

3D Imaging Radar

Reimagine Volume Measurement in 3D



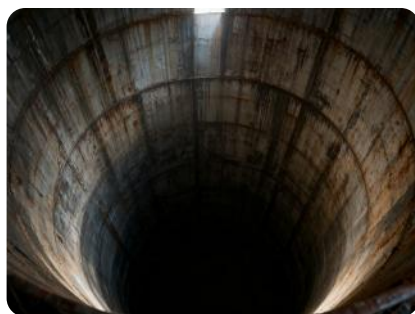
HIKVISION®

Volume Measurement in Silos

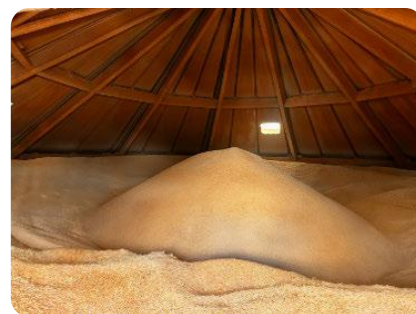
Silos are often used to store materials including grains, feeds, and chemical raw materials. Data on the material level, volume, and inventory in the silo is important for operational efficiency. The internal environment of a silo is complex, with high dust, poor lighting, and uneven material surfaces. Real-time monitoring of the material level, volume, and weight is highly challenging.



High dust



Poor lighting



Uneven material surfaces

Conventional Measurement

Manual measurement



Visual inspection



Laser distance measurement



Plumb line measurement

- 🕒 Inability to get real-time data
- ⌚ Low efficiency & accuracy
- ✖ Prone to human errors
- 🚶 Risks of falls

Traditional auto-measurement



lever meter radar

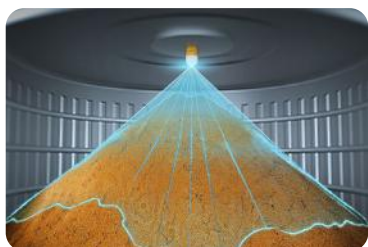


Ultrasonic level meter

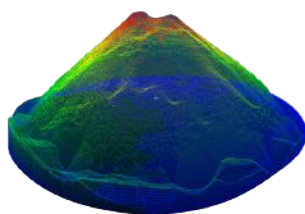
- 🕒 Incomplete data
- ⚠ Risks of material contamination
- 🌡 Poor environmental adaptability

Why 3D Imaging Radar?

3D Imaging Radar uses millimeter-wave radar and contactless technology to scan silo materials, generate point cloud data, and output HD 3D images. It accurately measures material levels and volumes for automated industrial inventory management.



Millimeter-wave 3D scanning



3D point cloud construction



Volume calculation

3D High-Definition Imaging

Waveguide antenna conducts non-contact scans, covers silo surfaces, generates millions of point-cloud data, and outputs 360° HD 3D images.

High-Precision Measurement of Volume & Material Level

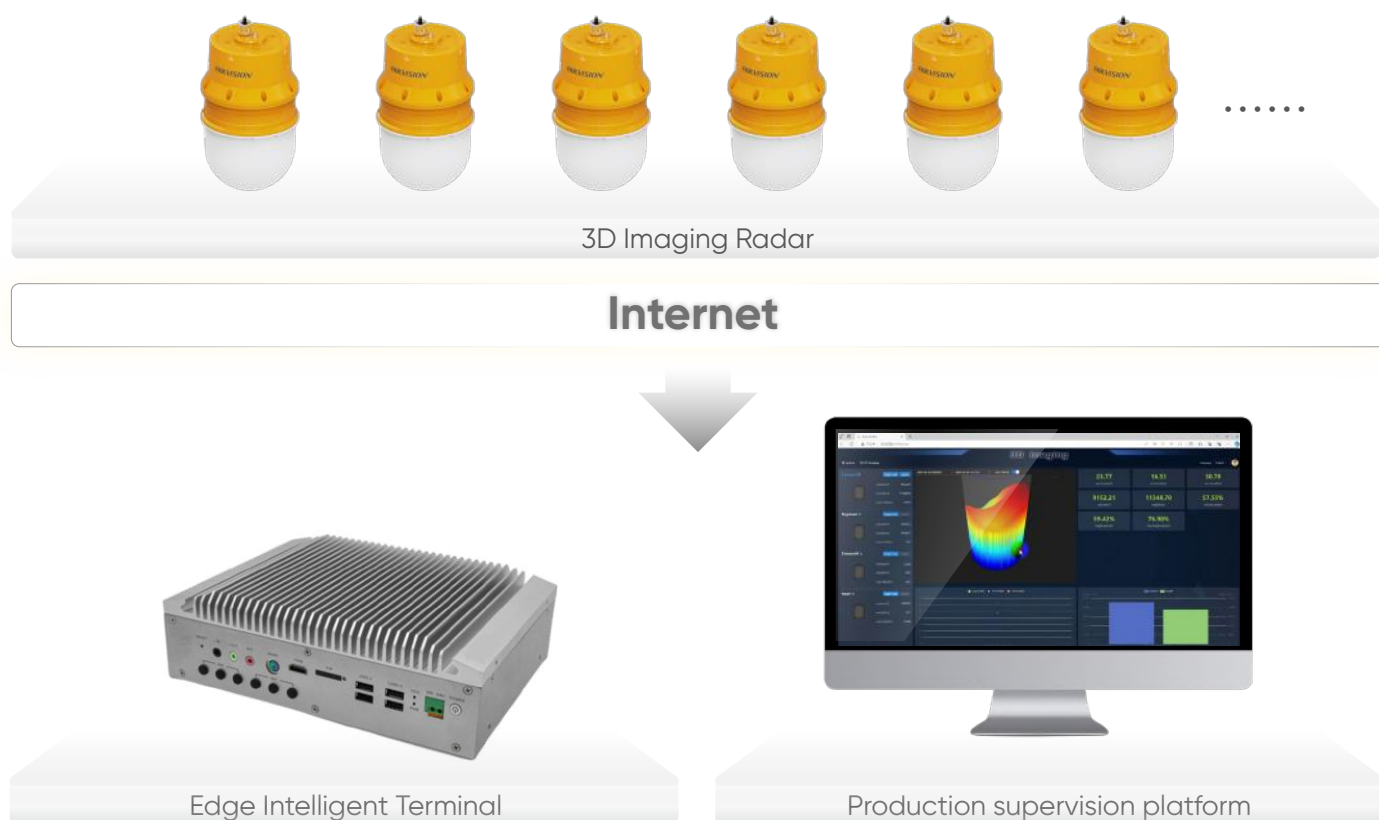
It has a small beam angle and millimeter-level material level accuracy. With AI 3D algorithm processing, volume measurement accuracy can reach up to 98%.

Dust Resistance and Maintenance-Free

The 80G millimeter-wave radar can penetrate dust, is highly resistant to environmental interference, requires no maintenance, and can work stably for a long time.



System Architecture of the 3D Imaging Radar



Edge Intelligent Terminal

- **3D AI Modeling and Accurate Volume Calculation**

The algorithm quickly creates a model and accurately outputs material volume data.

- **Multi-Radar Point Cloud Fusion**

A single terminal can connect 8 radars, integrate their data to build a 3D integrated model, and fully reconstruct the scene.

- **Custom-Defined Area Quantity Calculation**

It supports defining sub-areas for accurate local volume analysis.



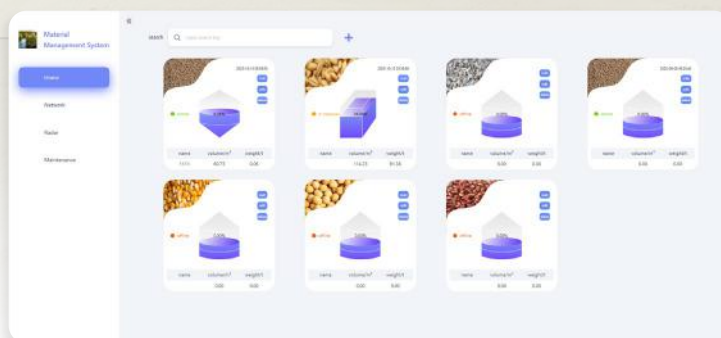
STI-XMECO-H1AG

3D Imaging Platform

1

Warehouse Management

- Statistically manage regional warehouses storing different materials and equipment quantity
- Display the latest measurement info of each stockpile
- Implement over-threshold alarms and pop-up windows to notify managers



2

Stockpile Details

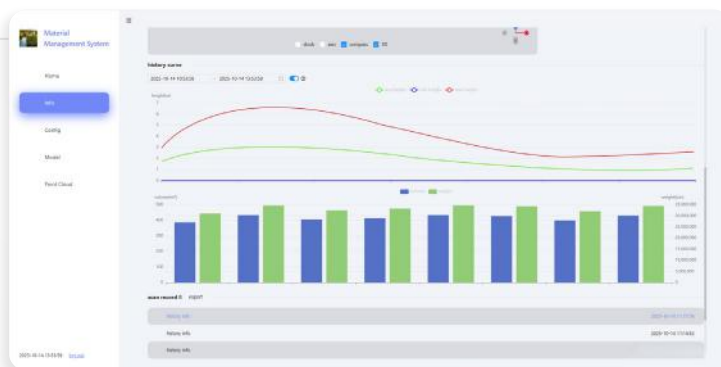
- Display real-time data such as stockpile volume, weight, and height
- Visualize stockpile shape and enable 3D model viewing from any angle
- Support regional measurement of different stockpiles



3

Data Dashboard

- Graphically present the volume change trend of stockpile warehouses
- Support generating and exporting historical information reports

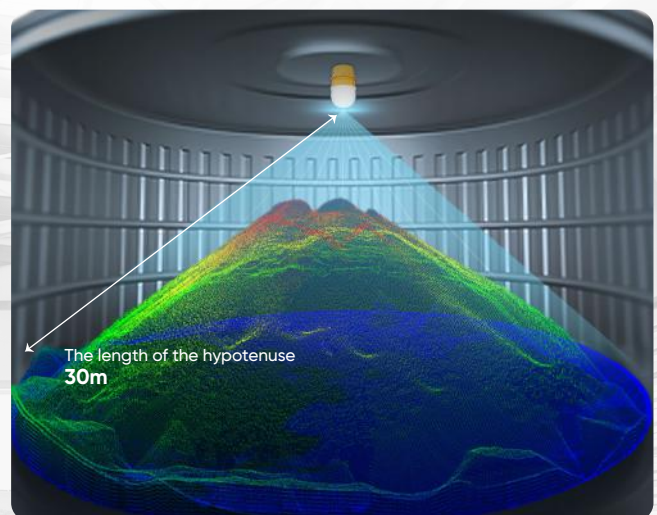
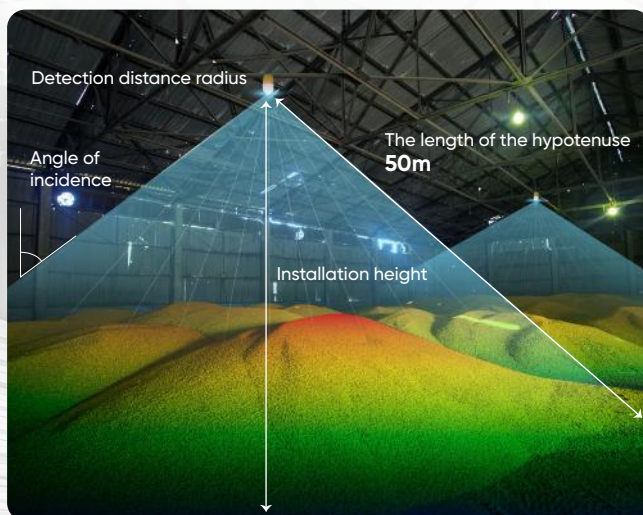


Application Scenarios

The solution is ideal for inventory management in various storage warehouses. It suits different materials like soybeans, wheat, corn, and feeds, and is compatible with storage warehouses of various materials (e.g., cement and aluminum alloy) and shapes.



Measurement ranges for different shapes of warehouses



Product Specifications

	STI-DSIR50-H2CG-T	STI-DSIR30-H2EG-B	STI-HSIR110-H2AG-T (3D Lidar)
Photo			
Beam Angle	±1°	±1°	/
Imaging Dimension	3D	3D	3D
Measurement Distance	50 m	30 m	110 m@ 10 % reflectivity
Distance Accuracy	±5 mm	±5 mm	±2 cm
Horizontal Scanning Angle	360°	360°	360°
Vertical Scanning Angle	180°	180°	180°
Imaging Time	>30s	>30s	30s
Power Consumption	30 W	30 W	30 W
Power Supply	DC 24 V	DC 24 V	DC 24 V
Protection Grade	IP67	IP67	IP65
Operational Temperature	-40 °C - 85 °C	-40 °C - 85 °C	-40 °C - 70 °C
Explosion-Proof Rating	Ex tb III C T85°C Db	Ex tb III C T85°C Db	Ex tb III C T85°C Db
Weight	8 kg	7 kg	15 kg
Application Scenarios	Large Silos, Warehouses	Regular Silos	Silo, Warehouse(Little Dust)
Dimensions (L*W*D)	380 mm*220 mm(H*φ)	357 mm*194 mm(H*φ)	220 mm*237 mm*442.5 mm (L*W*H)

3D Imaging Radar



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