

Wyssen Reference Projects
**Samnaun efficiently secures ski slopes
and residential areas**



Safety through **innovation**

WYSSSEN *avalanche*
switzerland+ *control*



Samnaun efficiently secures ski slopes and residential areas

Project:	Securing of ski slopes and residential area
Place:	Samnaun
Country:	Switzerland
Year:	Installation 2001
Customer:	Bergbahnen Samnaun AG
Protected Object:	Ski slopes, road and residential area
Intalled Systems:	- 70 Wyssen Avalanche Tower 12 shots - WAC.3®



A customer from the very beginning...

Bergbahnen Samnaun AG has been a customer from the very beginning. As early as 2001, the Samnaun company decided to install Wyssen avalanche towers to secure ski slopes. Soon thereafter, the community followed for the protection of roads and residential areas with the same goal: to achieve the greatest possible safety for guests and residents with an effective method without danger to personnel. To date, there are around 70 installations in the region. Their counterpart in Ischgl (Austria) has also opted for this system due to the positive experience in Samnaun. More than 50 Wyssen avalanche towers for securing ski slopes and roads are now also available there.

Samnaun ski area

Avalanche protection in the ski area has now been greatly optimized. After new snowfalls and large wind deposits, head of avalanche safety Hans Kleinstein and his team begin control work in the area at five o'clock in the morning. In about 30 minutes, all 70 avalanche towers in the ski resort and community can be activated, so that at the latest at six o'clock in the morning the snowcat drivers can start the slope preparation without danger of avalanches. The drivers then give feedback during their work on the number and size of the avalanches triggered. This is valuable additional information that guides the avalanche safety team to verify their assessment of the avalanche situation or adapt it as necessary.



This comprehensive set of information from avalanche bulletins, meteorological stations, observations, snow profiles, etc., then allows to decide about the next steps. Thanks to the professional work and untiring commitment of safety staff from the avalanche service, a high level of security from avalanches for guests in the ski area is achieved. Reliable, remote-controlled systems allow to achieve this goal faster, more effectively and without personnel exposing themselves to avalanche hazards.

Cooperation with the community

The safety team of the mountain railways and the avalanche service of the municipality of Samnaun work very closely together. For example, over the summer the mountain railway also stores the avalanche tower deployment boxes from the municipality in their own storage facility. Maintenance work is also carried out jointly. The municipality of Samnaun uses avalanche towers to secure traffic routes and settlement space. Using avalanche towers above settlements has been basis for controversial discussions among experts. Planning and implementing a safety concept that applies artificial avalanche triggering above residential areas must be well-founded and prepared by proven experts.

In 2009, the Swiss Federal Office for the Environment (FOEN) published a practical guide entitled "Artificial avalanche release above settlements". Excerpt from the practical guide: "In the Swiss Alps, avalanches are widely triggered artificially today in order to secure ski areas, roads and railways. This measure makes a valuable contribution to avalanche safety. In such cases, artificial avalanche triggering can be used without endangering the people and property to be protected. Transport facilities are temporarily shut down, endangered areas are closed off and evacuated."

Avalanche triggering above settlements

Samnaun is a best-practise example where artificial avalanche triggering above settlements has successfully been applied to reduce the overall risk. Yet, it also illustrated the challenges of implementing such an approach. Barriers and evacuations of people are more difficult, especially if this is necessary several times per winter. Also, protection of houses and infrastructures in the avalanche run-off area cannot always be guaranteed. Artificial avalanche triggering in the area of settlements should therefore be used with extreme restraint and caution. There are justified cases in which such a measure can be taken responsibly. It is already being practiced in various places in Switzerland.

The above mentioned practical guide provides the relevant safety aspects that need to be clarified and assessed, as well as the criteria. The assessment of this measure is to be examined by an expert opinion. If the expert utilizes this practical guide, there is a guarantee that the procedure corresponds to the latest state of knowledge. A first version of this practical guide was tested in the Davos region with financial support from the canton of Graubünden and in Valais. These tests showed that the practical guide is useful. The area mentioned above, where the practical guide has been tested, is the Frauentobel settlement near Davos, where four Wyssen avalanche towers have been in successful operation since 2010.





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