



Slurry Stirring

The Settlement Problem

On intensive pig and dairy farms, slurry is stored in large lagoons or above-ground tanks. When conditions are right, the slurry is spread onto arable or grassland by tractor-pulled tankers or through an irrigation system.

Whilst in the slurry store natural separation takes place between the solids and liquid. Some of the solids sink to the bottom of the tank, but the lighter elements tend to float to the surface.

The formation of a thick sludge on the base of the store is a problem with both pig and dairy slurries. Surface crusting tends to be more of a problem with dairy slurries.

Whether in the form of a floating crust or a sludge, segregation of the liquid and the solids of the slurry in these ways can be a big headache for the farmer, and can lead to large costs in breaking up and removing the deposits.

It is, however, possible to overcome settlement problems by regularly agitating the slurry to keep the mix homogeneous.

Methods of slurry mixing

1. The propeller stirrer

This is either a completely submersible unit or has the propeller mounted on a long shaft so that the motor can be kept out of the slurry. The action of agitation keeps the solids in suspension and breaks up any residual build up of crust on the surface. Crusts of up to 6 feet in depth have been broken by constant use of this type of stirrer over a period of 10 weeks. Although breaking

up of crusts in this way is expensive in terms of the amount of electricity that is used, it is still much cheaper and less disruptive than mechanically digging-out the crust. Where no crust has to be broken, stirrer operation for a few hours per day will provide enough mixing to avoid crust and sludge formation. These stirrers can be mounted on a rail and pulley system to allow mixing of the slurry at all depths.

2. Submersible pump with jet nozzle

Where a submersible pump is to be incorporated into a system for emptying the store, it is possible to use this pump to agitate the slurry by operating it in an "open circuit" manner, when not being used for conventional pumping. Although less efficient than the propeller stirrer, the dual role of the pump gives good use of the capital equipment. Again, the level of the pump can be adjusted in the store to allow agitation at any depth.

3. Venturi Aeration pump

The mixing action of the venturi aerator is similar to that achieved by the submersible pump with jet nozzle. However the venturi offers many other benefits, including a reduction in smells and polluting potential. This is a result of rapid aerobic digestion caused by the introduction of air. This digestion also reduces settlement of solids in the treated liquor.

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