

# Dump truck rollover control with Wialon

## ⚠️ Challenge

The client is a company that uses heavy machinery for extracting and transporting raw materials from quarries. In the past, the client frequently encountered accidents where their dump trucks would suddenly lose stability when lifting the truck body for unloading, especially if the surface slope they were standing on exceeded 6 degrees. The risk of the dump truck rollover posed a threat to the health of drivers and other workers around, could cause damage to the equipment, and significantly complicate the work process.

To control the vehicle rollover, the company used a complex technical solution: an inclinometer, which measured the angle of the vehicle position on the plane and in case of exceeding 6 degrees blocked the lifting of the body. However, this solution was expensive, and not all vehicles could be equipped with such a system.

## 🔧 Solution

The client turned to the Wialon partner, Geoservice, to solve the problem of dump truck roll protection and to improve safety during the unloading process.

The project required: accurately measuring the tilt angle during unloading on all three axes, promptly receiving and updating data from sensors, and being able to integrate them with the [Navtelemcom](#) navigation terminal.

There was no ready-made telematics system for vehicle rollover prevention on the market, so the Geoservice engineers developed a brand new working scheme for the client based on the [GPS fleet tracking software](#):

- They conducted testing of several types of inclinometers, including household ones, and settled on [Mielta](#) inclinometers.
- We developed an event-driven algorithm to control the tilt angle with false alarm protection and installed a light and sound indicator in the driver's cab that warns the driver that the vehicle is tilted when he attempts to activate the unloading mechanism.
- To further enhance safety and anti-rollover protection, each dump truck is equipped with driver-facing, road-facing, and blind spot cameras. Images from the cameras are transmitted to the display in the driver's cab and recorded on removable media. All sensor data and camera images are sent to the Wialon server.



## 🏆 Results

The roll stability control using Wialon has led to a significant safety improvement in the process of unloading trucks at the quarry: now dump trucks are not at risk of tipping when unloading at an angle. The system does not make any changes to the vehicle's structure, is easy to calibrate, and has already demonstrated its effectiveness.

### ✅ Workplace safety

Thanks to the tilt control system, dump truck flip can be prevented, which means there is no risk to the health and safety of drivers and other employees.

### ✅ Work efficiency

Drivers can perform tasks with confidence without the risk of accidents, which improves the productivity of quarry operations.

### ✅ Cost savings

Implementing this rollover protection system helped to avoid the cost of an expensive technical solution that had previously been used by the customer. This resulted in significant savings for the company without compromising safety and productivity.

## Company profile

**Industry:** Mining and processing

## Solutions

 Wialon

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