



OPTIMIZED FOR WINTER

With all the talk about global warming it's easy to forget that it can still get cold. Really cold. Take Tuesday, January 7, 2014 for example. All 50 states recorded temperatures below freezing. Yes, even Hawaii, where the weather station at Mauna Kea recorded 21 degrees Fahrenheit. So it's still a good idea to prepare for winter operations to ensure your business is optimized for cold weather in three key areas: equipment, personnel, and worksites.

EQUIPMENT

Jeff Morse is general manager at E.W. Sleeper Company, Inc., a Kawasaki-KCM wheel loader dealer in Concord, New Hampshire. He says it's important to get the right equipment from a dealer who understands your business. "We offer 4- and 5-month rentals just to meet the needs of snow removal contractors. All our equipment comes with block heaters and all are late-model units because there's no time for downtime in snow removal," Morse emphasizes the importance of having a good working relationship between the customer and the dealer. "When situations arise that force us to make a choice, we give priority to our preferred customers and snow-removal contractors."

Morse says early is better. Come early to the dealer to rent equipment or obtain service for current machines. "Winter arrives at different times and you need to be ready." Use fuel treatment early, preferably from the first fill.

Machines must integrate with existing technologies and the ways those technologies are used in winter applications. The Minnesota Department of Transportation (MnDOT) has worked closely with the Federal Highway Administration to develop and implement Vehicle Data Translator (VDT) 3.0. This system links with sensors on roads, in equipment, and in vehicles to monitor more than two dozen types of data, everything from precipitation type and intensity to pavement temperature to vehicle yaw rate and actuation of anti-lock during braking. Essential to the system is the AmeriTrak AT500 in-vehicle hardware and software transponder system. The AT500 shares data but also uses data for such functions as controlling application rates for de-icing chemicals on roadways.

Sue Lodahl, assistant state maintenance engineer with MnDOT, points out that "No truck, no loader operates in isolation. Everything must work together." For some loader operations, the only critical factor is matching the loader and bucket with the trucks being loaded to maintain efficiency. But it's more challenging to have the right loader in more complex and sophisticated operations to achieve peak performance within that system.

"One of the reasons we offer Kawasaki-KCM loaders is their wide range of machines to meet a wide range of applications," says Morse. He says the smallest model, the 42ZV-2, is perfect for smaller sites. Its universal quick coupler, interchangeability with skid steer attachment, and standard third-spool hydraulics

allow the use of not only buckets but also brushes and snowblowers. The standard limited-slip differentials provide traction control on slick surfaces. “Our customers also like the many models of Kawasaki-KCM mid-size machines, including the 67TM7 and 70TM7 with their TaskMaster true parallel linkage design.”

PERSONNEL

Why rely on the hit-or-miss results of conventional wisdom when training is so widely available? For example, Lodahl points out that MnDOT partners with the University of Minnesota’s Center for Transportation Studies and the Minnesota Local Technical Assistance Program and uses in-house trainers to provide training to district offices as well as local governments. The University of Minnesota offers CTAP, the Circuit Training and Assistance Program, to train government employees in the latest transportation-related tools and technologies. Contractors may be able to receive training from such groups or from construction associations or equipment dealers.

The point of training is that all assets—from lube oil to hydraulic cylinders to workers—experience unique demands in winter conditions and employees must use best practices to minimize risk to those assets in those conditions.

Technology has made winter weather preparedness more effective but also more complicated. We all know to dress in layers, but layers of what? (Here’s the summary: a base or “comfort” layer of wicking material, a warmth layer of wicking insulation, and a protection layer that vents perspiration while protecting against wind and precipitation.)

Likewise, we’ve all heard winter weather alerts, but do we know the definitions of each of the 11 categories used by the National Weather Service and how each affects our preparation? Yes, there is a difference between a Winter Storm Watch and a Winter Storm Warning and we should prepare differently for each.

And it’s not just operators who need training. Supervisors should learn to manage jobs in ways that minimize employees’ exposure to the elements. They should provide warming areas where workers can rest and recover as needed. Supervisors need to monitor changing conditions, from falling temperatures to dangerous ice buildup on overhead power lines and trees. Supervisors must ensure that jobsite communication is maintained and that company vehicles and equipment have emergency kits in the event an employee gets stranded due to weather or mechanical failure.

Morse says it’s important to spec machines for winter use with operator comfort in mind and uses the 42ZV-2 as an example again. “The optional rubber-mounted cab keeps operators warm and, along with the standard suspension seat, isolates them from the jarring ride on frozen soil.” Dual-sided cab entry allows easy access in confined spaces. Heated seating is available on larger models, which come with thermostatically-controlled HVAC as standard equipment.

JOB SITE

All the usual housekeeping rules become even more important when standing water can turn to ice, obstacles can be obscured by snow until a tire or track strikes them, and rough haul roads and loading areas freeze into obstacle courses that leave operators fighting their machines for control.

In snow removal applications, environmental management has become increasingly important and environmental controls increasingly stringent. Many agencies are requiring procedures that minimize the amount of road chemicals that can enter streams and groundwater. Operators are trained to use as much treatment chemical as is necessary to maintain safety and mobility but as little as possible to mitigate environmental degradation. Lodahl says operators manage windrows and use other techniques so that stream contamination is minimized. Cleanup is managed to meet the same concerns. “Our vehicles must be washed and the effluent sent to a sanitary sewer,” says Lodahl. “If no sanitary sewer is available, the effluent must be discharged to a holding tank that is periodically pumped and the contents hauled to a municipal wastewater treatment facility.”

THE BASICS

While considering more recent developments in winter preparedness, don’t overlook the basics. For vehicles this includes:

- **Make sure all fluids and filters are maintained and are appropriate for winter.**
- **Don’t charge or jump-start a frozen battery.**
- **Park equipment, whether with tires or tracks, on raised planks, old tires, or another surface that will keep the machine from freezing to the ground.**
- **Allow hydraulic and drive systems to warm up before operating them under full load.**

FOR PERSONNEL:

- **Dress in layers. Change clothes if garments become damp or wet.**
- **Stay hydrated with non-caffeinated (and, of course, non-alcoholic) beverages.**
- **Know how to recognize, prevent, and treat cold stress.**
- **Adopt a buddy system. Hypothermia can lead to confusion that prevents the person from taken appropriate action which may result in damage to vital organs and even death.**

FOR WORKSITES:

- **Keep all corridors (walkways, haul roads, etc.) free of snow and ice.**
- **Use ground heaters when necessary so frozen materials don’t damage ground-engaging tools.**
- **Pick up tools and debris that may get hidden under snow, resulting in damage if they’re run over.**