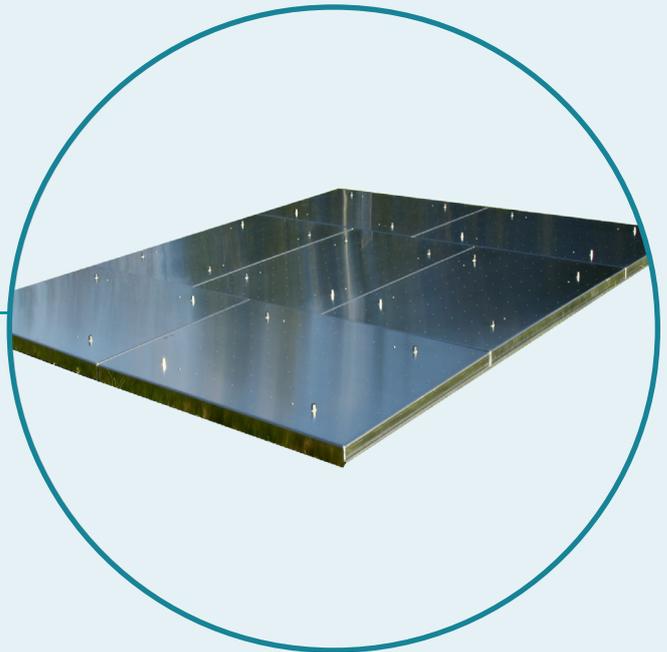
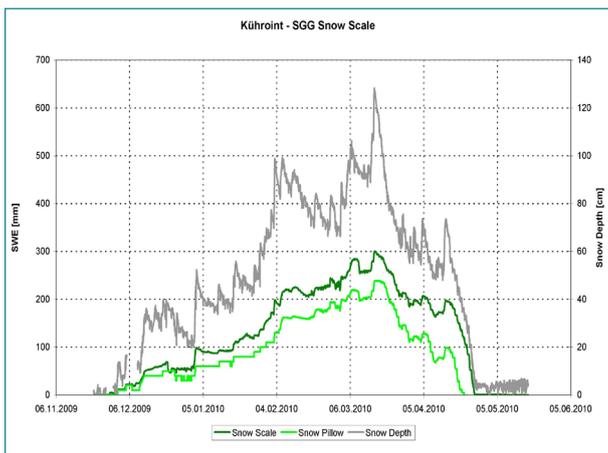


SSG

Snow Scale for Snow Water Equivalent (SWE) measurement



Functions and advantages

- » Automatic Measurement of Snow Water Equivalent (SWE)
- » Realistic representation of actual snow
- » High representativeness of the measured value and minimisation of ice bridging effect
- » Optimised thermal flow between sensor and ground for high accuracy during the melting process
- » Reliable, light and long life aluminium construction
- » Measure up to 200 / 500 / 1.000 mm of SWE
- » Simple and easy installation and setup
- » NO antifreeze liquid required
- » Simple systems integration
- » Flat construction design

Description

The SGG Snow Scale is a precision Snow Water Equivalent measuring device which is developed for quick and easy installation and implementation in the field. The SGG uses exactly for SWE measurement designed aluminium plates which guarantee accurate measuring values. A broad outer frame of plates minimises the effects of ice

bridging commonly experienced late in the measurement season. The use of lightweight aluminum materials minimize thermal resistance improving heat flow throughout the device for better emulation of natural conditions. Integration and connection to weather stations or other signal processing systems are kept easy and simple.

Functioning characteristics

The working principle of the SGG is based on the measuring principle of load cells. The sensor consists of seven, perforated plates each plate of the size of 0.8 x 1.4 m. The center panel and six surrounding panels allow water to percolate through the sensor. Water percolation minimizes thermal differences between the sensor and surrounding panels act to buffer the center panel, where SWE is measured, from stress concentrations which are

developed along the perimeter of the sensor. This systems allows accurate measurement even during periods of rapid snow settlement followed by large snow accumulations. Also when the rate of snowmelt at the sensor/ snow interface was significantly different from the snowmelt rate at the soil/ snow interface on the surrounding ground.

Installation guide

The SGG is designed for modular and easy installation and maintenance in the field. The snow scale consists of an instrumented center panel surrounded by six panels that act to buffer the center panel from edge stress condition (Figure 1). Each

panel is constructed and consists of a top plate of aluminum perforated with holes to allow water flow through the sensor. The SGG is supported by angle beams to provide strength and stiffness.

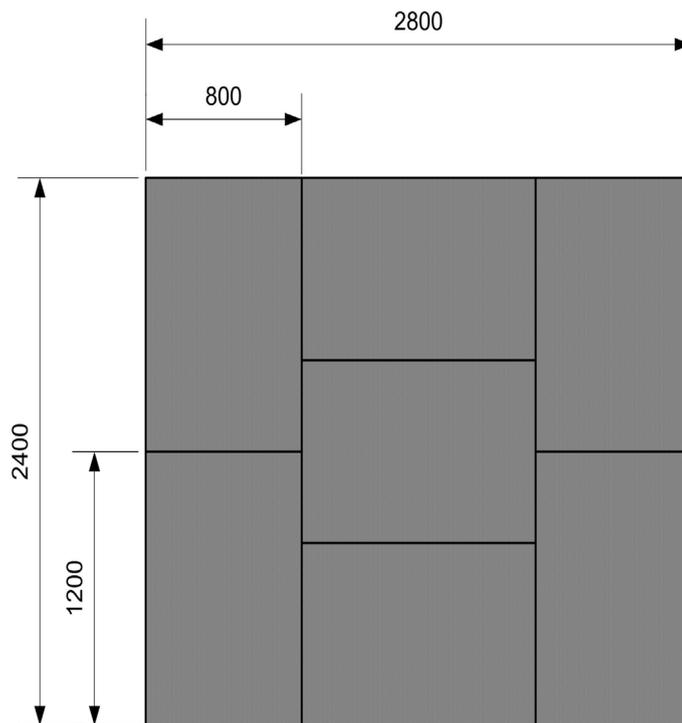


Figure 1: SGG snow scale Design

Set up

The measuring device can be set up in even inclined (up to 5°) areas. The site should be, for optimal measuring values, prepared as followed. Remove the ground and fill the trench with a thin

layer of gravel or sensor so in the end the SGG is flush with the surrounding ground. The support pedestals and load cells rest on aluminium base plates, placed on this gravel pad (Figure 2)

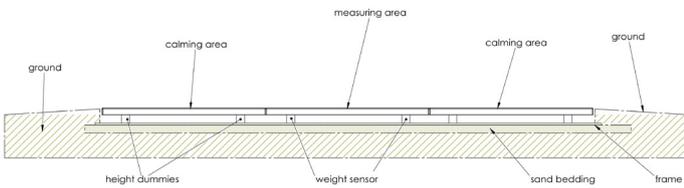


Figure 2: SGG snow scale set up

measuring cell: consists of plate with 4 sensors, fixed on a frame

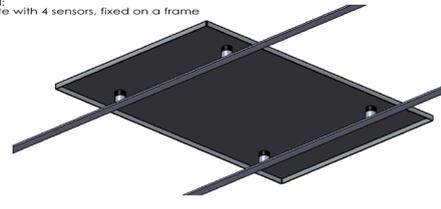


Figure 3: SGG measuring cell construction

Set up example:

In Switzerland, Davos (2.660 m) the SGG snow scale has been set up in the ground. So the SGG and the surrounding ground are on the same level.

Aim is that the snow scale takes over the characteristics of the ground and therefore the measuring values should have a higher informative value.



Figure 4 Preparation measuring site Davos



Figure 5: SGG snow scale set up Davos

System applications

- Water resource management
- Flood risk management
- Monitoring of precipitation
- Automatic snow load monitoring

Technical Specifications

SGG Snow Scale - water equivalent measurement	
Range of measurement	3 ranges: 0 to 200 mm SWE, 0 to 500 mm SWE, 0 to 1000 mm SWE
Resolution	0,1 Kg/m ² \triangleq 0,1 mm SWE (*)
Accuracy	0,3 % FS (*)
Measuring surface	6,72 m ²
Total weight	110 Kg
Dimension (mm)	L = 2800 B = 2400 H = 70
Packaging (mm)	7 x L = 800, B = 1200, H = 40; bars: L = 2800
Protection	IP 68
Power supply	10 - 30 VDC
Power input	max. 70 mA
Operating temperature	-40 to 80°C
Max. inclination	5°
Output	SGG 200 4 - 20 mA \triangleq 0 ... 200 mm SWE SGG 500 4 - 20 mA \triangleq 0 ... 500 mm SWE SGG 1000 4- 20 mA \triangleq 0 ... 1000 mm SWE
Order information	SGG 200: range 0 ... 200 mm SWE SGG 500: range 0 ... 500 mm SWE SGG 1000: range 0 ... 1000 mm SWE
Others	Connecting box with high voltage protection

* All declarations of weight and accuracy referring to standardised weights

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