

WSL – INSTITUTE FOR SNOW AND AVALANCHE RESEARCH SLF AND PESOLA DEVELOP A SCALE TO MEASURE THE SNOW WATER EQUIVALENT

The Institute for snow and avalanche research SLF in Davos Switzerland, is part of the Swiss Federal Research Institute WSL, making it part of the ETH domain. The SLF is well known worldwide as a leading research institute in its field.

The prerequisite for excellent research in the field of snow and avalanche are reliable basic data, which the SLF mostly collects by itself. The snow water equivalent (SWE) of freshly fallen snow and the entire snow pack belong to these basic data. The snow water equivalent is the amount of water (in Millimeter) which would arise if the snow melts. To measure the snow water equivalent is important for the science of snow hydrology and with it important for flood warnings and the calculation of roof loads.

To measure the snow equivalent of water, the SLF needs a SWE-scale. Firstly, a standardized tube with an inside surface area of 70 cm² is filled with snow and weighted with the SWE-scale. The weight of the tube is considered by a pre-set tare. The snow water equivalent can now be read in Millimeter directly from the SWE-scale.

For the development of the SWE-scale, the SLF issued a technical specification. In particular the SWE-scale needs to:

- measure accurately at freezing point temperature
- be calibrated at zero degree Celsius
- be suitable for use in adverse weather conditions
- consider the weight of the tube as tare
- be ready any time without power source
- be long-lasting
- be printed with the SLF logo

As existing standard measuring instruments did not meet the requirements, the SLF appointed Pesola to develop a new scale according to the technical specification.

It quickly became clear that a spring scale is the ideal measuring instruments for this application. Spring scales can be used in adverse weather conditions and are ready for use any time without power source.

To meet the technical specification, Pesola developed a new spring and calibrated it at zero degrees Celsius in its laboratory. Further, the weight of the tube was also accounted for during the calibration process. The graduation scale and the SLF logo were printed by an anodized printing process on the outer aluminum tube. With this complex process, the aluminum tube is very durable and even after many years in use; the measuring result can be read without problem.



“Since decades the SLF is using Pesola spring scales to measure the snow water equivalent. We appreciate the precision, robustness and longevity of the scales. With the newly developed SWE-scale we were able to further improve the handling. Pesola proved to be an innovative and flexible partner”, says Lukas Dürr, Technical Staff Member at the SLF.

Company Information:

For over 70 years Pesola Präzisionswaagen AG based in Switzerland produces high precision spring scales. PESOLA spring scales gained a world-wide outstanding reputation based on its Swiss precision and quality. No matter if industry, research or education, wherever precise mechanical measuring is needed, PESOLA spring scales are used.