21048

Removal of bucket belt issues and confined space

Aggregate Industries > Westleigh Quarry 1 4 5

AWARD WINNER

ON VIDEO

Confined space

Snagged belt

DESCRIPTION

Aggregate Industries' Westleigh Quarry had a problem with a bucket belt and straight conveyor that was lifting when empty due to a change in gradient and snagging on the tail drum.

The two belts were located in the secondary plant which had a return section, the bucket belt allowed material to be transferred up into the plant to pass through a crusher on the return leg. For this process to work, the conveyors had a transfer point which was below the platform level, the tail drum of the conveyor was in a confined box accessed via a vertical ladder.

The bucket belt often caused issues with side walls failing or ripping which allowed material to fall on to the walkways or around the tail drum. Often a section of broken plant would get caught in the chute at the transfer point, this would choke it up. Operatives and fitters were then required to clear the chute from the confined space.

A project team was set up to resolve these issues. Their solution was to replace the existing system with one standard belt and rollers. This overcame these issues and therefore, removed the need for the operatives to regularly be required to engage in tasks that involved work in a confined space, clearing the two transfer chutes, working on two drive systems, clearing spillages and undertaking repairs to the bucket system.

The removal of the old system and installation of its replacement took one week. The system was able to work using one of the existing drives. One innovative element of the project was the introduction of wheels from a child's quad bike at the point where the conveyor changed direction. This innovation prevented the belt rising from its rollers, which created spillage below. The wheels also removed pinch points as the wheel arms would allow the tyres to lift over hard objects and prevented the belt from tripping the speed sensor.

The full cost of this innovative design was around £11,000. The belts had been in this layout since 1986, the team considered all impacts in the 'management of change' and ensured all new risk areas were covered. The project reflected Aggregate Industries commitment to employee engagement and leadership at all levels, the team being given the time and space to implement their ideas.

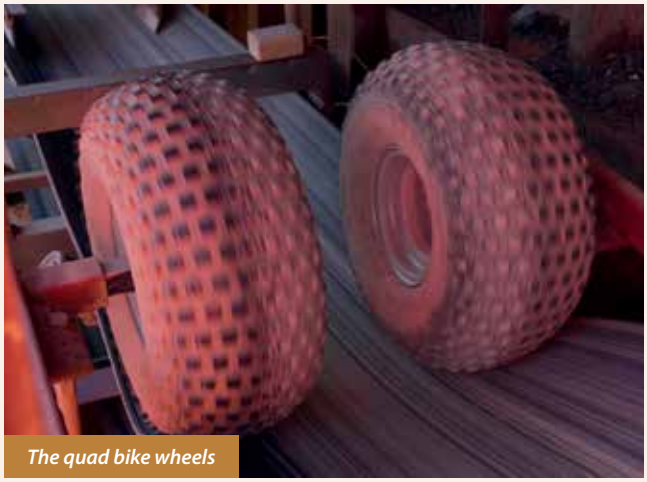
BENEFITS

- Two high risk tasks and areas of work removed
- Improved efficiency of maintenance and safety of the plant
- Improved production efficiency
- Reduced running costs of conveyor system
- Confined space working no longer required in dusty environment
- Reduced levels of spillage and housekeeping required
- Reduced downtime due to conveyor failure
- Improved morale of maintenance and production team.
- Improved safety culture as team worked together to find solution.

DEVELOPMENT AND TRANSFERABILITY

Whilst this application may be replicated in another plant, the key element of this project that is transferable is the approach to the problem.

- It recognises that a team knows their site and gives them the license to consider improvements such as changes to the process, ways to remove downtime issues and mitigate risk. This is essential for both the site and company to get the best results.
- It recognises that no plant is unable to change, just because a plant has been operating for years in a particular layout, it does not mean that it is configured in the best or most efficient form. Technology has changed and engineering moved forward. New ideas must be considered that may provide an option to improve the process.



The quad bike wheels