Walkways or paths that are adjacent to a heating plant outside entry/exit door are susceptible to slippery surfaces due to condensation.** Ensure sand or other provisions to improve traction are available for use on the walkways. Traction aids can also be provided to the heating plant operators that regularly perform outside work.

Before cold weather sets in, review your winterization procedures, confirm pressure equipment is protected from freezing, and ensure boilers and ventilation systems are maintained for safe operation.





LARGE OPENINGS IN PIPE MAY REQUIRE ADDITIONAL JUSTIFICATION BEYOND CODE

Large openings in cylindrical shells of pressure vessels and pressure piping systems, particularly in large-diameter components, may require more detailed justification than area reinforcement calculations alone. Reinforcement rules are intended primarily to replace the material removed by the opening so that the cylindrical component can carry the required membrane stresses.

As the opening approaches the size of the vessel shell or run pipe, however, the remaining ligament becomes smaller and the cylindrical component loses stiffness. Consequently, local bending, ligament effects, stress concentrations, stress redistribution, torsional effects, and localized distortion become increasingly significant, and reinforcement calculations alone may not adequately demonstrate structural integrity. External, thermal, and cyclic loads may further increase these effects.

ASME Section VIII, Division 1 and ASME B31 both specify limits on the applicability of their area reinforcement rules, respectively. For Section VIII, Division 1, Mandatory Appendix 1-7 further requires additional evaluation for large openings. When the opening inside radius exceeds 70% of the vessel shell inside radius, the Code no longer provides prescriptive design rules and refers the designer to the requirements of U-2(g), recognizing that shell stiffness and bending effects become significant.

Similarly, ASME B31 limits the applicability of its branch area reinforcement rules, while permitting alternative methods when those limits are exceeded. Although B31 does not contain provisions equivalent to Mandatory Appendix 1-7, large branch fittings – including fabricated tees, laterals, wyes, headers, hot tap fittings, manifolds, and size-on-size branch connections – can have geometries and structural behavior similar to large openings in cylindrical shells of vessels. While piping codes require flexibility analysis to evaluate the stiffness of the piping system, this analysis is not typically performed as part of an individual fitting review. Therefore, for branch openings approaching or exceeding a 70% inside radius ratio, submitters are expected to justify the effects of reduced stiffness, bending, ligament stresses, and local deformation.

The requirements of U-2(g) in ASME Section VIII, Division 1 and piping code are conceptually similar in that they permit alternative methods to demonstrate an acceptable level of safety. Acceptable methods include:

- Proof testing in accordance with Section VIII, Division 1, UG-101;
- Detailed stress analysis, including finite element analysis (FEA);
- Experimental stress analysis, such as described in Section VIII, Division 2, Annex 5-F; and
- Engineering calculations based on recognized pressure vessel or piping design principles.

FEA reports are expected to comply with CSA B51 Annex J, as CSA B51 is adopted under Alberta legislation. ABSA may also accept engineering calculations that are outside the prescribed rules of the construction code, provided they are based on recognized engineering methods. For engineering calculations, authentication by a Professional Engineer licensed in Alberta may be required, particularly where the analysis is outside the prescriptive code rules or the design is considered complex under Section 9 of the *Pressure Equipment Safety Regulation*. Regardless of the method used, the analysis should clearly identify its assumptions, limitations, and the basis for demonstrating safety.

Particular attention should be given to branch or nozzle connections approaching size-on-size configurations, where local ligament effects, shell bending, stress concentrations, and loss of stiffness may govern the structural response, even when conventional reinforcement requirements have been satisfied. The objective is not to replace existing code design rules, but to ensure that large openings receive an engineering assessment appropriate to their structural behavior.

AB-500 REVIEW PROCESS INCLUDES UPDATED PUBLIC CONSULTATION

ABSA's AB-500 documents set out requirements or guidance that can affect stakeholders' integrity management and quality management systems. Our AB-500 reaffirmation process was recently updated in response to stakeholder input.

Beginning September 1st of the year before a document is scheduled for reaffirmation, ABSA will post a feedback link in the "Public Consultation Link" column on our [AB-500 Series webpage](#). The consultation will remain open for at least six months, allowing anyone to contribute.

ABSA will formally review every submission and make public an anonymized summary. The AB-500 document may then be revised and republished.

PLANNING YOUR INSPECTIONS: A SIMPLE CYCLE FOR EQUIPMENT OWNERS

If you own boilers or pressure vessels in Alberta, keeping them inspected on time can be challenging without a fully implemented integrity management system. The good news is that ABSA already sends you a natural starting point each year: your annual fee invoice. Here's how to turn that invoice into a simple reminder for a repeatable inspection planning cycle.

STEP 1

It starts with your annual invoice

Each year, ABSA issues an invoice to collect annual fees on your in-service pressure equipment. This is more than just an invoice; it lists every piece of equipment on your account that is subject to fees, along with each item's next inspection date – making it your annual reminder of what's due and by when.

STEP 2

Verify the list against your records and site

Start by reviewing the list to make sure it's accurate and up-to-date by confirming it against what's installed and in-service at your sites. For each item on the list, ask: is this still at one of our sites and does it belong to me? Records on paper don't always match reality, so a quick walk-through is a good practice.

Sometimes equipment is installed, retired, relocated, or taken out of service without ABSA being notified. If anything has changed, let ABSA know by submitting an [AB-10 \(Boiler and Pressure Vessel Status Report\)](#) to your Safety Codes Officer.

For new equipment, it is recommended you contact your ABSA Safety Codes Officer one to two months before commissioning, ideally before purchasing and prior to installation to ensure pressure equipment meets Alberta Regulatory requirements.

Keep in mind the invoice only shows equipment subject to annual fees; some items are exempt (see [Information Bulletin No. IB22-021: Exemption from Annual Fees](#)). Owners are not exempt from their responsibilities under the Safety Codes Act if the pressure equipment is exempt from fees.

STEP 3

Build your inspection schedule and set reminders

Using each item's next inspection date (on the invoice or the most recent Certificate of Inspection Permit), build a schedule to ensure inspections are completed before the Certificate of Inspection Permit expires. Group nearby or similar items to reduce visits. If you manage a lot of equipment, setting a recurring quarterly reminder to review what's due in the next three to 12 months can prevent missing inspections.

STEP 4

Determine whether an internal inspection is needed, which requires more planning

Not every piece of equipment is the same. Some items only need an external inspection. Others have a manway or inspection openings which also require an internal inspection; the equipment must be taken out of service and opened. Contact your Safety Codes Officer early to confirm inspection requirements. Inspection requirements are further detailed in [AB-506 \(Inspection & Servicing Requirements for In-Service Pressure Equipment\)](#).

SUMMARY

Your invoice, a quick records-and-site check, a clear schedule, and a call to your inspector – that's the whole cycle. A little planning through the year keeps your equipment compliant and safe. If you have further questions, contact your area Safety Codes Officer on our [Inspections webpage](#) and enter your vessel number (A number). This can be found on your invoice, your last Certificate of Inspection Permit, or hard-stamped on your equipment.

B.C. COLLEGE RECEIVES FIRST-EVER B-PRESSURE WELDER TESTING CERTIFICATION

Okanagan College has become the first post-secondary institution in British Columbia certified by ABSA to retest pressure welders. The designation allows the college to offer recertification testing, providing a significant benefit to welders who live in B.C. but work on industrial projects in Alberta.



Pressure welder certification is a highly valued qualification that enables welders to work on pressure vessels and piping systems used throughout the oil and gas, energy, and heavy industrial sectors. Because the credential must typically be renewed every six months, many B.C. welders have traditionally been required to travel to Alberta to complete testing and maintain their certification.

Achieving the designation required more than six months of preparation by the college's welding department. Staff developed a comprehensive quality management system covering testing procedures, safety requirements, equipment control, and training records. Following an on-site audit of facilities, instructor qualifications, and testing processes, ABSA awarded certification with no major or minor deficiencies identified.

The milestone also highlights the importance of collaboration between industry and educational institutions. For the pressure welding industry, the significance extends beyond a single institution; it strengthens access to qualified testing services, supports workforce mobility across western Canada, and creates new opportunities for welders to achieve and maintain critical credentials closer to home.

JOIN ALBERTA'S POWER ENGINEERING LEADERS AT ACPEEC 2026

The 2026 Alberta Chief Power Engineers Education Conference (ACPEEC) is coming to the Renaissance Edmonton Airport Hotel on October 28th, bringing Alberta's power engineering community together for a full day of learning, discussion, and connection. The Chief Power Engineers meeting and social event will also take place on October 27th at the same location.

ACPEEC is perfect for Chief Power Engineers looking to sharpen their skills and connect with peers. Don't miss out on the latest industry insights and hands-on sessions.

This year, from ABSA, Alan McKee, President & CEO and Robin Antoniuk, VP Technical Services will be among the presenters, sharing insights on our strategic priorities and approach to regulatory oversight.

As the organization responsible for examining and certifying power engineers in Alberta, ABSA is proud to be affiliated with ACPEEC and to support opportunities that strengthen professional knowledge, safety, and regulatory understanding across the industry.

Space is limited. Register now.
We look forward to seeing you at this exciting event!



ABSA HAS A NEW OFFICE IN CALGARY



ABSA has a new office in Calgary, located at #100, 1111 - 57 Ave. NE.

All in-person activities in Calgary, including exams, will be held at this office. Our Edmonton office, where our Finance team processes payments, is unaffected.

If you have any questions or concerns, please phone ABSA Reception in Calgary at 403-291-7070.

UPCOMING SEMINARS

**Pressure Piping Fabrication
Requirements & Quality Control**

October 6th-7th CALGARY

**Pressure Piping Fabrication
Requirements & Quality Control**

October 28th-29th EDMONTON

**Quality Systems & Inspection For
Pressure Equipment Construction**

October 27th-29th CALGARY

**Repair &
Alteration**

November 4th-5th CALGARY

**Pressure Equipment
Safety Legislation**

November 4th-5th EDMONTON

**Pressure Piping Fabrication
Requirements & Quality Control**

November 18th-19th CALGARY

**Regulatory Information
For Power Engineers**

November 25th CALGARY

**Design
Registration**

November 25th-26th EDMONTON

REGISTER NOW:

visit learning.absa.ca/learn

Annual Code Update Seminar - no seminar in 2026 but will be held in 2027

