Pointers on design and operation of cattle restrainer systems

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By TEMPLE GRANDIN, one of designers of new cattle handling system at Swift Fresh Meat Co., Tolleson, Ariz. Second chute is at far right of photo.

The first major innovation in retraining and shackling systems for cattle was the restrainer conveyor system. These systems are currently in use in at least 12 beef plants in the United States.

In one plant, up to $500 per day is being saved as a result of reducing trim losses. This plant converted from a knocking pen system, where three cattle are held in each compartment, to the conveyor or restrainer. Contrary to popular belief, cattle can be bruised immediately before or after stunning. Another advantage of the conveyor restrainer is increased employee safety and humane cattle treatment.

The principle of the conveyor restrainer is as follows:

Cattle are held between two moving conveyors with their feet hanging out below. While the animal is held in this position, it is stunned and the shackle then is attached. It is then discharged onto a take-away conveyor or slide and transported to the bleed rail. Proper installation and operation of the equipment is essential for smooth, efficient operation.

Operating recommendations

The most important part of any cattle handling system is the people who run it. The employee who feeds the cattle into the conveyor restrainer should persuade the cattle to enter the unit in a steady stream. Forcing them to enter faster than the conveyor is able to pick them up will cause them to balk and become agitated. Using an electric prod on an animal when there is no place for it to go usually will result in its backing, or it may even be killed. Working the cattle carefully and gently through the system is the most efficient method.

To facilitate the stunning process, the animal's head should be up when it enters the restrainer conveyor. To encourage an animal which has its head down to raise it, the drover can tap the side of the neck. For maximum efficiency and ease, the shackle should be applied when the animal's head first emerges from underneath the hold-down rack. This also will make the shacker's job easier.

When cattle are stunned, they usually retract their legs suddenly. Starring the animal when it first emerges from underneath the hold-down rack will give the legs a chance to relax and drop back down. This will enable the shackle to attach the shackle more easily. Once the shackle is attached, the animal in restrained position

Animal in restrained position

PROPERLY designed slideaway plate (left) helps maintain tension on stunned animal's shackled leg. This allows (right) animal to move all the way to bottom of slide-off plate for gentle lift-off by takeup conveyor.

WATERING animals move past slaughter gate, which permits drover to switch back and forth between two chutes, at Temple Grandin, one of designers of new cattle handling system at Swift Fresh Meat Co., Tolleson, Ariz.
mended to prevent the trolleys from traveling at an uncontrolled rate into the bleed area. A power slat conveyor is the preferred system for conveying stunned cattle after they have been discharged from the conveyor restrainer. One advantage of this system is that the maintenance and expense of the incline conveyor is eliminated. The major disadvantage is the extreme height of the restrainer.

Unfortunately, there is no standardization within the industry regarding shackle length. These shackles range in length from 48 in. to more than 60 in. in existing restrainer installations. Long shackles can cause problems because maintaining tension on the long chains is more difficult. One way to alleviate this problem is to use a combination slide and slat-conveyor system. This combination also is useful in plants that are being remodeled, because space is sometimes limited. Another suggestion is to place the slat conveyor on a slight angle so the stunned cattle are pulled away from the incline conveyor.

Of course there are many other points of importance in the selection and installation of a conveyor restrainer system, but the foregoing should give at least some of the basic principles that should be considered.