

Case Study

AI-Material Scan

Detection of foreign objects
and particle size in-quarry



1. Summary

A leading multinational company in the cement sector has implemented **AI-Material Scan** on its production lines to automatically detect gravel, blocks with out-of-specs, and foreign objects, preventing blockages and unplanned machine downtime.

Thanks to computer vision and advanced AI models, the company now has a real-time inspection system that ensures operational continuity, reduces breakdown costs, and optimizes line safety.

2. Installation

The **AI-Material Scan** system has been installed directly above the conveyor belt, at a point in the feed line where early detection minimizes the risk of blockages.

Using a **high-resolution industrial camera and proprietary trained AI models**, the solution inspects every fragment of material passing along the belt. When the system detects a non-compliant object, it **automatically sends a signal** to prevent jams, part breakages, or cascading shutdowns.

3. Objective

The main objective of this implementation is to deploy an autonomous line inspection and protection system that enables the company to:

- Detect large stones or foreign objects **in real time**.
- **Prevent blockages** and breakages in critical machinery.
- **Reduce unplanned downtime** and maintenance costs.
- Increase operational **safety and incident traceability**.
- Improve the overall **efficiency and reliability** of the production line.

4. Results

Pixelabs' AI platform enables real-time, objective, and precise quality control of the analyzed components, with an **accuracy greater than 97%**.

The **AI-Material Scan** platform has allowed the client to increase the operational availability of the line and minimize incidents related to blockages caused by non-compliant material. Among the key results:

A/ Communication with existing internal systems and generation of immediate alerts, preventing equipment damage.

B/ Reduction of unplanned downtime and costs associated with corrective maintenance.

C/ Scalable system adaptable to different production lines and capacities.

