Plan to perform in-depth maintenance during the slower winter season.

Avoid frozen lines by injecting air and antifreeze into lines and pipes to reduce condensation and resist freezing.

If operating in lower temperatures, opt for the manufacturer’s cold weather package.

Keep unused mobile equipment sheltered from weather.

Schedule in-depth maintenance and equipment rebuilds.
Preparing for Winter

Preparing a plant to shut down for the winter really falls under the larger umbrella of “winterizing” — whether for shutdown or to operate through the winter season. “Our shutdowns in the northern regions might be only for a few weeks, and many of our plants operate year-round,” says Trent Carney, Rogers Group Inc.’s area production manager for Indiana. “For those plants that we do shut down, we want to make sure our winterization leaves open the possibility to produce if we need to.”

That said, Carney explains that preparations for winter begin as early as August or September, when the company looks at long-term weather forecasts, production needs, and inventory. “We look at what kind of winter is expected. Will we need snow removal? Is it expected to be wet and rainy? We talk on a regular basis, planning a shutdown date and working toward that. From a cost standpoint, we want to make sure we produce each day that we have planned to produce.”

Wade Lippert, field service representative for Kolberg-Pioneer, Inc., says the primary villain every plant battles in the winter is moisture. “Freezing liquid is freezing liquid — it is all bad for a plant. And moisture in components will create rust over time, which can damage everything from bolts and fasteners to gear teeth, bearings, shafts, and other parts — leading to malfunction or failure, as well as safety issues,” he says.

“What is the answer? Lubrication is a producer’s best friend,” notes Patrick McGuire, service manager for Johnson Crushers International Inc. “Bearings must be purged and cleaned, then fully greased to keep moisture out. Screeners require lubrication of the wheel case to make sure there is no moisture. “In short, grease everything you can grease,” he says.

Both McGuire and Lippert emphasize the importance of using the correct, factory-recommended lubricants. “Our engineering department spends a lot of time researching oils and greases so that we can recommend for specific pieces of equipment and specific applications,” Lippert says. “Our operating manuals provide all of the information you will need as to what lubricants are recommended.”

For washing equipment, the key is to completely drain everything. “Make sure there is no standing water in lines or pipes or it will freeze and they’ll break, creating downtime and lost revenue later,” McGuire says. “Blow out lines and pipes with dry air first, then fill with antifreeze, if applicable. And clean everything. Properly cleaning the plant will remove buildup that can harbor moisture, leading to rust.”

Water — when it freezes — can break steel, ruin hydraulic, air, and water lines, and damage fuel. For wet processing equipment, most care revolves around completely draining what is possible to drain. It is important that the ability to drain the equipment is designed from the start to be convenient, so that it will be done. Automatic pressurized drains are a benefit. Prepare for winter by injecting air and antifreeze into lines and pipes to reduce condensation and resist freezing.

With more operations choosing to produce through the winter months than in the past, traditional, month-long winter shutdowns are not as prevalent as they once were. That said, producers in northern states and providences still may choose to shut down for a matter of several weeks. The down period provides opportunity for them to handle scheduled maintenance on equipment. Planning begins in August or September.

Mobile equipment purchase options may include heaters for engines, tanks, fluids, and hydraulics. These are simply plugged into 120V or 480V systems. Before snow flies, be sure to install the correct engine, hydraulic, transmission, and final drive lubricants. Fuel stabilizers are recommended. When the machine is not being used, it’s best to keep it out of the elements. If indoor machine storage is not an option, storing the battery indoors at room temperature is advised.

Today’s processing equipment is available with options that allow it to run through the winter months — or shut down without worry about the elements. Cold weather packages can maintain heat for hydraulics and motors, and also monitor fluids, pressures, temperatures, and flow throughout winter shutdown. A critical factor is making sure lines and electronics are moisture-free. Grease whatever can be greased, filling all voids. Empty bins and chutes so that material does not freeze to them.

During winter shutdown preparation, many workers may be asked to perform new or unfamiliar tasks or work with equipment with which they are not familiar. It is important that producers provide additional safety training for non-routine tasks — including a written job safety analysis (JSA). The JSA, performed with 100% of employees, provides an efficient checklist of all equipment-specific safety rules. The JSA, performed with 100% of employees, provides an efficient checklist of all equipment-specific safety rules. If an employee can’t perform the task or works in an environment where the equipment is not available, the employer must ensure the employee is provided with an appropriate personal protective equipment (PPE) or one that is not available.

Producers will often use the winter months to provide thorough maintenance on equipment — making repairs that would normally cause shutdown during production. Many manufacturers and dealers offer winter rebuild programs. In addition to overhauling the machine to like-new condition, the manufacturer or dealer will return it completely packed with grease so that it is ready for proper storage until spring.

The answer? Lubrication is a producer’s best friend...
Rogers Group plants often run year-round, and those that do shut down typically only close operations for a matter of several weeks. According to Trent Carney, the company’s area production manager for Indiana, within the winter months, daily shutdown procedures are put in place so that the plant is prepared to sit idle if necessary — or it might start up, depending on production needs and the weather.

These daily procedures include emptying all equipment and bins of material so that nothing freezes overnight, dressing belts to help melt snow off of them, and using vulcanized rubber on head pulleys and winged tail pulleys. “Lube manufacturers now provide cold weather blends, where before, we had to keep our grease barrels heated,” Carney adds. He explains that Rogers Group orders its mobile equipment with heating packages, including heating blocks and lubricant reservoirs. “These are in place at all times, so we can just plug them in. Most run on 110V, and some systems run on 480V,” he says.

With the fixed plant, winter preparation can include back flushing the dust suppression systems and adding antifreeze at the stations to protect all waterways. Fixed elements, like crushers and screens, are typically outfitted with cold weather packages that are thermostatically controlled to maintain all fluids at the proper temperatures. “We used to make these cold weather systems ourselves, but any more, manufacturers offer them as an option when you buy the equipment,” he notes.

For wet processing systems, Carney says most facilities have been designed with convenient ways to drain water. “Because the goal is to be able to produce if necessary, we might not drain the system every night. One night of cold weather doesn’t affect the system. But if a whole week of freezing temperatures is in the forecast, we’ll drain it,” he says.

Rogers Group also uses monitoring systems — either from a manufacturer or built in-house — to monitor all fluids including pressure, temperature, and flow. “Our larger plants have a winter staff that prepares the site for winter and then monitors it after shutdown. Our smaller plants receive periodic checks. A lot of our mobile equipment has monitoring packages that can remotely send a text or place a call. And we also have developed our own call system that sends an alert through a PLC,” Carney says.

Preparing a plant for winter involves many of the same steps for both a plant that will sit idle, as well as one that will run all winter, says Wade Lippert, field service representative for Kolberg-Pioneer, Inc. “There are more and more producers who operate during the winter months, even in northern Canada and Alaska,” he says.

This is, in part, made possible by the evolution of processing equipment. Today’s crushers, screens, and washing equipment are much more sophisticated than equipment from years ago. “But what makes today’s equipment better able to operate in extreme temperatures also makes it sensitive to environmental changes,” explains Patrick McGuire, service manager for Johnson Crushers International, Inc. “For example, equipment is now run by electronics, which must be sealed against the elements.”

Lippert and McGuire offer universal maintenance practices that apply both to shutdown and operation in winter.

- Make sure all electrical components are sealed against the weather.
- Ensure all oil reservoirs are properly sealed; change or clean out all reservoir breathers.
- For portable plants and generators that run on diesel, add fuel stabilizers.
- Completely drain all wash plants; blow out pipes and lines with dry air and ethanol or alcohol; add antifreeze.
- Lubricate the rock impulse mechanism in screens and make sure there is no moisture in the case.
- Clean all equipment to remove material buildup, which can harbor moisture that creates rust.
- Grease bearings to lock out moisture and reduce possibility of brinelling from any ambient vibration.
- Cover crusher openings to avoid snow and ice pack.
- Rotate conveyor revolutions so that bearings don’t seize.
- Check belts and hoses; replace if necessary
- For oil heaters, use the correct viscosity oil for the ambient temperature; synthetic oils are more stable.
- Take batteries inside at night or use battery warmers.

“If you’re operating in the winter, it’s important to grease everything at night at the end of the shift. Fill all voids so that no moisture can build up,” says Lippert. “It’s good to do this all year long, actually, because it gets you into the habit.”

“Take the worst extremes into account, and operate as if conditions are always like this,” McGuire adds.