

# Ski resorts can now make fake snow in 80 degrees. Here's why that's a problem.

Some worry the amount of energy needed to make the fake snow contributes to the very problem resorts are trying to confront



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January 28, 2023 at 6:00 a.m. EST

A lack of snow and abnormally mild temperatures are threatening ski resorts in the eastern United States, Europe and Asia. As natural snow becomes scarcer and temperatures creep too high for traditional snow machines, new technology is helping a growing number of ski areas adapt to the warming climate.

These new snow machines can make fake snow in temperatures as high as 80 degrees. But there are limitations that may keep this human-made snow from being a true solution. The costly machines require an enormous amount of energy to operate — much more than traditional ones — and can often make only enough snow to cover small areas.

Still, more companies in the United States, Canada and Europe are using the machines to fill slopes during warm winter spells. Winter resorts that have purchased the machines say that when snowfall spells are mild, as they have been this year, the machines provide a more reliable supply.

This winter, mild temperatures and a lack of snow have posed challenges for ski resorts in both Europe and the eastern United States. Earlier this month, instead of deep powder, thick and goopy mud sat atop numerous slopes in the Alps amid record warmth. In the eastern United States, no measurable snow has fallen along the Interstate 95 corridor from Washington to New York, and flakes have also been scarce in the mountains to their west, home to numerous ski areas.

For Ski Apache, a ski resort based in central New Mexico, its entire business changed when it installed a SnowFactory machine three years ago. But it was especially critical at the start of this season, when the resort — which averages 15 feet of snow per winter — saw very little.

The all-weather snow-making technology comes in containers where ice flakes are shaved from frozen barrels. The snowlike ice flakes are then fired out using a high-powered fan. The machine uses electricity to draw from local water sources, pumping 20 gallons of water per minute. Since the artificial snow is made up of individual ice flakes, it's much colder and more durable against warmer temperatures.

“I believe it’s the magic bullet that everyone needs,” said Ken Marlatt, the director of operations for the resort, in an interview.

The machine, made by the Italian company TechnoAlpin, can produce 60 tons of snow a day in any environment — a huge upgrade from previous machines that required temperatures of 28 degrees or lower to operate. Using the machine, Ski Apache was able to produce five acres of snow to get up and running nearly a month earlier at the start of this season, Marlatt said.

To Marlatt, who has been in the ski resort business for 30 years, the technology has allowed his resort to reclaim some power from fluctuating weather.

“You’re not waiting for snow anymore, and you’re not waiting for cold,” Marlatt said. “I can produce the same pile of snow in 60 degrees out there as I can produce at minus 30.”

Normal snow guns launch water droplets high into below-freezing temperatures so that they freeze before hitting the ground. But those machines don’t work when temperatures aren’t cold enough.

While many ski resorts are using new machines to help adapt to climate change, some companies argue the amount of energy needed to run them is its own cause for concern — contributing to the very problem some are using them to confront.

Stuart Clotworthy, Western sales and service representative at TechnoAlpin, said in an interview that these energy-intensive machines are “really not the answer.” While he said the machines are a blessing for business, he acknowledged that’s not necessarily the case for the environment.

“If you want to be green and you want to be good for the environment, don’t do what we do,” Clotworthy said, adding: “The irony of trying to fight temperatures by using a lot more energy to make snow is pretty much using the cause [of climate change] to find a solution.”

The SnowFactory, which has been sold globally for 10 years, requires nearly four times as much energy as normal snow guns.

The technology used to create snow in warm temperatures isn't new, but it's been reimagined, Clotworthy said. It was previously used to cool down mine shafts and flash-freeze freshly caught fish.

On the outskirts of Philadelphia, Spring Mountain Adventures depends on a machine from Latitude 90, a Canadian company that has developed technology to make snow at high temperatures, to pump 50 tons of snow daily to help fill its beginner hills. While the machines can't cover an entire mountain with snow, they help smaller resorts stay afloat.

It took nearly a month of around-the-clock use for the snow-making unit to cover half of a beginner hill at Spring Mountain Adventures, according to John Brown, the manager of the ski resort.

“It helped start our season, keep our season going and ensure that we had some snow on the ground to get people out here,” Brown said in an interview.

The family-owned resort was able to open its beginner slopes and host private lessons even when temperatures were in the 50s in early December. Ordinarily, the resort would have to wait for colder temperatures to open at all.

“It definitely gives you a little bit more control over your own situation,” Brown said.

The Latitude 90 machines operate inside shipping-crate-like containers that are built to withstand a range of temperatures, winds and humidity, according to the company's website.

Demand for the warm-weather snow machines has increased in recent years as winter temperatures have warmed, said Raphaël Pelchat, president of Latitude 90, in an interview. He already has three machines ordered for next year in addition to eight operating units in the United States and seven in Japan.

The Latitude 90 runs like a “giant snow cone machine” with options that allow business owners to decide how refined each snowflake will be, Brown said. On days when temperatures are warmer, Brown pumps thicker snowflakes so that they'll last longer outside.

Like TechnoAlpin's SnowFactory, the Latitude 90 snow-making machine requires a lot of energy to operate.

The company is actively working to “use parts with the most efficient energy consumption,” Pelchat said. He said the Latitude 90 team is considering ways to use solar energy to run future units instead of traditional electricity.

While energy consumption is high for the machines, they use way less water — 12 gallons per minute compared with snow guns that use 70 to 110 gallons a minute, according to Brown. The SnowFactory uses roughly 20 gallons per minute, Clotworthy said.

Brown said he sees the new machines as a long-term solution to rising winter temperatures and plans to buy more machines in the future to combat warm, snowless winters.

But the cost is steep. Each Latitude 90 totals half a million dollars, compared with regular snow gun machines, which range from \$15,000 to \$30,000 per unit.

Despite the large price tag, Brown thinks the machine is worth it and is “a really good investment.” “[Climate change is] definitely a concern, and the [Latitude 90 is] definitely a solution that’s out there that works,” he said.

Even with the high energy use, Marlatt at Ski Apache said he plans to use the machines as one solution and buy more in the future, until better technology emerges.

“It’s the only way you’re going to get snow,” he said. If not, “you’re going to have less and less ski resorts. And no one wants that. So we adapt and we move forward.”