Cast iron pipe technology:

Continually rising average temperatures inevitably mean less snow. Mild winters are occurring more frequently, so that mountain regions whose most important economic factor is snow see their prosperity under threat. Even ski regions at higher altitudes, which are almost certain to have snow, must still be able to offer ski slopes in good condition in the run-up to the season in order to remain competitive. Many operators therefore have their ski slopes prepared with the aid of snow-making systems. Austria, Italy and France already use such equipment on over 50% of their ski slopes. In Swiss ski resorts, the corresponding figure so far is only around 30%.

Oldenkessel snow-making system

The "Bergbahnen Destination Gstaad AG", operator of the Glacier 3000 ski resort in the Bernese Alps, has been investing in the future of the Gstaad / Les Diablerets region by installing the long-planned snow-making system in Oldenkessel in the year 2006 and, at almost 4 km, now has the longest ski slope in the region which is covered in snow in the pre-season. The investment has already started to pay for itself because, despite the severe lack of snow in the pre-season, the ski slope was able to be opened in mid-December 2006, thanks to the snow-making system.

Good co-operation made the apparently impossible possible

"Weiss + Appetito Rohrleitungstechnik AG" and the technical support of "TMH THOMAS HAGENBUCHER", the Swiss sales partner of "Tiroler Röhren- und Metallwerke AG" (TRM) and "Buderus Gussrohrtechnik", were involved as early as the project planning stage, assisting the constructors and the responsible planning office with all technical questions of pipework construction. Various and sometimes very complex problems arose, which were solved by the outstanding co-operation of all involved. The first major problem was the deadline set by the operator: The Oldenkessel snow-making system was to be brought into operation in December 2006.

Only by means of the excellent teamwork between TRM, Buderus, TMH and the pipework company was it finally possible to maintain this tight schedule and complete this "monster project" in a construction time of just four months.

Glacier 3000

Following the acquisition of the Glacier 3000, the glacier skiing region between Gstaad and Les Diablerets in the Bernese alps by Gstaad real estate agent Marcel Bach, Formula 1 boss Bernie Ecclestone and the agricultural industrialist Jean-Claude Mimran, it was their plan to invest in increasing the experience value and quality of this mountain destination in the future. For this reason, projects worth around 18 million Swiss francs were realised in the first year following the purchase of the skiing area – an investment in the future.

In the only glacier skiing area of the Bernese Oberland, winter sports are on the agenda from October to the beginning of May.

Thanks to the two cable-car systems, skiers can make the 1,500 m trip to the top in around 15 minutes. The imposing mountain station on the glacier, designed by the Swiss star architect Mario Botta, forms the starting point for the trip into the mountain region of Glacier 3000.

The view from this point embraces no less than 24 peaks of over 13,000 ft., from Mont Blanc to the Matterhorn and on to the Jungfrau. With the ski slopes round the Oldensattel, Glacier 3000 offers one of the most demanding and longest downhill slopes in the region. On the glacier itself, a wide range of activities awaits visitors: winter trekking routes, cross-country skiing, snow park, observation point, dog-sled trips and the highest toboggan run in the world – the Alpine Coaster, which with a length of 1,000 m, total turns of 560°, 10 curves, 6 waves, 3 jumps and 2 bridges represents a real attraction.

Snow reliability as an economic factor in the Bernese Alps




Under water, over land and through the mountain: pipeline construction of a very special type

A total of 11.5 km of ductile cast iron pipes was laid. The maximum pressure stage was 100 bar.
Pipelines subjected to such enormous stresses are very rare and extremely complex.
The flexible, reliable and efficient VRS-T/BLS® joint connection system was the ideal solution for the difficult topographical conditions. The altitude, steepness, rocky undersurface, stone chips, danger of avalanches and the changeable weather in the high alpine terrain demanded a great deal not only from the material, but also from the planners. A total of approx 1,000 tonnes of material had to be transported to the installation site – most of it by helicopter.

In order to be able to prepare the so-called „Oldenpiste“, water was used from the Sanetsch reservoir located at an altitude of 2,034 m. This required the laying of a 1 km long reservoir pipe. There was also no comparable reference installation of this type. The pressure stage of 100 bar and the practically incalculable reciprocal effects during filling and emptying the pipe were extremely tricky. The diving work at over 2,000 m ASL also had to be planned carefully in order to avoid exposing the workers to any danger.
The pipe was assembled on land and then supported on the surface by floats before being lowered under control. The anchoring and stabilisation on the reservoir bed was carried out using colloidal mortar retained in fabric formwork.
After the reservoir pipe emerged at the bank, the transport pipe was laid conventionally over almost 6 km from 2,000 m ASL to 2,700 m ASL. The greatest challenges of this pipe section were the logistics, the sometimes very steep terrain and the land and landscape protection regulations of the Wallis Canton, which had to be strictly observed.
As a connection between the Wallis Canton and the ski area in the Bern Canton, a 260 m long tunnel was constructed using blasting. The most demanding, tricky and precarious part of the whole project was the 270 m long pipeline over the exposed rock wall as far as the Oldenalp distribution and pressure reduction shaft, which even included some vertical sections. Since the rock in this area is very unstable and brittle, the work had to be carried out under the strictest safety precautions. The attachments were installed using a special construction of steel and the anchoring with poured mortar. In the vertical area, a pipe gantry was constructed using pre-tensioned steel cables. The tensile stresses on the VRS-T/BLS® pipe connections were enormous, especially during the various construction states before the final anchoring. The cooperation with specialists, mountain climbers and mountain guides from all over Switzerland went perfectly. The pipe material met the exacting requirements, and the construction works, which are still unique today, were able to fulfil the required quality specifications.
The actual snow-making pipe with 62 outlets to the shafts with snow-making lances has a length of scarcely 4 km. This section is so inaccessible and steep that the pipe material, all the tools and the construction workers could only be brought to the installation site by helicopter.