



Salt Monitoring And Reporting Technology (SMART)

Portable LiDAR system rapidly measuring bulk material volumes with safe, low-cost accuracy.

Researchers at Purdue University have developed a new method to determine the amount of bulk material in a 3D pile (e.g., salt piles at Department of Transportation storage facilities). Knowing the amount of salt available at each facility helps Departments of Transportation better distribute the salt in advance of snowy or icy conditions, allowing more efficient use. Current methods for estimating the size of a salt pile include using photographic imaging, total stations, tape measures, and/or static laser scanning. These methods can be time- and labor-intensive, expensive, dangerous, and inaccurate. The technology and method developed by the Purdue researchers involves using LiDAR (light detection and ranging) to create a 3D point cloud and using it to estimate the volume of a 3D pile. This technology is portable, compact, adaptable, and simple.

Technology Validation: Relative to static laser scanning or unmanned aerial vehicles equipped with a camera or LiDAR system, the Purdue researchers' approach collects small amounts of data yet determines the volume of a 3D pile at least as accurately.

Advantages

- Portable
- Compact
- Adaptable
- Simple
- Inexpensive
- Safe
- Accurate

Technology ID

2021-HABI-69512

Category

Buildings, Infrastructure, &
Construction/Structural Health
Monitoring

Authors

Darcy M Bullock
Ayman F Habib

Further information

Matt Halladay
MRHalladay@prf.org

View online



Applications

-Estimating the volume of a 3D pile

TRL: 2

Intellectual Property:

Provisional-Gov. Funding, 2021-12-20, United States

Utility-Gov. Funding, 2022-12-20, United States

Keywords: LiDAR volume measurement,3D pile estimation,bulk material management,portable material scanning,transportation salt pile monitoring,construction material measurement,accurate volume estimation,compact LiDAR systems,3D point cloud analysis,inexpensive surveying technology