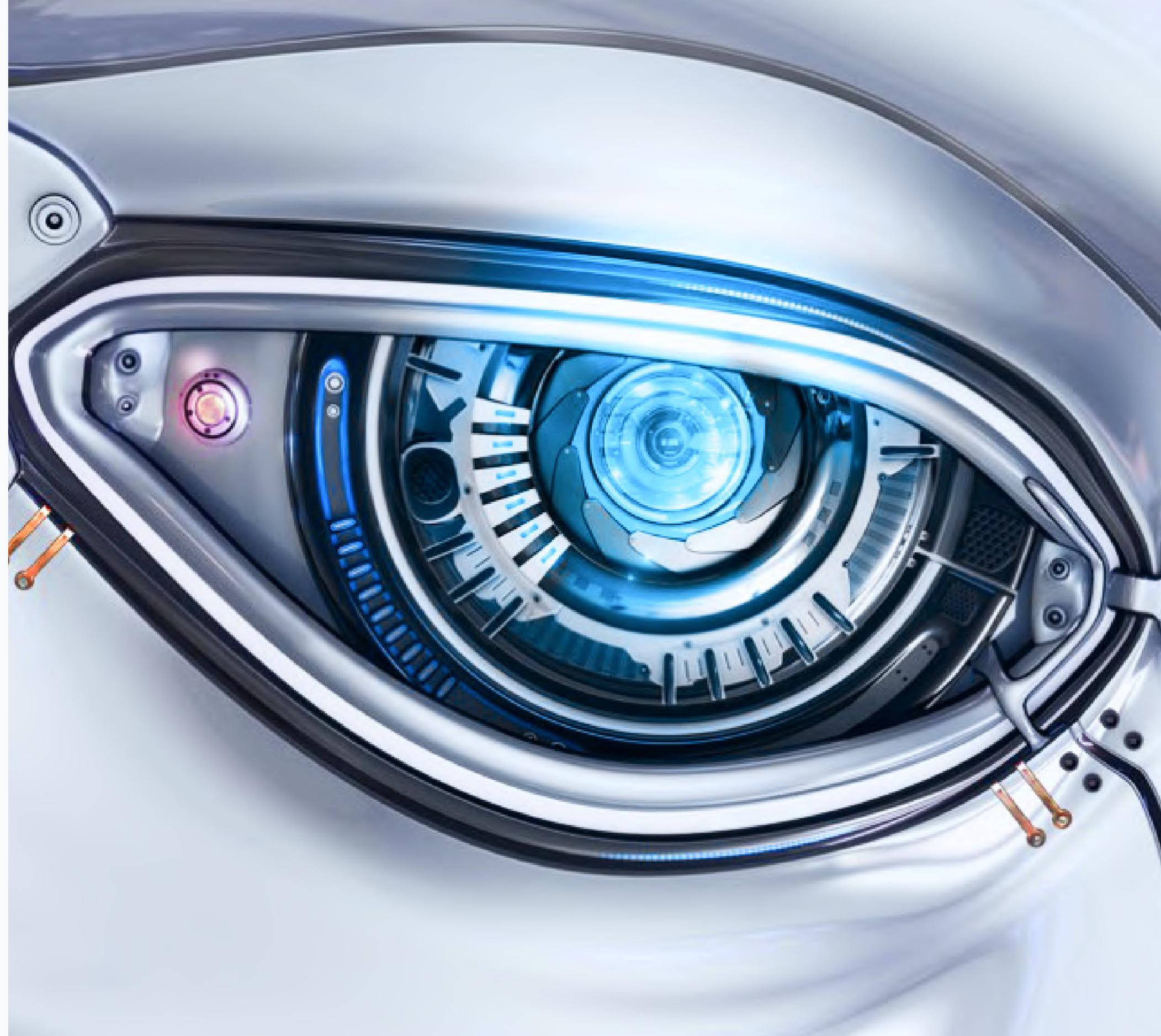




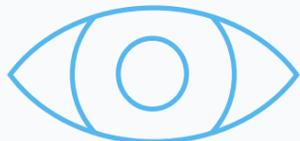
Dry bulk material monitoring system



The problem

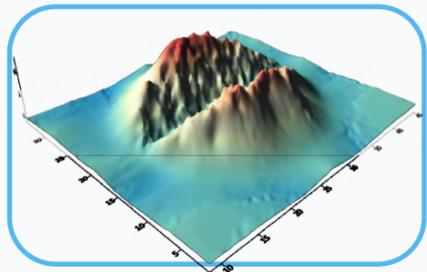
Manufacturing companies need operational control of materials in warehouses. Data quickly becomes outdated due to the high turnover rate of bulk products, **inaccuracies lead to losses and make it difficult to reconcile material balances.**

Human eye



Still the most common way to measure material volumes

No measurements "by eye" — this is a waste of time, quality, accuracy



Our algorithms, based on machine vision technology from IP-camera images, **create a 3D model of bulk materials online.**



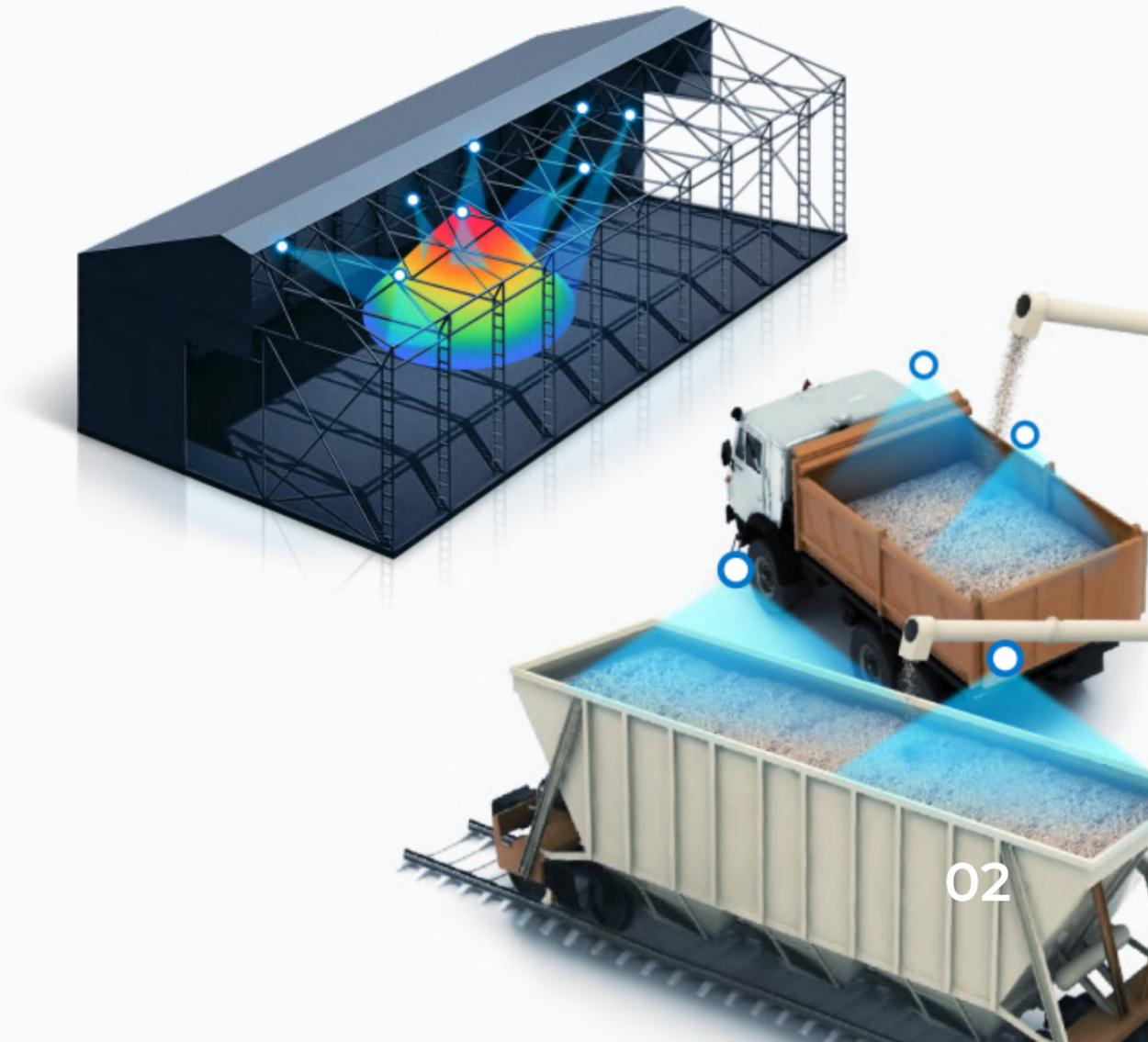
Online monitoring



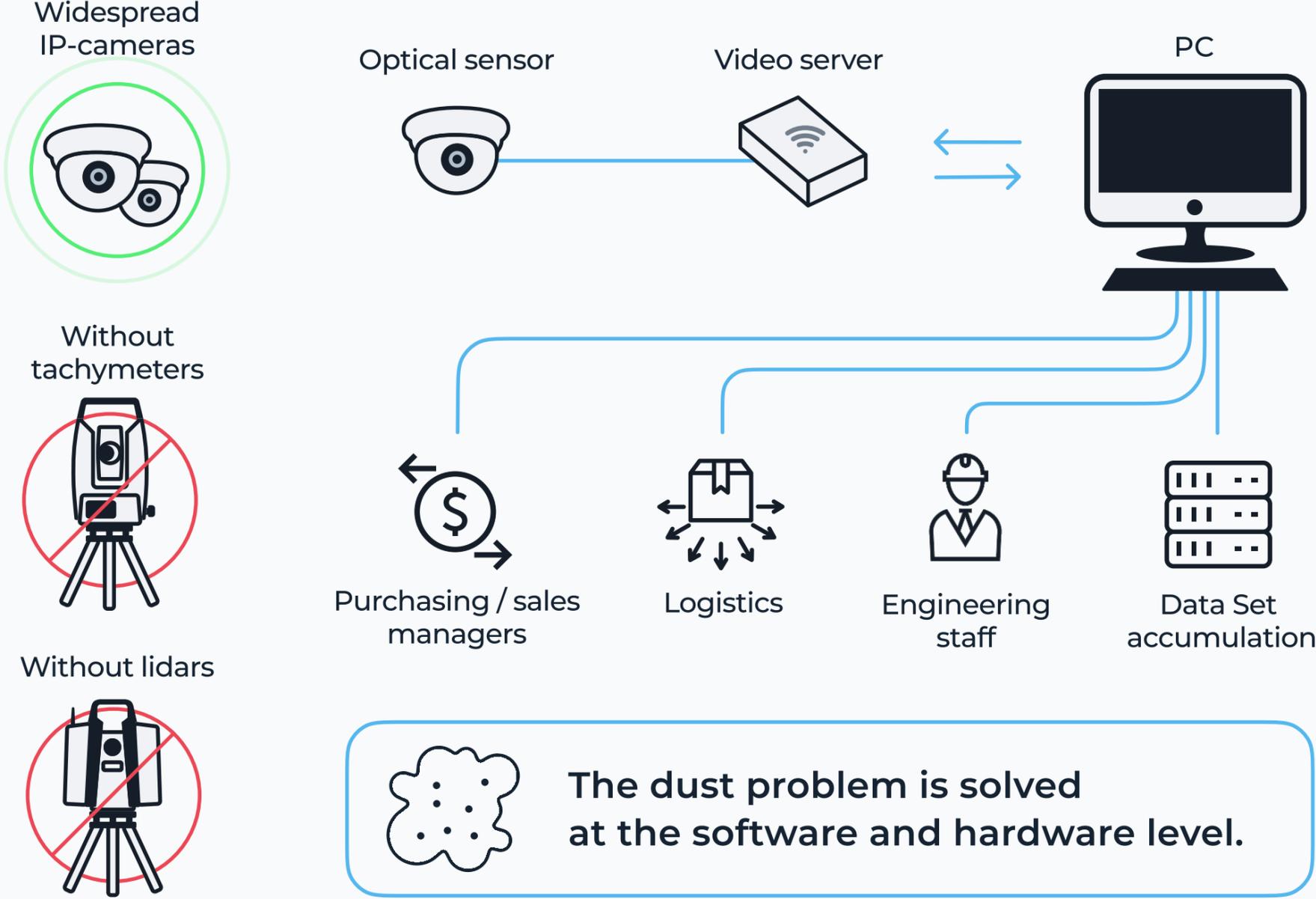
No need for the involvement of operations personnel



Analysis, optimization, predictability



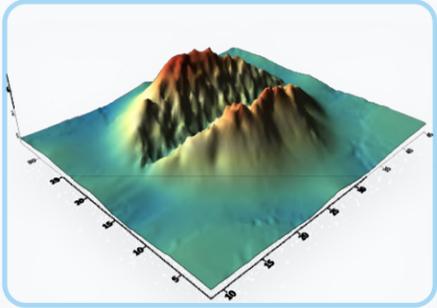
Easy and simple hardware



Digital model of pile of dry bulk materials

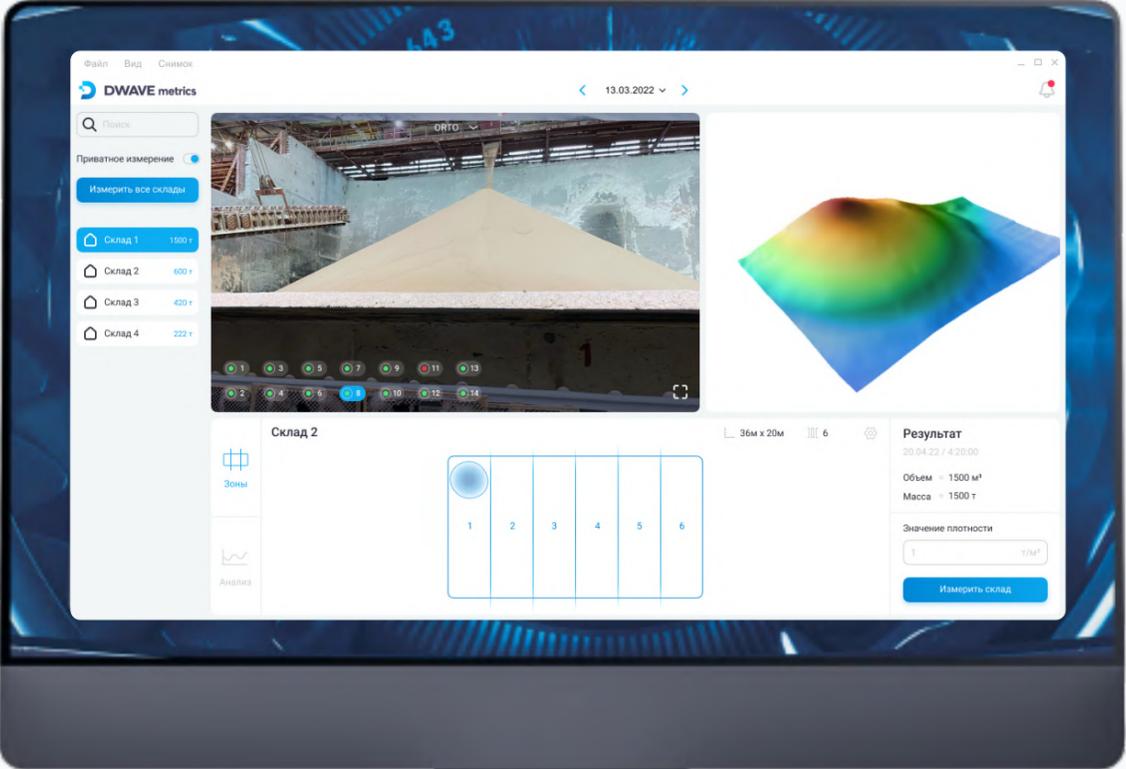


Photo



3D model

Interface



Файл Вид Снимок

DWAVE metrics 13.03.2022

Поиск

Приватное измерение

Измерить все склады

Склад 1 1500 т

Склад 2 600 т

Склад 3 420 т

Склад 4 222 т

Склад 2

36м x 20м 6

Результат
20.04.22 / 4:20:00

Объем = 1500 м³
Масса = 1500 т

Значение плотности
1 т/м³

Измерить склад

Зоны

Анализ

Software of solution for railcars

888 88882 — т

888 88883 — т

888 88884 — т

Вагоны

Анализ

Состав: XXX XXXX4 Груз: щебень 40-70

Дата/время прибытия: 20.04.22 / 4:19

Вагон: 888 88881
20.04.22 / 4:21

Груз: щебень 40-70
V = 71 м³
m = 71 т

Груз: щебень 40-70
Объем = 71 м³
Масса = 71 т
Плот-ть = 1 т/м³

Software of solution for enclosed warehouses

Solution for the chemical industry

Fertilizer manufacturer

Effect of implementation

- Increase the efficiency of the technological process;
- Reduce the operating costs;
- Control over dry bulk product flows;
- Allow to avoid disagreements between the production and controlling departments.

High accuracy

Error less than

3%

Based on data from May 31 to June 21
Voskresensk Mineral Fertilizers, JSC



Case

The introduction of the complex **has reduced the time of measurement from 10 hours to 5 minutes**, the acquisition of operational data has improved control of the technological process, **increased output by 2% and reduced the amount of substandard products by 15%**.

Establishing control over bulk materials

One of the largest companies on the mineral fertiliser market in the Russian Federation, the CIS and Eastern Europe.

Effect of implementation

- + Real time residue control;
- + Accuracy of measurement with an error of under 3%;
- + Optimization of technological processes, logistics and sales divisions.

High accuracy

Error less than

3%



Case

Lack of continuous monitoring of production volume, resulting in **inability to assess the actual output of the product and the inability to promptly intervene** in the process to achieve the targets.

DWAVE

Implementation of control system for dry bulk materials, allows you to **monitor residues in real time, with high accuracy**, which allows you to obtain **objective data for accounting and production calculations**, as well as to **optimize the work of technological processes**.

Improving accuracy in controlling bulk cargo flows

Central management of the terminal and warehouse complex and Russian Railways Logistics

Effect of implementation

- + Improved efficiency of warehouse space utilization;
- + Operative data acquisition;
- + Accuracy of measurement with an error of under 3%;
- + Increased operating efficiency of intra-warehouse equipment and rolling stock.

High accuracy

Error less than

3%



Case

In 2020, Russian Railways transported more than 700 MILLION TONS of dry bulk cargo.

Existing counting methods have limitations, are expensive, and require highly trained personnel

DWAVE

Algorithms based on machine vision technology from IP camera images create a 3D model of dry bulk materials online, which **allows to take control of bulk material flows, to analyze and optimize production.**

Why DWAVE

01 Tangible economic effect of implementing our technology;

02 Wide experience with large customers;



03 Human factor in processing of measurement results is excluded;

04 Real-time monitoring.



Due to the flexible settings and adaptive mathematical model the solution is available for use in different industries.

Implementation of our complex:

Will increase the efficiency of the technological process;

Will reduce the operating costs;

Allows you to establish control over bulk product flows;

Will allow to avoid disagreements between the production and controlling departments.

High accuracy

Error less than

3%

Based on data from May 31 to June 21
Voskresensk Mineral Fertilizers, JSC



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