HIGH-ANGLE ENGINEERING · INDUSTRIAL RIGGING · ASSET INTEGRITY

Installation of Monitoring Instruments: Cement Silos

Continuous monitoring of settlement, tilting and cracking during rehabilitation of cement silos at the end of their design life.

CLIENT / INDUSTRY	PROJECT SCOPE	ASSET SCOPE	SAFETY PURPOSE
Cement Manufacturing	Monitoring Installation	4 Silos Monitored	Emergency Response

1. The Challenge & Project Overview

The cement silos had reached the end of their design life and were on the brink of collapse. During rehabilitation, crews worked in and around these vulnerable structures, making structural monitoring essential to safe working and emergency response.

Talos installed instruments to track settlement, tilting and cracking, and calibrated and programmed the monitoring software. Tiltmeters on four silo tops, electronic crack meters and an H-level settlement system were connected to a central data logger to provide continuous information on the silos' behaviour.

Critical Project Objective: Monitor structural movement while crews work in and around the silos, with alarms at set parameters supporting immediate evacuation if needed.

Project Specifications

Scope	Monitoring
Condition	End of design life
Sensors	Tilt, H-level & Crack Meters
Settlement	H-level system
Data logger	Sisgeo OMNIAlog
Reporting	Daily reports



FIGURE 1: Cement silo overview — OVERVIEW SILOS



FIGURE 2: Crack monitoring — CRACK METER



FIGURE 3: Tilt meter — TILT MONITORING

4	3	1	Daily
Silos Monitored	Monitoring Systems	Data Logger	Behaviour Reports

2. Instrument Installation & Access

Talos installed instruments and calibrated and programmed the software:
• Tiltmeters on four silo tops monitor biaxial movement.
• Electronic crack meters monitor cracks considered dangerous during operation and reinforcement.
• An H-level liquid level system at the silo bases monitors differential settlement.

Technicians reached the silo tops in a crane-hoisted man-basket to install tiltmeters and some crack meters. H-level instruments underneath the silos were installed from the ground.



FIGURE 3: Crane man-basket access TACTICAL ACCESS



FIGURE 4: Settlement monitoring SETTLEMENT MONITORING

3. H-level System & Data Logging

H-level gauges are hydraulically connected to a reference tank in a stable location. Each gauge has a high-resolution pressure sensor measuring the elevation difference between gauge and tank to monitor differential settlement.

All sensors connect to a Sisgeo OMNIAlog data logger, enabling continuous monitoring and daily reports on the silos' behaviour.

4. Results & Emergency Readiness

The instruments were installed safely and successfully, enabling continuous monitoring. An alarm triggers when set parameters are reached, supporting immediate evacuation if needed. Daily reports from the logger record the silos' behaviour.

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