Techni Facts

No. 150
KM Continuous Mixer/Conditioner

Key to Processing Municipal Sewage Sludge

Settled solid sewage residue from wastewater treatment plants (commonly referred to as “sludge”) presents environmental disposal problems for muncipal sewage treatment facilities due to pathogen content, organic content, and the malodorous nature of the sludge. Several methods have been developed to blend additives such as lime into the sludge to render the blend environmentally usable or additives such as sawdust to make feedstock for digestion in downstream bioreactors producing environmentally suitable fertilizers.

CRITICAL MIXING

Critical to the blending of additives into the sludge is the utilization of the proper mixing system, one which completely distributes/disperses the additives into the sludge without overshearing the product and turning it into a watery paste. The Littleford KM Series continuous mixer/conditioner is the key to rendering the sludge into a usable form for land application or further processing in bioreactors.

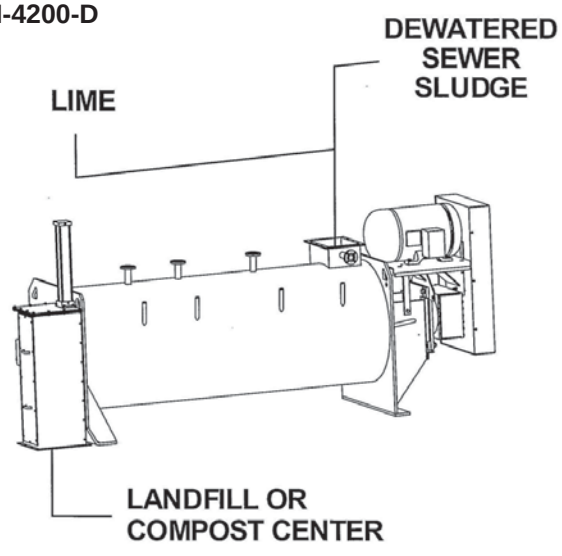
The previously dewatered sludge (of water content up to 30%) is usually fed to the mixer/conditioner via a variable metering screw. At the same time the lime, fly ash, sawdust, or other additives are fed into the mixer/conditioner in the appropriate ratio through a port mounted on the top side of the drive end of the unit. Littleford’s advanced mixing elements put the product into a three-dimensional motion producing a uniformly mixed product within a retention time of only 30-60 seconds. This short residence time is critical to keeping the product in a form (wet “topsoil” consistency) that can be handled rather than a paste (pudding consistency), which cannot be handled.

Use of the proper mixing system dictates the ultimate success of the downstream use of the blended sludge product?

- Bioreactor feedstock out of the Littleford KM mixer/conditioner is thoroughly mixed resulting in an even distribution of the water content. Microbe growth occurs uniformly and there is an even development of heat resulting in thorough disinfection of the product. The compressed lumps and dry nests of product typically created by inadequate mixing, problems which cannot be rectified in subsequent composting, are avoided with the Littleford KM mixing technology.

- Organic materials for land application are made by feeding pathogen-laced biosolids to the Littleford KM mixer/conditioner and relying upon Littleford’s advanced mixing technology to completely and uniformly disperse the added lime throughout the dewatered sludge in order to stabilized solids and affect the pathogen kill required to meet Class B standards for fecal coliform. In fact, the resulting product is normally well below the limits for Class B, and typically within the low fecal standard for Class A. The stabilized, pathogen cleaned solids can then be used in agricultural applications.

Continuous Process
Model KM-4200-D



Littleford Day
Where Processing Ideas Become Reality

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DESCRIPTION

The Littleford KM mixer/conditioner is the key to effective processing of sewage sludge. Littleford's advanced mixing technology forces the materials of mix into a quick, yet highly efficient mixing pattern.

This pattern is developed by the movement of critcally angled plows mounted at very specific positions on a rotating plow shaft which spans the length of the mixer/conditioner. The resulting mix action produces the consistent quality of blending required to generate the high kill rates on pathogens in either the sawdust-added bioreactor mix or in the lime-added land application mix.

These Littleford KM mixer/conditioner units are especially designed and ruggedly constructed to deliver the high quality of mixing accuracy needed for this application over years of trouble-free service. Hundreds of these conditioners are already in successful operation at sewage plants around the world.

FEATURES:

Some of the key mechanical features of the KM Series continuous conditioner as it applies to composting systems include:

- **Large Easy Open Doors for Easy Cleaning**
- **Specially Engineered Charging Port for Easy Charging with Odor Control**
- **Effectively Designed Baffle Discharge to Vary the Retention Time of Mix**
- **Safety Limit Switches on All Access Doors**
- **Heavy Steel, Welded Construction to Provide Years of Trouble-Free Service**
- **Bottom Discharge for Easy Material Handling**

GENERAL SPECIFICATIONS

Model No.	Approx. Throughput (ton/hr*)	Approx. Vessel Dimensions A	B	C	Mixer Weight (approx. lbs.)
KM-300	6	76”	25”	30”	1490
KM-600	12.5	95”	30”	35”	1915
KM-1200	25	117”	36”	43”	3115
KM-2000	40	138”	46”	51”	5080
KM-3000	60	140”	53”	60”	7080
KM-4200	80	163”	59”	68”	10760

*The throughput data refers to a bulk density of 40#/FT^3

Note: Other sizes of the KM conditioner available upon request.

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