

## CHPP Tag Readers

### Xstrata Coal Queensland – Newlands Surface Operations

#### The Problem or Initiative

##### a) Identified problem

- The primary issue is the risk of a bin discharging whilst the cabin of a vehicle is in the drop zone.
- This creates the risk of a potentially fatal hazard or serious crush injury.

##### b) How the improvement opportunity was identified

- In 2008 (at Ravensworth) a fatality occurred when a bin discharged while the cabin of a vehicle was in the drop zone.
- This clearly heightened the awareness and importance of working on a process improvement project to mitigate this risk.

##### c) What health and safety consequences were to be addressed

- The primary health and safety consequences are serious crush injury and fatality.

#### The Solution

##### a) Strategies and initiatives developed to identify and address the problem

- A project team was created to work with an external supplier on the development and implementation of a viable and effective solution.
- After reviewing alternatives, the use of a tag reader system was selected, designed and implemented to determine when it was safe for the reject truck to proceed under the rejects bin.
- The solution includes entry lights and reader and an exit reader.
- The tag reader system is superior to normal standards as it does not use optics or radar that may be affected by the environment they are installed in or a sequence of events that may be misinterpreted.



- The tag reader reads a dedicated number from the tag.
- From the numbers and the channel the numbers are received on, the control system is able to determine the position of the cabin.



- When the truck leaves the drop zone, the reject dump bin control is disarmed.
- The system is rearmed when the cabin of the truck passes under and past the drop zone.
- Traffic lights on the bin and SCADA screen indicate the system status.
- The tag readers may be utilized in the future to aid in the positioning of the trailers to improve loading of trailers.

**b) Internal and external resources used**

- The control room operators were involved with the process control engineers in the configuration of the control logic and the operator interface.
- The haulage contractors Operations Manager and Training Office attended the commissioning and fine tuning stages of the project.

**c) Methods used to trial and test**

- The system was bench tested by Logicamms at their Mackay office.
- The proven system was then sent to site and installed.

**d) Implementation process**

- While the system was being bench tested in Mackay the cables and supporting equipment was being installed on site.
- During a planned shutdown final installation and commissioning was completed.

**e) Demonstrate how hierarchy of control has been applied**

- Engineer / Redesign – Isolation. The tag reader system disarms the gate control when the trailer is detected leaving the drop zone.
- The gate control is armed when a trailer is detected entering the drop zone.



**Benefits / Effects / Outcomes**

**a) Safety and occupational health benefits**

- Mitigated the risk of serious crush injuries and potential fatality.

**b) Supporting data**

- An extensive commissioning process has proven that if a trailer is not detected, the system will not allow the bin to discharge.

**c) Extent of deployment**

- At Newlands Coal CHPP the reject bin is the only installation of this kind.

**Transferability**

**a) Potential for innovation to be used, modified, transferred across the industry**

- The tag reader could be used in any situation that requires the positive identification of an item to be transferred to a control system.

**Innovation**

**a) Originality of the innovation**

- Tag reader systems are usually associated with computer based systems and communications protocols not Programmable Logic Controllers.
- We believe this innovation is unique to Newlands Coal CHPP.

**Approximate Cost**

**a) Statement of approximate cost, if known**

- Hardware \$10,000
- Engineering \$14,000
- Installation \$10,000