

# Pressure Relief Drainage

Groundwater drainage and leak detection beneath snow pond, Pozidrain, San Martino di Castrozza[TN], Italy



## Project Description

As part of a project to upgrade ski facilities and to provide more consistent piste conditions in increasingly unpredictable winter weather, Funivie Seggiovie San Martino Spa commissioned the design of a new water basin for the production of artificial snow at the San Martino di Castrozza resort, high in the Italian Alps.

## The Challenge

Construction of a basin high on a mountainside meant that groundwater flowing beneath the liner would create an increase in hydrostatic pressure. This could, especially in times when the basin was not full, cause uplift or floating of the lining system that would be detrimental to the serviceability and longevity of the pond. A reliable, low cost and easy to install drainage method was sought to remove this groundwater pressure beneath the liner. The designers, on behalf of the client, also wanted a way to capture and monitor leakage beneath identifiable sections of the liner to decide if and when any remedial repairs may be required.

## The Solution

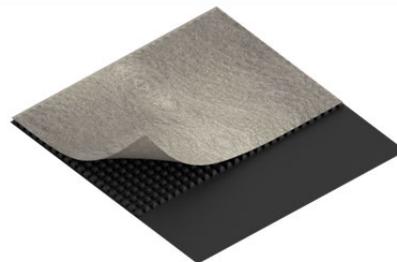
**Pozidrain 4SK250/NW8 [L]** was laid textile to soil as a groundwater drainage layer. It was chosen to provide a thin and effective water pressure relief membrane, having a flow capacity sufficient to cope with the groundwater conditions expected locally. This version of **Pozidrain** was also selected for both its long term creep resistance of up to 250kPa and for resistance to installation loads. The addition of an “L” flat selvedge down one edge of the **Pozidrain 4SK250/NW8 [L]** rolls enabled a pressure seal between adjacent rolls which assist in preventing leakage from the pond if the liner is damaged. A second layer with textile facing upwards was

## Project Information

<b>Client</b>	San Martino Rolle S.p.A
<b>Contractor</b>	Sevis Srl
<b>Consultant</b>	Ingegneria per la Montagna, Ing. Gobber Monplan
<b>Products</b>	Pozidrain 4SK250/NW8 [L] Pozidrain 4S250/NW8
<b>Quantity</b>	30,888 m <sup>2</sup> & 2,970 m <sup>2</sup>

## Benefits

- Thin groundwater drainage layer with quantifiable capacity to reduce uplift pressure on snow pond liner
- Certified long term performance
- Drainage layer includes flat selvedge overlap to provide an impermeable, secondary protection layer directly beneath the liner
- Easy to transport and fast installation requiring no additional excavation
- Two drains, one inverted, formed an impermeable barrier below the liner, enabling separation of leak collection and groundwater drainage



**Pozidrain 4SK250/NW8 [L]**

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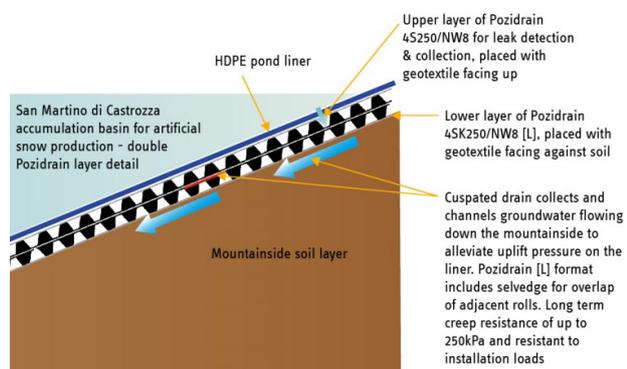


placed directly underneath the liner, back-to-back with the first, to provide a leakage collection, drainage and monitoring layer. The double layer was only required on the slopes facing the mountainside for groundwater pressure relief (see function diagram on the right). On the valley side, a single layer for leakage collection was installed.

One truck of Pozidrain provides the drainage capacity of >300 trucks of drainage stone. This was easier to transport up the mountain, required less excavation and therefore provided a more efficient drainage solution.

## The ABG Service

Distributed through Huesker Srl, Italy, ABG were able to support with test results, installation instructions and on-time delivery.



**Dual layer of Pozidrain 4SK250/NW8 installed back-to-back to provide groundwater drainage & leak detection functions**



First layer in the foreground with geotextile face down for groundwater pressure relief and second layer with geotextile facing upwards for liner leak detection / collection



The completed accumulation basin at the foot of the Ces Valcigolera ski run, San Martino di Castrozza

Contact ABG today to discuss your project specific requirements and discover how ABG's past experience and innovative products can help.