

SnowNews



A TIMELY NEWSLETTER FOR OWNERS AND OPERATORS OF SNOWMAKING EQUIPMENT WORLDWIDE



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Editorial

Many thanks to SMI's customers for making 2003/2004 our best year ever for sales and global market share.

This year we celebrate our 30th year serving the snow industry. SMI continues to view the snow industry with optimism. Our commitment to improving products, facilities and people rolls forward. We are constantly investing in technologies to maintain our strong market position.

SMI has invested considerably in our SmartSnow™ automation software platform and programming. SmartSnow is the heart of our automation efforts and is now operating around the world. SmartSnow works with Windows and can be customized for your resort, yet it runs on common industry software platforms. We continue to evolve our automatic valve manifold, pressure control technologies and weather station for snowmaking durability.

SMI has also invested heavily in the development of our new low energy tower air product named Viking Snowtower®. SMI's patent pending Viking uses internal mix nucleation technology in a simple, easy to use package with easy access to the head. There are many ease of use features such as the hydraulic jack with safety latch, inline water filter and two valves for water flow addition or deletion.

SMI has added three automation specialists to our team who bring extensive automation and controls expertise to SMI. We are running fiber optic, wireless ethernet, radio and hardwired communications at multiple customer sites.

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SmartSnow™ is the heart of our automation efforts and is now operating around the world.

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These people and products enhance SMI's Wizzard and PoleCat family of products and extend our product line to offer just about any snowmaking solution available for the energy efficient world of snowmaking. These products are backed by the most experienced and largest snowmaking team in North America.

We encourage you to try SMI's new products that are backed by our 30 years in the business.



SmartSnow™

The SMI automatic software and control package, SmartSnow™, has been developed together with ski areas over the past ten years to provide a menu-driven flexible package for your resort.

Snowmaking machine, plant and other resort information can be controlled or in view only mode, depending on your level of security. The screens are easy to navigate and provide information in an easy to view and control format. Weather data is also simple to monitor and track. Machines can be controlled or viewed individually or in multiples. The reporting and graphing features are menu driven and provide excellent information.

SmartSnow is built on the latest Microsoft technologies and can be connected via wireless internet, hard wire, fiber optic, radio modem or other technologies.

Call SMI today to learn more about the flexibility and simplicity of SMI software and controls.



SmartSnow™ software screens



Technology of Snowmaking

Dimensions of Snowmaking

The conversion of water to snow technology at the snow-gun is now more complex than ever. Products are becoming more energy efficient and better performers in marginal conditions. There are also more product choices than ever before.

SMI sees the snowmaking market evolving into various performance dimensions of snowmaking production and ease of use. The range of products goes from the very simple on/off only tower snowgun to the multiple dimension portable fully automatic fan snowgun.

The snowgun performance categories break into general categories as follows:

■ ONE DIMENSIONAL ON/OFF

Generally low energy tower snowguns have a sweet spot operating range of about 5°F (3°C), say 16°F to 21°F. These do not perform very well in marginal conditions above 26°F (-3°C). They might make snow at 28°F (-2°C), but likely with very small capacity nozzles in capacities around 5 gpm (18 lpm). They never move so they are susceptible to the wind direction. They do not throw the snow as they only use water pressure to break up the water droplets. So they typically require lots of grooming time to connect the piles. If it is too warm, they sit idle. If it is too

cold, they make really dry snow that can blow away, slip downhill or be easily pushed to the trail edges. The start up is sometimes called "automatic" if you leave the hydrant(s) open and product drains on shutdown.

These products typically have low capital and operating costs, but offer limited performance, flexibility and function. They are tower mounts with tight spacing and have the stick look on the trail edges. Portability and nozzle changing are not practical alternatives. They generally do not throw the snow or fight the wind, so grooming costs are usually much higher.

■ TWO DIMENSIONAL

These products are also typically low energy tower air snowguns. They may be portable, but are generally fixed position towers that are challenging to move. They usually do not throw the snow or fight the wind. These products will project the snow only 30' to 70' from the base of the tower in light winds.

These products offer valve(s) or other adjustments to help add flow in colder conditions. The nozzle set up will determine the range of the sweet spot for this product's performance. Generally, this snowgun will have a 8°F (5°C) range of performance. The startup performance may be 27°F (-2.8°C) and go down to 20°F (-6.7°C) or you could nozzle it for a range of say 24°F to 16°F (-5°C to -10°C). These products typically carry a mid-range price, and more flow and temperature flexibility.

■ MULTI-DIMENSIONAL

These products have multiple adjustments and generally perform across the full temperature range of say 25°F (15°C). There is the ability to vary the snow quality in all temperature conditions. These might be traditional air water snowguns that are large energy users, multi adjust tower air snowguns like SMI's Viking Snowtower or portable and tower fans like

SMI's Wizzard and PoleCat. These products typically have a higher capital cost, but offer low energy costs, maximum flexibility and the best snow quality. These products may be portable and generally throw the snow far from the snowgun so the spacing can be greater between guns and they fight the wind.

Summary

As you evaluate your trails and operations, ask yourself if you can afford to wait until conditions reach and maintain the temperature required for your snowguns to perform? What type of snow quality is acceptable? How many years have you just barely opened? How much terrain must you open for Christmas? What type of throw do you want? Are your grooming costs up?

We see 10 year weather falling into three main categories for snowmaking:

- 3-4 YEARS - LOTS OF COLD EASY TO MAKE SNOW
- 3-4 YEAR - LIMITED COLD CHALLENGING TO MAKE SNOW
- 2-4 YEARS - VERY LIMITED COLD DIFFICULT TO GET OPEN, STAY OPEN AND RESURFACE

We recommend placing multiple dimension snowmaking on all your trails. However, if you consider simple dimension snowmaking, consider it on your lower priority and narrower trails.

SMI continues to place emphasis on trail-by-trail, hydrant-by-hydrant snowmaking design. The ability to open significant portions of your mountain quickly, maintain the trails with good snow and produce it at an affordable cost is one of the keys to success.



Happy Holidays!



SMI Research & Development

One of SMI's investments this summer involved new pumping, piping, hydrants and snowguns at our research facility in Michigan.

SMI sits on approximately 13 acres (5 hectares) with a 10 million gallon lake (35,000 cubic meters). We added the ability to pump up to 900 psi water pressure (60 bar) and upgraded our piping with fusion bond epoxy coated welded steel line. We also added new automatic hydrant vaults and fully automated Wizzards, PoleCats and Vikings to our testing field. SMI regularly makes 20' deep piles on a couple acres of terrain.

SMI's commitment to future products and testing remains a big factor in our success. We strategically think and plan for long-term success. Research will remain a significant strategic investment.



Snowmaking Automation

People's definition of snow-making automation varies tremendously around the world. We talk with resorts that have 10 water only snowguns lining a teaching trail with valves always open. When temperatures drop, a pump is manually started, the line flooded and the 10 snowguns are running. There is no adjustment and the snowguns start and operate "automatically". Others may have an automatic pump station and view their system as "automatic".

Semi-automatic may mean auto start, manual adjust, and manual stop. Another definition is manual start and manual stop with auto adjust. These snowguns may be standalone, in clusters or networked into a communication system.



SMI research facility in Michigan



Full automatic generally means automatic start once a certain wet bulb temperature condition is reached. The pumps start, hydrants open and snowguns start. The snowguns then adjust through the temperature range to meet a preset snow quality. Snowguns can be set to run in priority sequence based on water availability or time of day energy features. Snowguns will automatically stop and drain on shutdown.

We advise customers to be careful to understand the details of automatic snowmaking. The definition means different ideas to different people.

SMI's snowmaking philosophy has always been to offer customers flexible, custom solutions. We also try to have our new technologies be easy to install on older SMI equipment to upgrade older machines to take advantage of new technologies. Our new automation products continue this tradition.

SMI's automation products are flexible, modular and menu-driven. We use top of the line weather stations, programmable logic controllers with touch screen displays and simple effective valving controls.

Automation can be challenging to understand because of the variety of options and ideas available. And there are lots of different methods and approaches. You will want to work with a reputable company that will be around for the long term.

Call SMI today for a full auto or semi-auto demonstration.



SMI 2004 Project Highlights

Added 11 Super PoleCats, 2 miles of buried piping and electrical and a new VFD controlled pump station



Added 5 more Super PoleCat fully automatic snowtowers to total 28 full automatic Super PoleCats on hard-wire and radio communications.



Added 25 PoleCats in both Super and Standard sizes/tbrows/capacities to take fleet up to over 240 Polecats.



SMI Construction

Added new 2000 gpm VFD pump station in new lake water source with complex intake and over 50,000' piping with 25 snowguns. Turnkey design, engineering and installation.



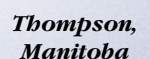
Assisted with trail construction and turnkey snowmaking pipeline expansion.



More sewer and water pipeline construction in difficult terrain.



Turnkey snowmaking project for automotive testing ground in Northern Canada. SMI design, installation and operations for snow.





Bright Thoughts:

"Everyone smiles in the same language."

-Unknown

"It's not the strongest of the species that survive, nor the most intelligent, but the most responsive to change."

-Charles Darwin

"I hear and I forget. I see and I remember. I do and I understand."

-Confucius

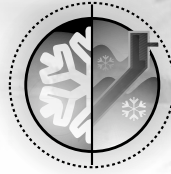
SMI Viking Snowtower®

The SMI Viking Snowtower® has been developed to meet the needs of customers wanting fixed position, colder condition, and lower cost snowmaking.

The Viking uses a 30 foot (9 meter) tower to feed up to 80 gpm (302 lpm) to 12 water nozzles. Nucleation is provided by an on-board 5 HP (4Kw) compressor feeding two SMI custom nucleator nozzles. The Viking is well packaged and simple to install and operate.

Some unique design characteristics of the Viking are the simple mounting base, and the seven sided head to avoid freeze ups and simplify service. The custom nucleation and filter system are easy to maintain. The jack for raising and lowering the Viking is safe and easy to operate. The valving system is a custom design that allows the extra water to simply adjust to the changing temperatures.

Call SMI today for more details.



VIKINGSNOWTOWER™



SMI Viking Snowtower®

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