

## BEST PRACTICE

LOCATION: Company-wide  
ACTIVITY: Access & Egress & Working at Height  
SUB ACTIVITY: N/A  
BEST PRACTICE No: BP2018  
COUNTRY OF ORIGIN:

ARTICLE YEAR: 2018  
COMPANY: Marshalls Plc  
COMPANY LOCATION: Comany wide  
COMPANY TEL: 0000

### TITLE

**Silo ground level testing**

### ARTICLE

#### DESCRIPTION

A SHE review at Marshalls recognised a concern about the number of times staff were working at height on the tops of silos. It was estimated that there were over 300 manual inspections at the top of silo's every week and circa 1,000 silo fills per week. It also revealed high levels of environmental discharges from the silos and, in one serious incident, a filter unit had been blown off a silo. These findings led Marshalls to undertake a detailed survey of its 150 cement and PFA silos which are located across 24 sites. The survey identified that 50% of the silos had either below standard or under-capacity pressure relief valves (PRVs), faulty safety sensors or showed signs of a contents discharge. There was virtually no standardisation of safety equipment across the estate and the silos were assessed as being a high risk to the environment.

A plan was developed to undertake remedial engineering work and reduce the potential for silo discharge during deliveries. The priorities were to design an engineering solution that could be standardised, systemised, was legally compliant and would work across the entire Marshalls network. In addition, the system should be fail-safe, enable tanker drivers to check spare capacity prior to discharge and would integrate with the factory's Allen Bradley plc's – so data could be recorded for root cause analysis.

In partnership with Hydrocontrol, modifications were undertaken over a year with an investment of £1.1million. Marshalls is now in the process of informing local councils about the new systems and anticipates that the number of compulsory checks on the top of silos will be reduced.

#### BENEFITS

- 90% reduction in operators checking top of silo
- Significant reduction in working at height
- Exceeding current PPC permit requirements
- Standardisation of PRV's, silo fill valves, high level sensors, and over-pressure sensors
- Installation of standardised level gauges and displays
- All silo safety systems NOW tested prior to fill
- Automatic stop on fills if a high level or high-pressure event occurs
- Sensors check functionality of PRV's and silo tops
- Since installation the modifications have
  - Detected and prevented 338 over-pressure events
  - Detected and prevented 163 high level alarms
  - Detected and prevented 11 PRV alarms (preventing discharge)
- Silo servicing frequency extended from three to six months
- Safer and cleaner environment
- Safer and easier for tanker drivers to make deliveries
- Systems easier to maintain and manage.

### ARTICLE IMAGES

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