Snow Load Estimation and Modeling System (SnowLoad)*

* Patent Pending

Snow Load Monitoring with Forecast Assurance

The System continuously measures the actual weight of snow load on flat roofs and enables the user to avoid unnecessary snow removal. Facilitates the planning of snow removal through fact-based load knowledge so that emergency service calls can be avoided.

Important features and benefits:

1. Automatic and continuous monitoring of snow load on the roof.
2. Maintenance free, once installed and configured, it does not require any day to day attention.
3. Increases protection by ensuring the snow load does not exceed a safe limit
4. Provides the intelligence to remove snow *only when necessary* – so it optimizes your snow load removal expenses
5. Delivers powerful forecast snow load modeling
6. Provides accurate measurements below 1 lb. per square foot (PSF) weight and over 100 lb. PSF (maximum weight according to code is 50 pounds per square foot)
7. Wireless, cloud-based reporting provides remote user access via password protection
8. Capable of issuing alarms for weights above safe limit and for critical conditions
9. Specially designed perforations drain water to measure snow weight accurately

Need for Monitoring and Forecasting

Recent abnormal weather behavior and the winter storms of 2014-15 indicates the need to intelligently manage snow removal from the roofs of flat buildings. Roof collapses due to extreme weather are becoming “the new normal.” Each roof collapse costs thousands of dollars or more to property owners and businesses. Near-record snowfall and prolonged extreme cold throughout the northeast this past winter resulted in insured losses of more than $1.5 billion, according to the Insurance Information Institute.

Snow Weight Danger

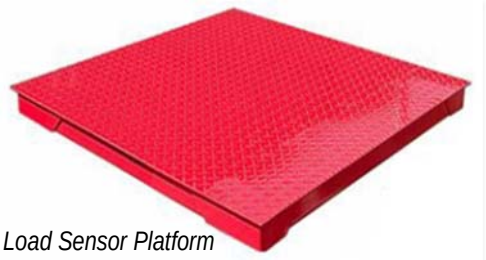
Although snow may look light and fluffy, it can quickly build to substantial weight on the roof. You can have up to 1,000 or 2,000 pounds in a 10 by 10 area,” says David Schneider of Merrick Snow Removal. “It doesn’t take much, more than 4 or 5 or 6 inches. Don’t forget, water weighs 7 pounds a gallon. “In some cases, you’ve got up to 20 or 30 pounds per square foot if you’re adding snow and ice,” said Anania, who runs Roof4Roof. According to the Boston Globe, heavy layers of snow caused roof collapses across the state last winter, including a major failure at a large industrial complex in Hyde Park,MA.

Responding to the need to better understand the snow load conditions on roofs, Erallo developed a smart Snow Load Monitoring System that empowers users to predict the impact of a coming snowstorm -- and make fact-based decisions about when to remove snow from the roof. The system can send status and warnings 24 hours/day. With the ability to access the system from any internet connected device, users can quickly review the snow load status on their roofs.

How is Erallo's Snow Load Monitoring System Set Up?

Every roof has a design limit, including a maximum amount of weight permitted on the roof, like snow and ice. This information is provided in the architecture design document or it can be determined by structural engineers. The configuration of the system begins with client reviewing the roof structure and inputting the safe limits of the structure's design. Once the safe limits are known, then the user can set alarms to trigger whenever the weight on the roof exceeds a specific limit or safety range. Different levels of alarms can be configured – from low level alerts to critical warnings. The level of alarms is established by the client and continuously monitored by the system.

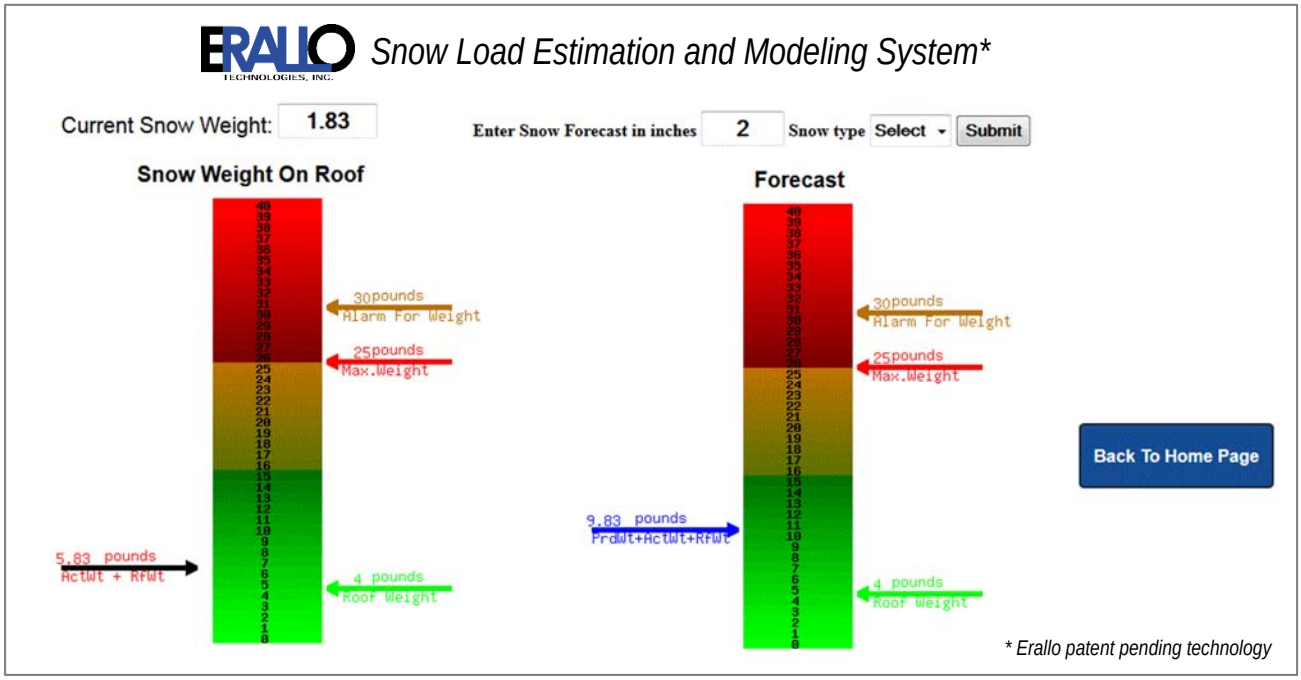
The system is consists of a 6 ft. x 6 ft. square snow load sensor platform that has 4 precision sensors secured within the center of the platform. These rugged sensors read the weight of the snow-ice accumulation and the embedded microprocessor calculates the average load on the roof. This calculation is then stored in the database located on the internet ("in the cloud") and made available via a web-based interface.



6' x 6' Snow Load Sensor Platform

Prediction Model

A powerful feature of the system is predicting snow load conditions based on the weather forecast. For example, if the weather forecast predicted 10 inches of wet snow overnight, the user can model that weight on the roof by automatically combining the existing snow weight with the weight of the forecasted snow. If the combined snow weight does not exceed the pre-set limit, the user knows that it is not necessary to call in a crew to shovel the roof. However, if the user finds that the additional snow is pushing the safe zone weight limit on the roof – they then know that it is time to schedule snow removal. By using the prediction model feature, the user can more effectively manage their budgeted maintenance dollars by scheduling snow removal rather than being charged for premium rate emergency services.



Screen Capture of the Snow Load System User Interface