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In the 1940s, in Canada, a team of scientists, led by Dr. Ray Ringer, were working on discovering the effects of rime icing on jet engines. The process they used, spraying water into the air before the engine intake, did not create ice, but instead formed snow. This discovery was not expanded on by this team of scientists, although they did publish their results in scientific papers. Later on, in 1947, a group of ski manufacturers, Wayne Pierce, Art Hunt, and Dave Richey, formed a company they called Tey Manufacturing Company. However, the company was hit with lowered ski sales in 1949, due to a lack of snow. But Wayne Pierce had an idea. Using a paint spray compressor, garden hose, and a nozzle, he developed a machine that would blow droplets of water through freezing air, creating artificial snow. While various advances have been made in snow making technology, and new variations on the machine have been created throughout the late 20th century, the basic principles of snowmaking remain the same.

Artificial snow is created using water and compressed air. They are transported to the snow-making machine through a series of pipes before being cooled to the proper temperature. This temperature is dependent on a variety of factors, such as the outside temperature and humidity of the environment. The water is then sent through a nozzle, splitting it into many fine droplets. The droplets are passed through the compressed air, freezing them, and they are then sent out onto the slopes.

There are two main types of snow making machines, snow cannons and snow lances. While they work in the same way, there are clear differences between the two. Snow cannons, which may also be referred to as fan guns, are much larger and have a greater width, resembling a plane engine. They shoot out more snow, and put out snow in a wider area, and are typically used for wide slopes and open spaces, as well as being movable In contrast, snow lances are much thinner, resembling a light post in thickness, are permanently installed, and are designed for narrower slopes, as they have greater accuracy than snow cannons.

Wausau's ski hill, Granite Peak, is reliant on artificial snow to be skiable. I interviewed Brian "Buffet" Scheel, a former employee at the hill, about how artificial snowmaking happens at Granite Peak. Granite Peak relies on several kinds of carriage guns (snow cannons) and has several permanent tower guns (snow lances). Some runs on the west side of the hill do not have access to power, and are covered in snow using a pipe system. An additive is added to the water that causes it to freeze at a lower temperature, and it is then pumped through the pipes and exits through nozzles, creating snow without the use of snow machines. Different runs rely on different amounts of snow to be skiable. For example, the run Skiers Right only needs two to three feet of snow, while another, Skiers Left, requires almost twenty to be able to be groomed

and skied on. The exact amount of snow made varies, based on how much natural snow occurs, the temperature, when the hill opens, and who is in charge of snow-making. Typically, the goal of Granite Peak is to make enough snow to be the first hill to open and the last hill to close. At the beginning of the year, a lot of artificial snow is created in order to make the hill skiable, and then more is added as needed. Some of this is dependent on the expected temperatures. For example, if it's expected to be quite cold for about a week or so, a lot of snow will be made, as it will last, but if there's mild temperatures, less snow will be made, as it will melt. Once a base of artificial snow has been created, natural snow improves skiing. Artificial snow is very dense, and can get icy, which doesn't make for great skiing.When natural snow falls, it's better for grooming and skiing, and helps fill in any gaps that are missed by snow machines.

Sources

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