

SnowNews

40TH ANNIVERSARY EDITION

4 turns  1974~2014

INTERVIEW WITH JOE VANDERKELEN
40 YEAR PICTORIAL TIME LINE
INTERVIEW WITH TOM FILLMORE
VINTAGE SNOWNEWS
TECHNOLOGY OF SNOW



SNOWMAN



An Interview with Joe VanderKelen

Joe is the President of Snow Machines, Inc. (SMI), a US company specializing in snow making equipment, systems and design for resorts world-wide.

Editor: Congratulations on SMI® celebrating its 40th year in business in 2014. Take me back in time: how did SMI get started?

JVK: My parents, Jim and Betty VanderKelen, started the company in our house and in the back of a small carpet company with only



one employee. Our first product - an unusual but energy efficient snow-making machine - was called the SnowStream 320 and it remains the only truly airless snowmaker ever successfully sold and used by hundreds of resorts. My dad saw the future of energy and believed there was a smarter way to produce snow than using big compressors. As we look back and reflect on our heritage, the founders of SMI would be proud of the company's success today.

Editor: How has SMI changed over the years? Do you still focus on energy efficiency and smarter snowmaking strategies?

JVK: Yes, these two philosophies continue to guide us today. As you will see in our company milestones section, our products have been developed to allow snowmaking in warmer and wetter conditions, for

less energy and with less labor. Our software and controls platform was named SmartSnow™ because it really enables our customers to make snow in a much more intelligent manner.

Editor: Tell us about your personal history with the company.

JVK: I grew up working in the business starting in middle school sweeping floors, loading trailers and playing gopher as in "go for this and go for that." Later, while studying engineering at Michigan State University, I was able to help with engineering, project management and learn from both my father and Jim Dilworth (coinventor of the Boyne and Highland snowmakers). Both Jim's were known for common sense engineering and the keep it simple method.

Then while obtaining an MBA, I began working at IBM in sales and consulting for computer systems. After working at IBM for three years, in 1987, I came back and joined the SMI snow team as a sales engineer.

Unfortunately, in 1991, my father was diagnosed with cancer and passed away in January 1992. At that time, I became president and owner of SMI.

A big "thank you" for all the customers, suppliers and community members that have believed in SMI these past 40 years.

These last 27 years have been very fun and it has been personally rewarding to see so many satisfied customers around the world. Our conservative business philosophy has stayed strong in both the good and the bad years in this great industry.

Editor: Can we count on SMI to be around for another 40 years?

JVK: The recent industry consolidation in snowmaking has seen the strong get stronger and the weak go away. We have a very strong leader-

At 40 years old SMI is one of the oldest snowmaking companies and still going strong.

ship team in place and a great group of employees and reps. In addition, SMI is financially strong and well positioned with great products and people.

So yes, we are quite confident that in 2054, SMI will be a leading snowmaking company across the world market while continuing to earn the business of mountain resorts. SMI will continue to change and develop new technologies that follow the smarter and more energy efficient objectives.

Editor: What are you most proud of in your years with SMI?

JVK: Taking a successful company and building a great team of people and products that have been well supported and that has grown to be a major contributor to the industry.

Also, challenging people to move from good to great every day.

Editor: What kind of snow machines will exist 40 years from now?

JVK: I think the future will continue to evolve around energy efficiency and easier to use and maintain equipment. Automation will continue to advance and take advantage of the latest technological developments. More resorts will move to fixed position snowmaking that is elevated and consistent. Snowmaking has seen small advances year to year that over the span of 10 years results in good progress for resorts. This trend will continue.

Editor: Any message for the readers of this special SN edition?

JVK: A big "thank you" for all the customers, suppliers and community members that have believed in SMI.

We pride ourselves on making quality products at fair prices with committed on-time deliveries and the best service in the industry. We will keep working hard and listening to our customer requests, helping them work smarter for years to come.

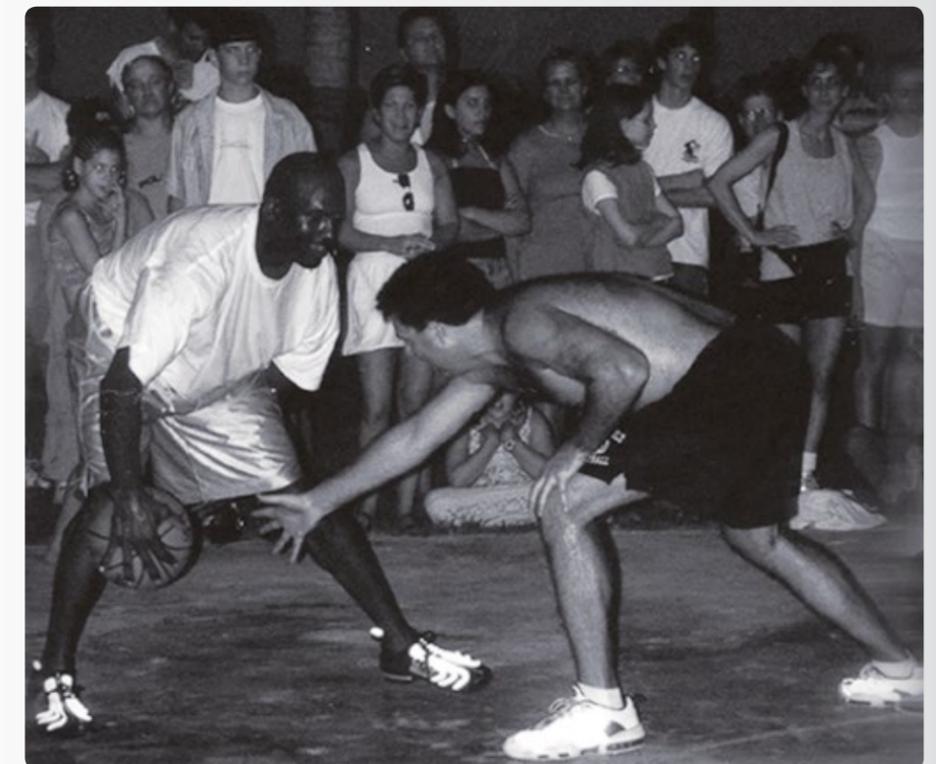


Facts about Joe:

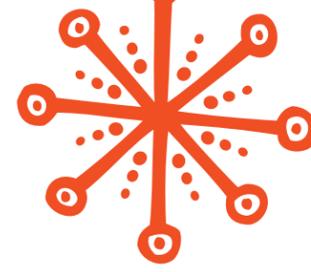
He learned to ski on a rope tow when he was only three years old.

He's strictly a skier.

He played basketball with Michael Jordan and Magic Johnson.



SMI CELEBRATES...



[1974] First product:
SnowStream



[1977] Boyne
Snowmaker



[1984] First
Olympics: Sarajevo



[1977] SnowStream
on boom

[1985] Boyne on JT
Tracked Vehicle



[1985] Boyne

[1988] SAM Ad



[1991] Silent Storm



[1989] SMI
Oscillation
Patent

[1992] SMI automation
is formed - first auto
systems developed

[1994] Standard
PoleCat



[1995] Standard Wizzard



[1996] SMI Headquarters
R&D Expansion

[1991] Joe VanderKelen
becomes President

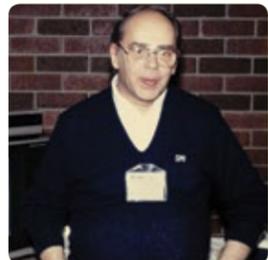


[1996] PoleCat Conversion Kits

[1990] Snow
Groomer
Powered Boyne



[1992] First International Sales Meeting



[1974] SMI Founded by
Jim VanderKelen

[1976] First SnowNews



[1982] Highland Snowmaker

[1984] Mobile
Double Boyne



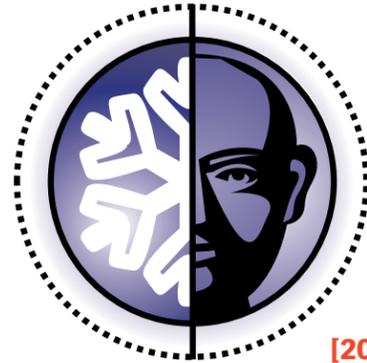
[1997] Kid Wizzard

40 YEARS!

[2000] Super PoleCat



[2001] SmartSnow Introduced



[2006] Offices at SMI double in size

[2003] Viking SnowTower

[2004] Auto Vikings

[2007] Carriage Lift Mount



[2009] Silent PoleCat



[2011] Viking V2 and Kid SnowTowers



[2012] Puma

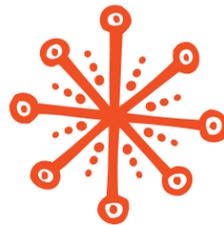


[1997] Wizzard Conversion Kits

[2001] Major Office and factory expansion and renovation

[2002] Salt Lake Olympics

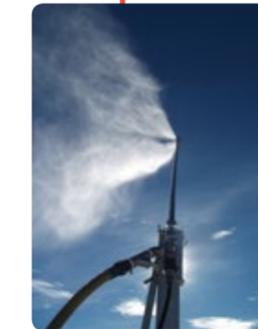
[2003] Smart Snow 2.0



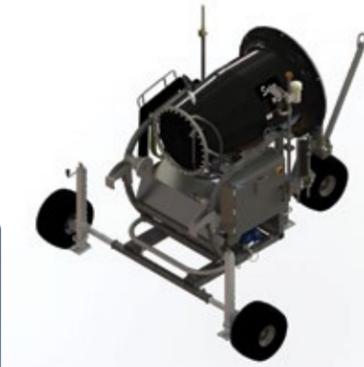
[2006] Kid PoleCat



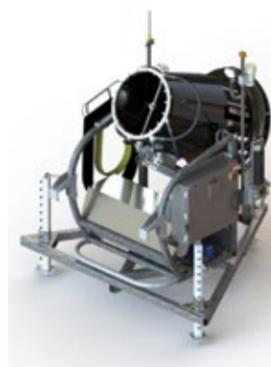
[2009] Swing Arm Mount



[2011] Axis SnowTower



[2013] Delta & Omni Mounts



[1998] Super Wizzard



[2001] Automatic Hydrant



TOM FILLMORE BORN TO BE WILD

Tom Fillmore, also known as Dr. Snow, is a leading field and service technician with SMI. He is also one of their most loyal and dedicated employees – not to mention most colorful. Tom is married to Cindy Fillmore and lives in Midland, Michigan.

Tom has been with SMI for over 33 of the past 40. I recently sat down with Tom and asked him about his years with SMI.

Q: When and how did you get started? Do you remember your first interview?

Tom: I was working as a Commercial fisherman in Tampa, Florida for 3 years, when I decided I was ready for a break, so I hitch hiked back to Midland MI, with my pit bull that January.

Q: You mean people actually picked you up with a pit bull?

Tom: Yep. So that following spring, I figured it was time to look for a job, and at the time I lived about 2 miles from SMI. One day I drove by on my Harley and saw this building with a skier on it, took a U-turn and met Jim VanderKelen at the door. He interviewed me on the spot and I was hired a half hour later.

Q: Most people probably think you earned the Dr. Snow title because of your massive knowledge about SMI products as well as the competition's. But why do you

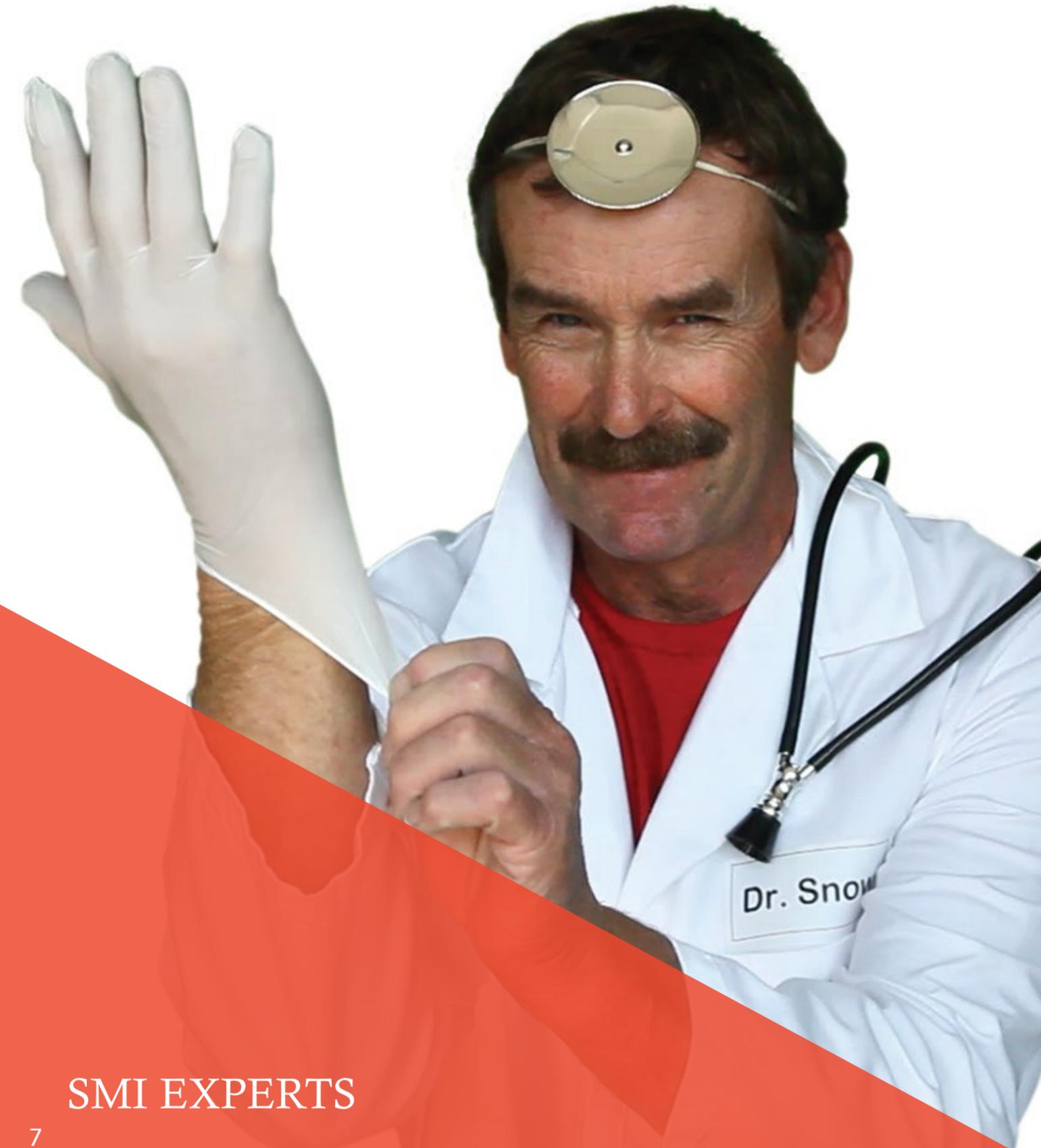
"Rest easy gentleman, I will be in your area all day."

-TOM FILLMORE

think people call you Dr. Snow? Do you remember when folks first started calling you that?

Tom: Well, there is one main reason. Most people don't know the story, but I traveled through Austria over 20 years ago to meet one of our European reps. He picked me up at the train station and we drove to a resort called Lech where the main snowgun manufacturers from Europe, the USA

and Canada were bringing their snowguns for a shoot-off. Our rep had not made us a room reservation and when we arrived it was a busy ski week and there were no rooms available anywhere we went. Finally, we went to this one resort – it was slope side and looked way too nice but we had to try it. The representative came out and told me, "Tom there's no rooms left anywhere – there's only rooms left for doctors." In Europe they have to keep two rooms free in case a doctor may want to stay and ski. So we used my credit card and I signed as "Dr. Snow," and got one of the best rooms, slope side, with a second story view of the shoot-off at all times. Thank goodness, there was not an accident while we were there because I would have shown up with a Snap-on bag of tools.



I guess the title stuck because I know our products so well. I can tell by the sound if a snow gun is icing up from 3 miles away. Many times when I'm at a resort, I'll even ask them to drag something out from behind the shop – something old. Let me fix something

“Keep your stick on the ice.”

–TOM FILLMORE

old because any time you can fix something old for the customer, that's a huge value.

Q: What were the early years of snowmaking like?

Tom: I can remember when we got our first fax machine (Telex) and that was the only “technology” we had. I've seen it come from our first computer to wireless technology. You know our auto guys can remotely pull up and look at anybody's resort with SmartSnow. It's just amazing!

Also, back in the day, we didn't have cell phones – we had to go to pay phones and the best we had was a calling card and you had to find the pay phones that accepted that particular card. Jim would give us like twelve resorts we had to go and do a demonstration at. The owner had contacted him and wanted to see a new snowgun. When we did a demo, we came in, we unloaded it, we set it up, took the customer to dinner, came back to make sure it was running okay, and then we went to bed. That's back when I was learning the business. The guy I worked with, he never stayed up all night cause he didn't want to burn himself out for the next day. But I'm a night owl and always wanted to stay later cause that's when the action is, at night. That's when you want your best snowmakers.

“Yeah Baby!”

–TOM FILLMORE



It was real special when we demo'd the PoleCat tower. We had it on the trailer so we could just pull the trailer out on the slope and then we jacked up the tower 3 feet and made snow. Well that was a huge mistake because the PoleCat made so much snow,

“You gonna eat all that?” –TOM FILLMORE

every morning the trailer was buried. So the snow cat would dig it out, we'd lower the head down, drag the trailer out, hook it up and drag it about 50 miles down the road to get the snow and ice off the trailer. And of course the weather had to cooperate. We had to be out on the road with the right equipment at the right time, which was hard to do. And you didn't dare come home until all the people had

“I was Joe's boss.”

–TOM FILLMORE

been called on.

Q: What are you most proud of in your years with SMI?

Tom: Two things: the PoleCat gun and technology and our property, buildings and research facility. Whether Kid or Super PoleCat, I've had a lot to do with the development and improvements and it's what I like to call “the pride of the American side.” This thing is bullet proof. When everybody else's is failing, the PoleCat is still making snow.

As for the property, there's a little piece of me in every building or improvement. Every year, whether it



was Jim or Joe, they would put money back into the business. Ideas were put on a wish list and carefully thought through. In the summers we had what we called “paint up, fix up, clean up” getting everything ready for the next production season.

Q: What's been the best part of working for SMI?

Tom: Whether it was back in the 80s proving to a customer in the north-east, where it was tough to prove anything, or proving to our customers in Chile and Argentina that these machines actually make snow, my favorite part was to see their faces. Both the towns people and people from the resort would come to this demonstration and see this snowgun and a booster pump hooked up to a hydrant and watch this thing actually make snow. To see these people running around in it like kids, dancing and acting crazy was very rewarding. You can't buy that kind of feeling. It's very satisfying to turn the “doubting Thomas” around and then actually go from talking about the demonstration to doing the demonstration and showing up the next year for the start up.

Q: Tell me how you got started with training?

A: Yeah, that's basically all I do now along with setting up equipment. In the early years I didn't go to trade shows. I was a “wrench” and a territory salesman. Only the boss went to the trade shows. But when I started going to trade shows, being as I had built most of the equipment, I knew all the parts. So Jim started to use me a little more for parts orders and trouble shooting over the phone, which led to doing what we call clinics now, where our customers will come to one resort and we give them some custom training they wouldn't get at the trade shows. It's open to anybody that would like to attend the class.

Q: What do you love most about your job?

Tom: Everybody's got an office – the outdoors is my office. I could not handle sitting in an office for 8 hours a day. Of course I change hats during the day, but I look forward to 10 p.m. cause that's when everything happens.

Q: What will you be doing 20 years from now?

Tom: I'm going back to commercial fishing. I'm gonna buy a couple of old crab boats, about a hundred traps and a license – that's my retirement dream. I've already got future customers from our resorts lined up. Some of them are probably reading this.



Facts about Tom:

He's self-described fish-a-holic.

He's strictly a snow boarder.

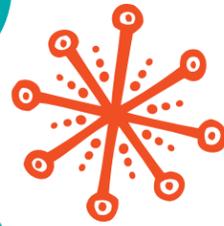
He loves the American Rocky Mountains.

He's most proud of the PoleCat gun and technology.

He hitch-hiked from Florida to Michigan with his Pit Bull.

“Rock On!”

–TOM FILLMORE



VINTAGE SNOWNEWS

Boom Mounted
SMI 320
Airless Electric
SnowStream

SUMMER 1976



- a timely newsletter for owners
and operators of snowmaking
equipment here and abroad.

Dear Reader,

This is our first issue of *SnowNews* and we are pleased to send you a personal copy. Why you?

Because we are publishing *SnowNews* especially with you in mind . . . you and all the other folks in ski areas who have a personal stake in successful snowmaking here and abroad.

In many ways, *SnowNews* is different than any other newsletter you receive.

For one thing, *SnowNews* is the only newsletter dealing exclusively with snowmaking and discussing every subject of interest to snowmakers.

For another, we invite you to be a part of the editorial staff by contributing material for use in future issues. That way, you can help other areas by

sharing your expertise with them . . . and, in turn, be helped by them.

Say you've worked out a specially good solution to a particularly vexing problem. Why not share this information with others in your field by telling us about it.

Or you have a problem. Let us know about it. One or more of our readers just may have a good solution.

A free exchange of information!

For our part, we'll try to spice things up with jokes and other humor to keep things lively . . . and we'll do our best to keep commercialism to a minimum.

Let us hear from you! We'll publish just as often as we have enough material to go to press . . . and we hope this will be often.

You must not lose faith in humanity. Humanity is an ocean; if a few drops of the ocean are dirty, the ocean does not become dirty.
Mahatma Gandhi

A peculiarity of capital is that it cannot be employed productively without benefiting the community in which it is used.
William Feather

Carriage Mounted
SMI 320
Airless Electric
SnowStream



Snowmaking Today

THE WIND/CHILL FACTOR ON SNOWMAKING . . . a Scientist's View

In our last issue, we discussed the very real chilling effect that high winds have on people. Why wouldn't the same winds also have a chilling effect on water particles and help turn them into snow?

Here is a follow-up to that article from the leading scientist on the subject.

Effect on People

The wind/chill factor is an attempt to calculate the heat loss from a human body at given wind velocities. In order to be relevant, the object (in this case, the human body) must be producing heat or be at a temperature higher than the surrounding air temperature.

This being so, each combination of air temperature and wind velocity is labelled with the particular air temperature which alone would produce a like heat loss without any wind.

All the wind velocities in these calculations refer to the relative velocities between the object being cooled and the air. A person standing still, for example, is subject to the entire wind velocity and will experience substantial heat losses due to the wind.

Effect on Snowmaking

A water droplet, on the other hand, is carried along by the wind and is subject to much lower heat loss forces.

Furthermore, the speed of the air from an SMI 320 SnowStream and most other snowmakers is somewhere between 60 to 100 miles per hour. This high speed air stream is unlikely to be influenced to any measurable degree by wind speeds which are much slower.

Relative humidity, on the other hand, has a much greater effect on the cooling of droplets because of the rapid evaporation of water into the air at low relative humidities. If high winds in an area combine with a low

relative humidity, an observer can easily be misled into concluding the increased snow production is caused by wind velocity rather than the low relative humidity.

It is my opinion that wind has only a very negligible effect on snowmaking. The effect is probably less than the probable error for making the measurements involved in determining snow quantity and quality.

Alden W. Hanson

(Before his retirement, Mr. Hanson was a scientist of Dow Chemical Company for over 30 years in basic and applied research. He is the holder of U. S. Patent No. 2,968,164, the pioneer airless snowmaking patent. He is also the holder of 100 other patents and is the father of Denny and Chris Hanson — the founders and manufacturers of Hanson ski boots. Ed.)

TO GROOM OR NOT TO GROOM

The problem of grooming — what's too little or what's too much — is one that every ski area operator must answer for himself while the arguments go on endlessly.

Is there a practical alternative?

There is. Both Jack Kurlander at Hidden Valley and Nelson Sears at Mt. Belleayre avoid risking their grooming equipment on their steep slopes altogether. Instead, they lay down a fresh covering of snow every night.

Each of these areas has extensive SMI boom installations, and they have found that skiers really look forward to skiing that new snow every morning!

This gem from a ski area in Colorado Springs: Guest without reservation to Room Clerk: "If the President of the United States came, would you find room for him?" The Room Clerk allowed as how he would. Guest: "Well, he isn't coming so let me have his room."

SMI SNOWMAKING all over the globe

The good news: All indicators point to a great season coming up. Skiers are ready and willing!

The bad news: Insurance rates, energy and equipment costs are up, too!

With operating costs looming ever larger in the profitability picture of most ski areas, many managements are taking a second and even a third hard look at ways to improve efficiency and reduce costs.

NOTE TO MANAGEMENT . . . give credit where credit is due

The success of any ski area takes a great deal of team effort with every department doing its appointed job with enthusiasm and competence.

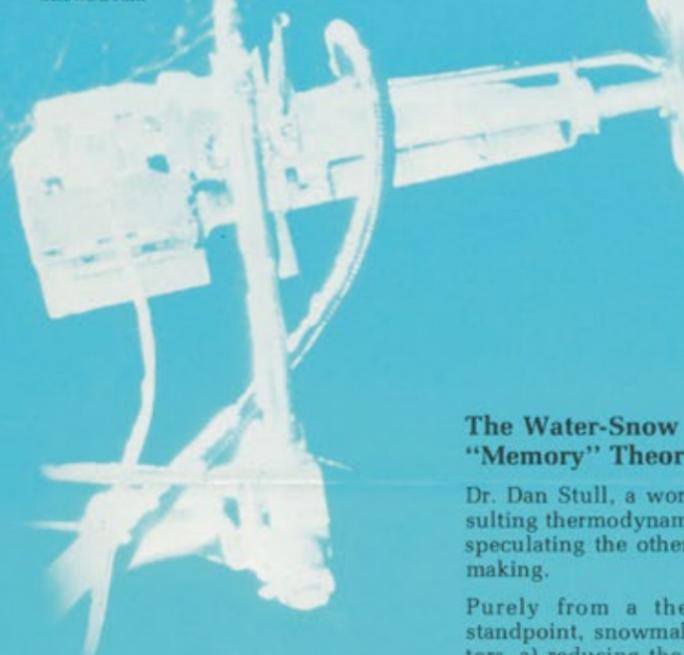
But don't forget the fellows out back. The guys who get cold and wet in the middle of the night, whose work is conspicuous to everyone, but who labor alone under every handicap subject to every whim of the weather.

These are the guys who have to work with complicated systems, compromises and dangers in the dead of night with little or no recognition and under the most difficult conditions. In fact, as a manager, you will not really understand their problems until you have actually been out there with them 2 or 3 nights (not 2 or 3 hours), started the pumps, fixed the leaks, thawed out frozen sections, positioned the guns, moved them, tested the snow, changed the various settings, and just generally defined the problems with your system.

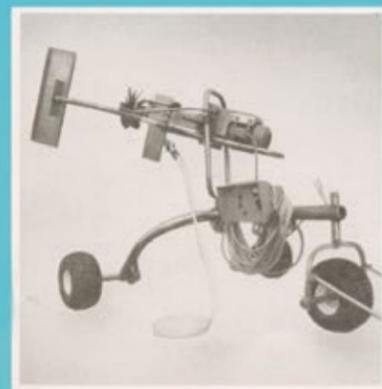
Some areas are spending as much as \$500 an hour making snow yet the boss man hasn't been in the pump house or on the slopes all season during snowmaking. To be an effective manager, he should have a close personal familiarity with his snowmaking system in order to give proper recognition to his people who man them.

The quality and quantity of snow is one of the most important facets of a ski area operation, one of its biggest costs and one of the few aspects of his operation that can be scientifically controlled. Hence, snowmaking should receive the recognition and management time it deserves!

Boom Mounted
SMI 320
Airless Electric
SnowStream



Carriage Mounted
SMI 320
Airless Electric
SnowStream



SPRING 1977

SnowNews

- a timely newsletter for owners and operators of snowmaking equipment here and abroad

The Water-Snow "Memory" Theory

Dr. Dan Stull, a world-famous consulting thermodynamics expert, was speculating the other day on snowmaking.

Purely from a thermodynamics standpoint, snowmaking has 3 factors, a) reducing the temperature of the water to its freezing point, b) removing the heat of fusion and c) overcoming the super-cooling phenomena.

Super-cooling, of course, is the ability of a material to be cooled below its freezing point and still remain in the liquid phase. Many snowmakers overcome this supercooling factor by using a compressed air nucleator while SMI uses a vortex formation system to shock the cooled water particles and generate nuclei.

Dr. Stull mentioned that if freshly-formed styrene (a chemical widely used for plastics manufacture) is first heated and then cooled, it will super-cool very easily and does not want to go solid until it sees a solid crystal of styrene. It then solidifies quite readily. On the other hand, if styrene that has once been crystallized is heated to a liquid or gas and then cooled to

its solidification temperature, it will crystallize readily. It is most difficult to supercool this styrene. Dan has also observed this phenomena with many other chemicals.

He then speculated about some of the unexplainable things we have seen in snowmaking. A gun at one area will make great snow and at another area the same gun makes lesser quality snow. Again, one area can make good quantities of snow at 30°F while another area doesn't do as good a job at 27°F.

Analyzing various temperatures and humidities usually does not explain the differences. Could it be the water? One area has water that has at some time been crystallized and has a memory while another area has water that has never been crystallized. Dr. Stull, who for years believed that everything could be explained by laws of science and nature, is sure we do not fully understand all the laws that operate in nature.

While your Editor cannot accept the above thesis completely, it does lead to some interesting speculation.



Snowmaking Today

WHAT PRICE ENERGY? The choice is yours!

While the nation hotly debates a national energy program, we can all be certain of one thing: the outcome will affect all of us because in the ski area business, energy is money. Big money!

Any price hikes to force conservation will hit us big in the area where it hurts the most — right in the pocket-book!

So we listened intently when several scientific types recently discussed the energy pros and cons of various snowmaking systems.

One theorized that excluding water pumps, vehicles and manpower, one should theoretically be able to convert one gpm of water into snow for every horsepower expended at 20°F.

The other took a much more practical view and said, heck, let's just look at the field results.

He calculated that, on average, compressed air snowmakers using proven guns now get about 1 gpm per 2½ horsepower.

In contrast, the SMI 320, Boyne Snowmaker and Hedco Standard get about 1 gpm using ½ horsepower. That's a whopping 5 to 1 differential!

What does this mean to the economics of a ski area? Just this. If snowmaking energy use now consti-

tutes 3% of the overall budget, this 3% can be reduced to a mere .6 of 1%.

Considered in dollar terms, if the area's present snowmaking energy costs are running \$30,000 annually with compressed air, this amount can be reduced to only \$6,000 annually by using airless equipment. All the savings can be tacked right on to profits!

With favorable economics like these to work with, an area operator can easily convert from one system to the other over a period of two or three years on just the savings alone.

All our major industries — steel, chemical, aluminum, automotive — have waged an all-out war on energy waste. "I wonder", asked the first scientist, "when a majority of ski area operators will start asking themselves the same hard questions with respect to their own energy use."

Many well-managed areas, of course, have already started converting to the energy saving airless systems, and fewer still have completed their installations.

One word of caution, though. Like in all things, check things out carefully before you proceed. Be sure you're not buying yourself a new maintenance headache.

What was the most common problem in snowmaking last season?

Not enough water!! Area after area ran out of water, hundreds of thousands of gallons, millions of gallons. Matt Baker characterized it the best: Matt says figure the acreage and depth you want to cover and divide by 2. This is the amount of water snowmaking needs.

For example, if one is going to cover 40 acres with 12 inches of snow, one needs a lake 40 acres by 6 inches deep or one acre by 20 feet deep. Of course, the amount of make-up water available can be deducted from this.

VEHICLES FOR SNOWMAKERS

Each area operator has his own ideas on what kind of vehicles, if any, his snowmakers should have or need. Approaches vary widely.

In some areas, snowmaking personnel simply ride the lifts up and walk down while hooking up and checking guns.

Other areas provide snowmobiles, or they provide their snowmakers with an allowance for buying their own snowmobiles and keeping them in repair. Still others provide Thiokols, Tuckers or Bombadiers.

What's best for you?

We can't really say, but we suggest you spend a few nights with your snowmakers to help make up your mind.

Snowmaking is hard, cold demanding work. It is often frustrating, as well, and you may just decide your snowmakers deserve every consideration you can give them. The right transportation could go a long way to making them more efficient, better workers.

"Now that you're married," said the insurance agent to the bridegroom, "I suppose you'll want some additional insurance on yourself."

"I don't see why," replied the new husband. "She's not dangerous."

WHEN ALL IS SAID AND DONE,
THERE'S MORE SAID THAN DONE.



BOYNE SNOWMAKER doing what it does best: quietly producing snow in scandalous quantities!



SNOW UNIVERSITY YOUR DEGREE FOR QUALITY SNOW

Snowmaking as a really cool science. In this section we provide both technical and practical information and expert advice from our technical support team at our R & D center in Midland, MI, as well as invaluable input from resorts from five continents.

SMI is celebrating 40 years of non-stop innovation in the snowmaking world! Since its inception in 1974, SMI has always focused on three important snow gun qualities: efficiency, performance and usability.

This combination of essential properties has made SMI snow guns super user friendly. So much so that it's easy for resort management and snowmaking teams to forget that they are still working with industrial equipment in a rugged environment.

In this issue we want to share what we consider to be some of the best practices followed by experienced resort operators who want to protect their staff while snowmaking is in progress. To stay safe and have a great snowmaking season, the following simple tips should be imple-

mented for all staff involved with transporting, connecting, and operating snowmaking equipment.

THE MOUNTAIN EXPERIENCE

A great deal of what we do as snowmakers occurs in the cold, dark and harsh conditions on the mountain. Limited visibility, the effects of a higher altitude and even physical discomfort, each present unique challenges for the men and women who keep the slopes white season after season.

Unfortunately, some resorts view certain safety precautions as optional or even as luxuries for their staff, putting their bottom line ahead of safety. Not only does this view pose potentially dangerous risks for employees, sub-standard safety often contributes to poor work performance and efficiency. However, if the follow-

ing concepts are used and addressed as work safety measures for the entire snowmaking team, it can result in reduced snowmaking expenses in the long run.

Noise Risk

High-energy consumption air/water guns are notorious for being extremely loud, and although still used by some resorts, they are no longer popular. And for good reason. Historically resorts have known about noise risk



Protect your snowmakers

for some time, but it has become less of a concern as fan snowguns and lowE sticks have evolved and replaced these earlier designs on many slopes.

But even with these new machines, snowmakers are still working in a relatively loud environment. It's not as apparent when standing 50 feet away, but even a small change in the decibel meter (un-weighted sound level) due to proximity to the snowgun, especially standing at its side, may represent a gigantic change in the amount of noise perceived by the human hear.

Ski resorts should take the lead by providing the right safety equipment and proper training before and during the season.

A constant high level of noise can lead to permanent hearing impairment that cannot be fixed by modern medicine to date. In addition, long and even short exposure to high noise levels can also create temporary or permanent tinnitus, a phantom noise that can vary in pitch from a low roar to a high squeal, and in some cases, the sound can be so loud it can interfere with the ability to concentrate or hear actual sound.

These higher noise levels emitted by snowguns, compressors and pumps

can also very easily create physical and psychological stress. Stress is proven to reduce daily productivity. Loud noise can also interfere with communication and concentration, contributing to a higher incidence of workplace accidents, injuries and job dissatisfaction, just to name a few.

Fortunately there is a simple solution. Compulsory ear muffs and plugs for the snowmaking staff. Some types are even able to connect to the radio communication systems for better and clear communication between staff members and are proven to reduce noise by up to 35 dB.

Darkness

We all know that snowmaking operations are primarily conducted at night and in some places during 12 or more hours of darkness. And snowmakers are generally surrounded by industrial machines such as groomers and other transport vehicles like snowmobiles. Head lamps are the smart choice of many snowmakers since they can run for many hours on a couple of small batteries and they can illuminate up to 200 lumens out of a single regulated LED. Old fashioned Mag-lite flashlights can be okay, but only as a secondary light. Head lamps have proven to be ideal by most resorts as they are lighter, they leave you hands free and

"Cause every girl crazy 'bout a sharp dressed [snow]man"

-ZZ TOP



make you visible at all times.

And of course, reflective and brighter color gear is always advised.

Head

Protection

Helmets have become more common for snowmakers on the slopes. Helmet fit, comfort, warmth and chin strap convenience are all factors to consider.

Footwear

Uneven terrain, snow, and hard ice are among the conditions expected on any ski

slope, so it's no wonder that hard shell boots are the preferred footwear by experienced snowmakers around the world. Not only do they provide good ankle and foot support, they also protect the toes from accidental impacts. This type of boot is normally fully waterproof and ideal for stepping on both hard ice and soft snow. Hard shell climbing style boots may also be fitted with crampons. Ice axes may also be needed some nights in many alpine style terrains.

Waterproof jackets and pants are also a must when making snow.

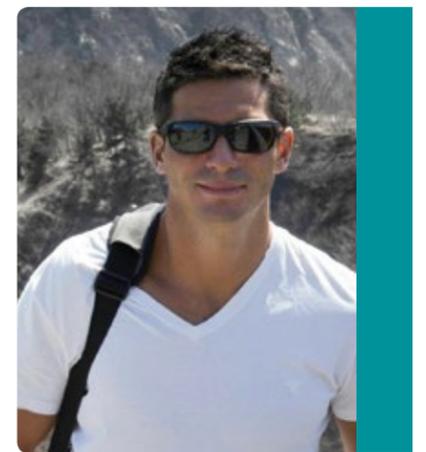
Gloves

Waterproof and comfortable gloves are also advised. Many snowmakers will have two sets ready to go at all times. Appropriate inner and middle layers made of the new Dri-fit and quick dry fabrics are warm and comfortable.

Making snow on a cold, windless night can be incredibly rewarding if the above common sense recommendations are applied. Ski resorts should take the lead by providing the right safety equipment and proper training before and during the season.



If you have a question or comment, please forward to snowuni@snow-makers.com



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