

## Volumes 24.01

### An award-winning lidar software solution

Winner of  
Swedish  
Mining  
Innovation  
Award 2022

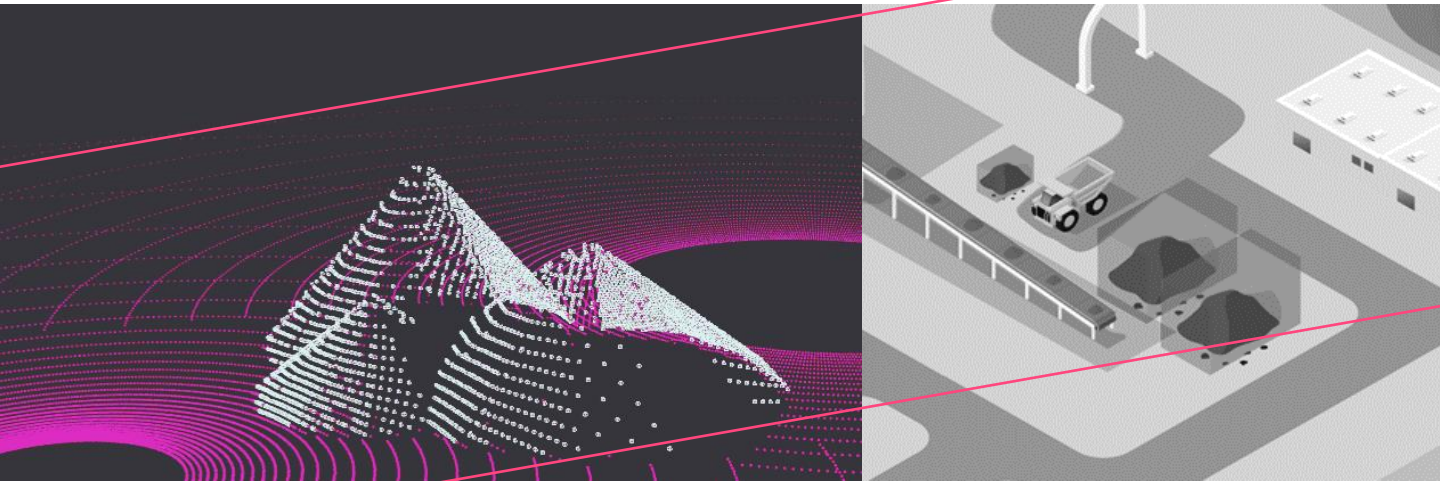
**NyT|33**

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Become more **autonomous**, **efficient**, and **safe**. Flasheye's industrial solutions provide all tools needed to understand what is happening in the physical environment and gather real-time information based on high-precision data from laser measurements and advanced 3D analytics.

3D laser technology, like lidar, is an active sensing device sending out laser pulses, making it independent of light conditions and more robust.

Flasheye **Volumes** provides the amount of raw material in  $m^3$  in real-time, a product that has been challenging to source, track, and optimize.



Save X0 000 EUR of installation costs compared to other smart systems



No need of specialized hardware and multi-brand support



Save costs by mitigating the need of personnel and ensure efficient and safe production flows



Open platform, integrate with industrial control systems and protocols

## Features

### Create zones of interest

Create 3D zones anywhere in the 3D space with centimeter accuracy. Lidar sensors are more accurate than radar and traditional methods. Beyond this, you can add more logic with zones tracking all activities close to the material.

The volume zone is a box, but more shapes will be available in the upcoming releases.

### Filter settings

With several steps of filtering the point cloud in real-time, information about moving objects and changes in material amount is gathered.

The filter settings allow you to decide how large objects or how big changes need to be for being reported. This mitigates false alarms effectively and is tunable to each site's unique needs.

### Analytics

Attach functionality to zones:

- **Volume calculation**
- **Object detection** (human, vehicle, etc.)
- **Max/min levels of material** (addition or loss detection of points)

### User interface

The user interface can be accessed from any PC or Android device using a web browser. The interface includes:

- Lidar view for configuring the 3D zones and settings
- Alarm presentation
- Integration to external interfaces

## Hardware requirements

### Sensors

Ouster, Blickfeld, Velodyne, Cepton, Hybo, Aeva, Innoviz, Hokuyo and SICK are among sensor brands that have been tested by us. We continuously test and integrate new sensors. Almost any sensor can easily be integrated upon request.

### LPU (Lidar processing unit)

Recommended system requirements

- Equivalent of ~4000 CPU marks of processor power per 1M points/sec and at least 2 cores per sensor
- ~5GB RAM and ~100GB disk space per sensor
- Linux OS for running Docker containers

This is used in some systems:

- Splitters and injectors for sensors with no PoE connection
- Switches and modules for digital I/O

### Performance

The system has built-in self-diagnostics to prevent errors and ensure the best possible performance. The self-diagnostics include dirt detection, anti-tampering, sensor analytics, and system monitoring. This data can activate other systems or be sent as alarms.

### Integrations

External integrations:

- OPC UA
- Digital Outputs
- MQTT
- ABB 800XA

Data

	Data type	OPC UA (PLC/DCS e.g. 800xA or S7)	Digital outputs* (only on supported LPU HW)	MQTT
Based on zone	<b>Volume</b> Volume m <sup>3</sup>	✓	✓	✓
	<b>Event (start+stop)</b> Zone type Object ID Class Number of points (motion detection)	✓	✓	✓
	<b>Alarm (continuous)</b> Zone type Object ID Class Number of points (motion detection)	✓	✓	✓
	<b>3D traces</b> Link to viewer Text			✓
Based on objects	<b>Tracking</b> ID Speed Sensor name Class Center of mass coordinate Prev. center of mass coordinate AAB min coordinate AAB max coordinate OOB min coordinate OOB max coordinate OOB transform Prev. OOB transform Gravity bounding box min coordinate Gravity bounding box max coordinate Gravity bounding box transform			✓
Monitorin	<b>Self diagnostics</b> Dirt detection Anti-tampering	✓	✓	✓

\* Digital output does not support variable metadata.