

Blood, Sweat and Snow

As the Biathlon World Championships kick off, the absolute World elite will venture out into the tracks at Österund's ski stadium. They have been training for months to perform at their highest level. Simultaneously, work has been underway to secure the absolute highest quality of snow imaginable.

There is research as well as continuous development efforts behind the activities that ensure that the tracks are as good as can be expected, at an event that brings the World elite together. It is a combination of preserving natural snow and producing enough new, artificial, high quality snow. Snow is actually more frail than you may think. Temperature changes and the continual friction of some 6,000 pairs of skis, passing the same curve every day, wear down the tracks, thus requiring high maintenance.

Roger Hedlund is managing operations and snow production at the ski stadium in Östersund. He aims at creating good conditions for the athletes, regardless of what weather it will be during the WC. Usually, natural snow falls in Jämtland from December to March.

“The falling snow is continually compressed and pisted into the preserved snow from last winter, that has been in place on the track since early November. In addition to the snow layer and the falling snow, we also produce artificial snow continuously,” Roger Hedlund says.

The production of snow requires three components - water, electricity and equipment. The equipment consists of large and small snow cannons and lances. The ski stadium has also recently opened its own lake water pipeline, which facilitates the production of the snow.

"Having our own dedicated water transport system from Storsjön to the ski stadium, we can now use the big snow cannons at the factory and the small ones directly at the tracks simultaneously," Roger says.

Adapting to the weather

The major challenge is the climate in March, when the daily variations are often excessive; very cold nights often follow very warm days. The sun may shine during the day on some slopes and thaw the snow, then during the night they will turn into icy and shiny tracks that will have to be broken up and re-made for the race.

Another likely scenario is warm nights as well as days, then the snow in the tracks will need help to bind. The solution to that problem is salt.

“Salt binds water and makes the ski tracks hard after only some 30 - 40 minutes. A salt grain binds about a handful of snow. However, too much salt makes the snow melt into slush. It is a delicate task,” Roger explains.

The artificial snow, made with cannons and lances, is harder than natural snow, which is more fragile and tends to melt quickly. At zero degrees centigrade, the combination of both types of snow is ideal. At five degrees below or colder, natural snow is stable on its own, but when conditions are windy or warm it will water up, which results in wet, shiny tracks.

Snow is Stored During Summer

The City of Östersund has used the technology of storing snow since 2006. The snow stored is artificial, and it is piled on a gravel plane in the forest, near the ski stadium. When the snow piles are in place, they can be seen from the E45 highway, leading in to Östersund and the stadium.

The snow that is now at the bottom of the tracks was produced as early as the spring of 2018, and was stored until November, when it was laid out. The top layer is produced later, or has fallen from the sky.

The bottom layer of snow was stored during the remarkably hot summer of 2018. The snow rested, protected from heat and sun, under a 30 centimeter sawdust layer. When covered, there were 65,000 cubic meters of snow and at the unveiling there were just over 57,000 cubic meters left. Thus 16 per cent had melted, which is a lot, compared to the cold and rainy summer of 2017, when a mere 9 per cent was lost.

Martin Ponsiluoma, biathlete from Östersund, says that snow quality is crucial for skiing. In November 2018, when Östersund opened its tracks for the season, he felt that Östersund was one of few places that could present good snow quality, along with long and tough tracks.

The worst thing that can happen to the snow before the WC competitions, he says, is if the surface is hard at first, but then softens towards the second half of the starting list.

“I hope for rock hard snow, as hard and nice as possible. I believe that is the best. But above all, it gives fair conditions for the whole starting field, as the snow stays together throughout the race,” he says.

Companies in Östersund Manufacture Snow Cannons

The snow stored during summer is artificial, i.e. it is made using snow cannons. Just outside Östersund the company Sufag manufactures snow cannons. Vincent Douillet, head of the snowmaking division, explains:

“Some green snow cannons are installed here in Östersund, assuring snow on Gustavsbergsbacken's ski slopes. These machines are also used for snow storage, also called ‘snowfarming’. This process is trendy now, because it is an efficient and cost-effective way to have large amounts of snow early in the season,” Vincent says.

Other ski resorts are inspired by Östersund's snowfarming capacity.

“Since Östersund has made this for so many years, in preparation for biathlon World cups and championships, France has also commenced in snow storage before strategic events. More than 30,000 cubic meters of snow was stored before the French WC contest last year. It is also good to combine the two options - to make snow and then save it,” says Vincent Douillet.

Without snow, there would be no WC. The most important prerequisite - the snow - is more frail than you might think.