

Safeguarding Options for Rotary Milking Machinery

What Happened

In November 1998, a four-year-old boy from Pio Pio was killed in a rotary cow shed accident. He tried to leave a bail through the entry ramp while the platform was still rotating. He was caught and squeezed through a 75 mm gap between the end of the rotating bail fence and a stationary supporting upright.

The main trapping hazard in the rotary machinery occurred as the steel supports within the circumference of the rotating platform passed fixed parts at the entry and exit points of the machine.

After the accident OSH, farming organisations and rotary milking machinery manufacturers agreed on practicable steps farmers can take to minimise the risks posed by the machinery. These are as follows:

1. Minimum Safe Clearance

There should be a minimum clearance of 180 mm between the bail divider rail or any attachment fitted on it, and the ring support rail or any fixed upright up to 750 mm above the platform level.

A minimum safe clearance of 200 mm should be used for height between 750-800 mm above the platform. This clearance will allow a person's legs to pass through without trapping. For height above 800 mm, a safe clearance of 300-500 mm may be necessary to ensure that a person's body will not be trapped.

A clearance space greater than 200 mm, however, may not be practicable as it could allow an animal to squeeze through. If this clearance is not practical, trip devices can be used.

2. Safety Trip Devices

Safety trip devices can be fitted at potential trapping points at the fixed supporting pipe ring or upright at the ramp area, the ring pipe bend or particularly at any entry and exit points to the platform. Trip devices ensure the platform stops immediately to prevent injury in the event of a person being trapped at the danger area.

Springs or a buffer may hold the safety trip device so that it will not be activated by a cow or person pushing on it, until it reaches the point where trapping may occur. The device will stop the machine immediately. The pressure on the spring or buffer should be low enough to prevent people being trapped in the gap, yet enough to prevent unnecessary stopping if it is hit by cows.

After a machine has stopped, the machine may be allowed to restart automatically when the trip device is released back to its normal position.

Alternatively, the machine may be restarted by pushing a restart button or pulling the start and stop wire provided overhead, once the machine is clear and safe to restart.

The machine brake has to be able to stop movement immediately before trapping occurs.

Trip switches or any programmable logic controller fitted for the safety trip devices should be designed to fail to safety. Standards for these are outlined in OSH's *Guidance Notes for Electrical Interlocking for Safety In Industrial Processes*.

3. Shear Pin

Another safety option is the use of a moveable fitting or shear pin at points of potential trapping. This allows the pipe ring bend or support to be pushed away under a certain force to prevent trapping.

The system should be designed by a registered engineer to ensure that it can only be pushed out by a person in the event of an emergency, but that the normal movement of a cow will not cause the fitting or shear pin to operate.

A safety trip switch can also be fitted at the area to stop the machine immediately when the moveable fitting or shear pin has been operated. Standards required for safety switches are also mentioned in the *Guidance Notes for Electrical Interlocking for Safety In Industrial Processes*.

If a safety trip device is used for the machine at the entry and exit ramps, the uprights holding the ring pipe at other positions away from the entry and exit ramps may have a trapping hazard for a person's head while they are standing on the floor. In this case, the machine should be modified so there is a head clearance of 300 mm between the supporting upright and the bail divider rail. Another option to avoid this trapping hazard is to prevent access by putting a guard in place. If the rotary table is used to revolve in both directions, the safety trip devices should be fitted on both sides of the ramp.

Alternative Safeguarding Methods

Alternative safeguarding methods may be equally effective in addressing the hazards that

exist with rotary milking machinery.

Alternative safeguards are acceptable as long as they meet relevant machinery guarding standards.

For further information please contact your nearest OSH office.

Power Control Lockout Device

The machine's power control should have a lockout device to stop it starting inadvertently during maintenance or cleaning. Machine start and stop buttons should be prominently labelled. Details are included in OSH's *Guidelines for Guarding Principles and General Safety for Machinery* available from any OSH office.

References

- Health and Safety in Employment Act 1992*
- Health and Safety in Employment Regulations 1995*
- Machinery Act 1950*
- *Guidelines for the Provision of Safety, Health and Accommodation in Agriculture*, available from OSH
- *Ergonomics of Machine Guarding*, available from OSH
- *Electrical Interlocking for Safety In Industrial Processes*, available from OSH
- *Guidelines for Guarding Principles and General Safety for Machinery*, available from OSH
- Farming Bulletin No. 9: *Advice to Persons Hiring or Purchasing Plant in the Agricultural Industry*, available from OSH.

* Legislation can be purchased from Bennetts Bookshops and selected stationers.