



MAKING OPERATOR SAFETY A TOP PRIORITY



When it comes to safety, terminals, refineries and chemical plants globally are always keen to highlight how much of a priority it is in their day-to-day operations.

'I cannot recall the amount of times I have seen 'safety is our #1 priority' as I walk into terminals, refineries and chemical plants,' says Alec Keeler, managing director of UK-based Loadtec Engineered Systems.

'So I think, ok, let's see that in action.' Sadly, as Keeler recalls, it is a somewhat different story. In many cases in fact, there is a scattering of minimal equipment, designed and built to a specified budget to 'appease authorities and doesn't give a moment's thought to actual operator safety and ergonomics'.

Ergonomics, according to the Collins English Dictionary, is 'the study of the relationship between workers and their environment, especially the equipment they use'. 'For many workers, this is an excuse to spend company money on an office chair that has multiple adjustments, which are never truly used,' says Keeler. 'But let's apply this thinking to the concept of industrial safety.'

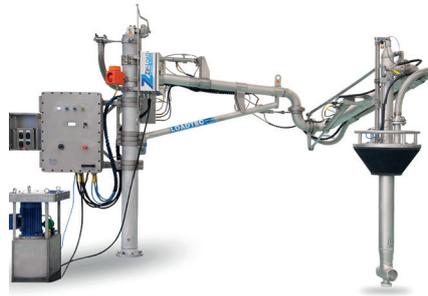
The loading and unloading of tankers, regardless of the liquid handled, is a hazardous operation, and this is where the concept of Ergonomics comes in.

Traditionally, the loading arm is moved by hand from a parking point, out to the tanker and lowered into position in the manhole.

EVOLVING REQUIREMENTS

'The operator takes great care not to damage the equipment by clashing with peripheral structures - or not, as is most likely the case,' says Keeler. This is because the loading arm has now become more integrated into industrial process machinery, and as such comes with an assortment of valves, sensors and other equipment, adding to its weight.

'Previously, the loading arm was a simple articulating and counterbalanced pipe, which made it fairly lightweight and easy to handle. Step forward 30 years and in many cases the loading arm is carrying instruments, actuated



The Loadtec automatic loading arm

valves; sensors; vapour recovery; anti-splash telescoping drop pipe and anything else the client thinks is necessary.

'This turns the lightweight pipe into an 800kg + machine. This is 800kg + that needs to be moved, with care, while working on a tanker top in all weathers.'

Hydraulic actuation of all movements is a reliable option and is increasingly used to allow the operator to guide the arm into the manhole and, when loading is complete, to retrieve the arm and park it safely.

However, the action of moving the arm is still reliant on the skill and familiarity of the operator to use the controls. A misadventure when driving a hydraulic powered arm can be far greater than when it is hand powered. It can result in damage to the loading arm, the tanker and quite possibly the operator if they are standing in the wrong place.

With operator safety at the heart of its business strategy, Loadtec has developed a solution to mitigate the danger facing operators.

'It will appeal to companies who are already handling dangerous liquids in unfavourable situations,' says Keeler. 'This is for companies who have recognised the hazard and are considering buying 3-way hydraulic arms or, at least, complex pneumatically balanced arms.'

THE AUTOMATIC ARM

So, what is this solution?

Imagine a tanker loading operation, where the tanker is positioned somewhere in the loading bay. The manhole has been opened and it awaits

filling and the loading arm is parked in a tundish.

One button is pressed. It can be pressed from a control panel on the loading platform or a distant control room. The loading arm will lift out of the tundish and move through its arcs to a point over the tanker. Then, it will actively search for the open manhole. Once detected, it will lower itself into position and carry out self-checking operations (tanker earthed/arm pressed on the manhole/vapour line pressure OK/high level alarms dry).

Only when all this is verified will it give a permissive to start loading. This can be linked to a pre/post purge sequence or directly to the DCS. On completion of loading, the arm will remove itself from the tanker and return directly to the parking tundish where a purge can be conducted awaiting the next load.

There are several benefits:

- The operator is not subject to environmental hazards,
- The loading sequence is performed, monitored and measured precisely and consistently each time. This is irrespective of who is on duty or handling that station and their familiarity with the equipment,
- The operator faces zero ergonomic challenges,
- The costs are recovered very quickly due to the saving of not having an operator present for the duration of tanker filling.

Several of Loadtec's clients are currently working on concepts where driverless tankers arrive at operator-less depots.

'Given the progress we've all seen with driverless cars in the last five years, we fully expect to see pilot sites emerging within the next five years,' explains Keeler.

'The Loadtec automatic arm bridges the gap between what is possible now and the inevitable future direction of the industry. It is a future that Loadtec with its loading arm partner, Zipfluid, will embrace as we continue to challenge convention with innovative ideas that shape environmental and operator safe working practices.'

FOR MORE INFORMATION

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