

New Barn Cleaner Has No Moving Parts

by Tom Lawin

By any standard of measure, Dick Lettner's method of cleaning his 136-foot-long barn is unique in North America.

It has no moving parts. In fact, the only thing that moves is the manure itself.

This system is one that was conceived in West Germany, being used in virtually all new dairy operations in that country, and it was designed for Lettner by a German engineering firm. Moreover, metal grates that cover an unusual gutter, which is more like a pit, were imported from a West German manufacturer.

In all, the Lettners' conventional-appearing, hip-roof barn, built perhaps a half-century ago, shrouds the only manure handling system of its kind not only in Wisconsin, but in the United States and Canada.



Dairyman Richard "Dick" Lettner, of Trempealeau, Wis.

Built by Lettner and his sons, the system works, but it is being monitored closely by the Wisconsin Department of Agriculture, Trade and Consumer Protection to ensure it complies with "Ag 80," Wisconsin's grade A milk code.

Instead of finding the usual barn cleaner gutter behind each cow, running the length of the barn, together with cleaner chain, one observes a metal grate, 1 meter (40 inches) wide, running the length of the barn.

Beneath the grate is a pit, from 3 to 5 feet deep. But there are no moving parts in this pit that not only runs the length of the whole barn, but also runs across the north end, under the manger area, also collecting manure from an attached calf barn with the same manure movement system.

Manure gets from the Lettner barn into an outside reception pit, and then into a new slurry tank storage unit "naturally," not only eliminating winter manure spreading at the Lettner farm, but also erasing the problem of broken gutter chains and the purchase of barn cleaners, as well as use of electricity.

Metal grates are floor level, or the same height as both the walkway near the outer wall of the barn and the floor under tie stalls or near stanchions

(there are both in the Lettner barn).

Of course, this floor-level grate means cattle no longer have to step (by design or mistake) into the barn cleaner gutter when getting in and out of their stanchions or tie-stall area; it means that if large cows lay down or stand up, the rear half of the udder, will not be in the gutter; and it means that if a "mistake" occurs (a calf is born while her dam is in the stanchion or tie-stall), the calf will not experience its first few hours in a manure-laden barn cleaner gutter. The Lettners have their cows calve in individual stalls.

There are three levels of depth in the German system used at Dick and Ann Lettner's farm. At the south end of the barn, which is the "far end," the pit beneath the grating system is 1 meter, or about 40 inches. This depth is maintained for about 45 feet when it drops 8 inches. This same level is maintained for the next 45 feet when another 8-inch drop in level is maintained. Thus, it's 5 feet deep at the north end.

At each of the two changes of depth there is a 6-inch high concrete "dam" that holds back 6 inches of manure, which is in the barn manure pit at all times.

Manure moves out of the barn when bacterial action puts it into a liquid state by breaking down solids. Movement of the manure is "automatic." That is there is no cleaner chain to move it into the outside reception pit, there is no flushing out of the system with water to make it move. In effect, it moves itself.

The outside portion of the Lettner manure handling system is just like any other liquid manure system used by thousand of farmers. Manure moves from the reception pit into the slurry tank where it is held until it is emptied and spread on the Lettners' 440-acre farm with a tractor and tank.

Why go to a system like this that probably no other dairyman in the United States has?

"Why not?" the progressive southern Trempealeau County farmer replied. "I have to admit it was a tremendous amount of work putting it into a conventional barn, but it eliminated moving parts and should last forever, or as long as the barn lasts



Photos courtesy "The Country Today"

John Lettner uses a metal scraper with a handle through which water flows to scrape fresh manure into the pit grates. Pit is about 4 ft. deep at this point.

because it is built entirely of concrete beneath the metal grates."

Several times a week the grates are cleaned with a stiff brush attached to a hollow metal handle through which water passes. This water falls into the gutter pit below and winds up in the slurry tank.

Currently, the Lettners flush out their milking equipment wash water into the pit, but state officials believe this chlorine-laden water might be detrimental to growth of bacteria needed to break down solids into liquid form.

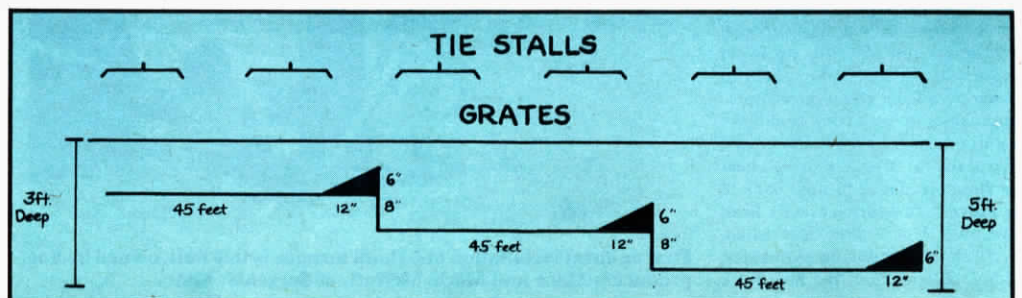
Although UW-Extension engineers reportedly told Lettner that the system would have to be sloped, there is no slope in the gutter floor. The bubbling action that takes place when manure breaks down from the solid to the liquid state apparently is sufficient for the manure to move by itself.

As Lettner describes his new system, "it is labor saving, energy efficient because no electricity is needed, it has no moving parts and the cows stand level. Besides, it's easier at milking time because we don't have to step into the gutter to attach the milker."

The system cost \$18,025 and was broken down by Lettner in this manner: \$600 for an air hammer to break up old concrete; \$7,164 for 78 1-meter-long metal grates; \$3,861 for concrete; \$1,000 for miscellaneous expenses; and \$5,400 for labor.

He said this compares to about \$9,100 for a barn cleaner with 18-inch grates over the gutter.

For more details, contact: FARM SHOW Followup, Richard Lettner, Rt. 1, Trempealeau, Wis. 54661 (608 539-3490).



Cross-section view shows how manure pit is "stair-stepped" from one end of barn to the other.