

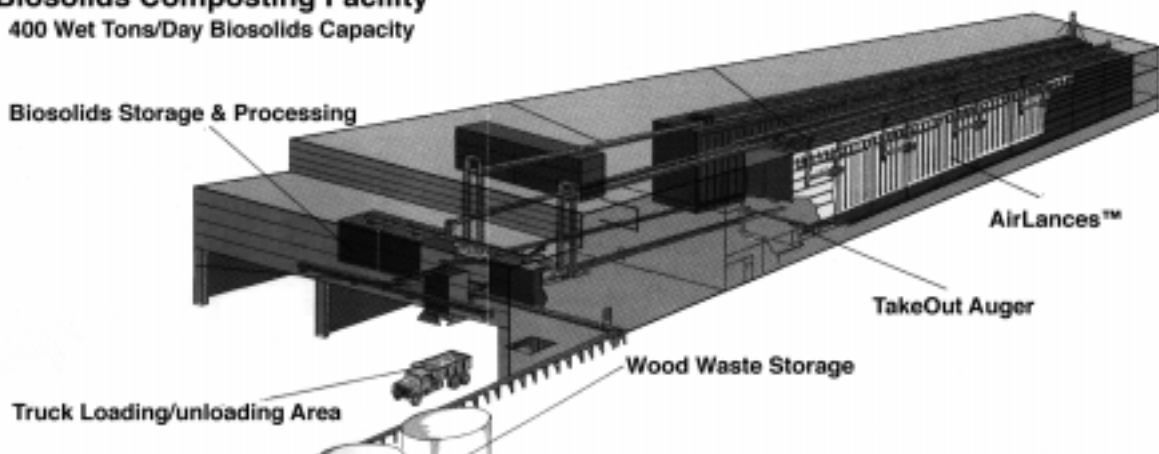
AirLance™ Facility Tour:

The **AirLance™ System** was invented to meet the world's continuing growing need for organic waste recycling. The described process has taken composting from an open pile to a controlled production line for year round processing.

This patented in-vessel composting technology has proven capable of handling any size city's organic waste recycling needs. This walk through will help you to better

Biosolids Composting Facility

400 Wet Tons/Day Biosolids Capacity



understand the process used to solve complex and the related problems associated with biological processing, material handling, aeration, and odor control. Any weak link can make an installation an economic or environmental failure.

The cubical container design assures production rates can be reliably scaled up or down to meet any demand. The facility shown is designed to process 700 tons/day of organic waste, 400 tons/day biosolids blended with 300 tons/day of wood waste. It only required a 102' by 460' space.

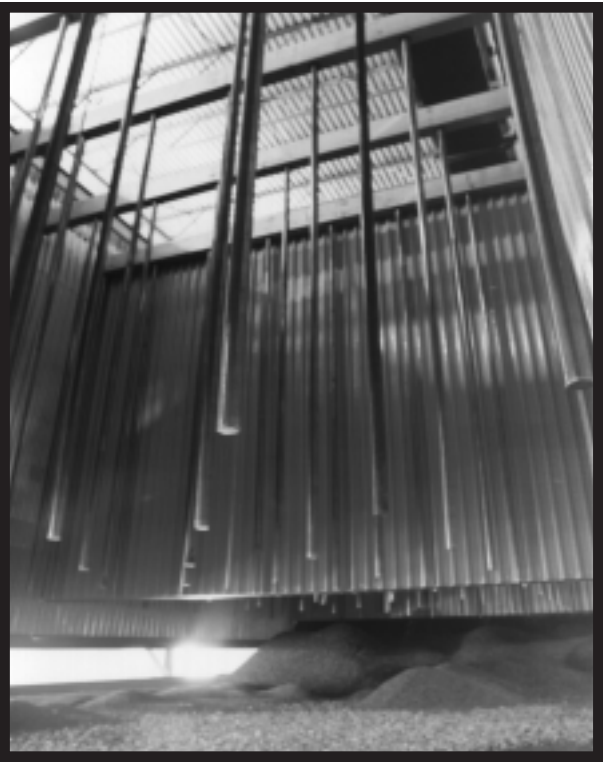
The **AirLance™ Process** uses a totally enclosed design to contain, collect, and process any odors which develop and to assure that the facility always meets community acceptability and can operate year round.

The **Air Lance™ System** helps to avoid odor problems through high rate stabilization of the compost in a fully enclosed environment for the full composting period. The process is controlled by the use of the **Patented AirLance™ Aeration / Collection Process** which assures of uniform high air flow maintaining high biological activity, rapid volatile reduction, critical pathogen destruction, and reliable drying

within the reactors. This produces a highly stabilized product ready for direct truck loading or bagging as it leaves the system.

In operation, pre-sized organic waste (yard waste/wood waste is reduced to 1/2" or less) and biosolids are proportionally fed into a mixer, blended, and loaded on to the top of the 26' high composting cells. Gravity moves the compost mix through the cells when a void is made on the bottom of a 26' high cell by the take-out auger. Only a single auger is required for the entire length of all the compost cells set in a row, removing finished product once a day

AirLance™ Facility Tour:



VIEW FROM BOTTOM OF AN EMPTY COMPOST CELL

Efficient aeration is the key to accelerated composting and to controlling odors during the composting process. The patented **AirLance™ Process** uses aeration manifold beams placed at the top of the cell which are used to support the hanging air injection lances as well as serving as an air plenum. The aeration system is designed for maximum operational flexibility. With the simple keyboard input to the computer it can be operated in various air flow modes.

AERATION MODES:

Alternate Positive / Negative Headers

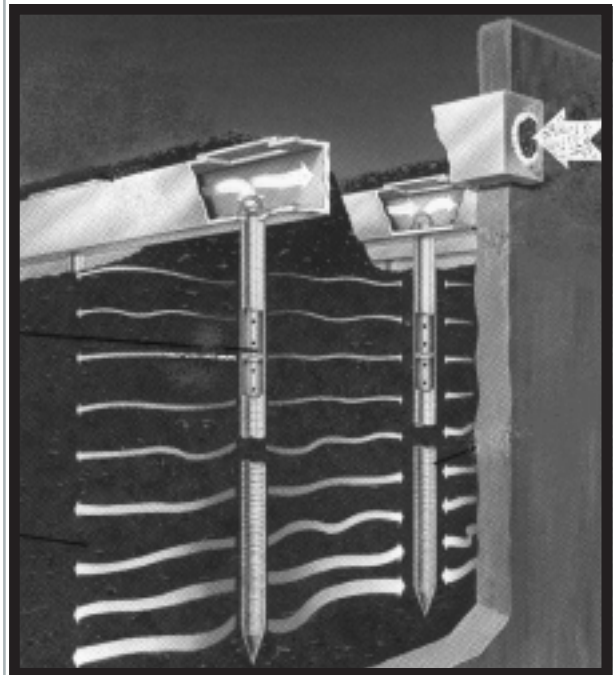
All Positive

All Negative

Air flow is computer controlled to be all positive, all negative, simultaneously positive and negative, or alternating between all modes of the air flow direction to automatically create a self cleaning action. Negative air flow is

collected hot within the compost mass to improve odor processing efficiency.

The rows of lances create a short horizontal air flow path between the multiple pressure/vacuum zones inside the compost mass to assure of uniform composting. Oxygen starved pockets (odorous anaerobic zones) in the bio mass are eliminated by diffusing three dimensionally throughout the biomass. This efficient air



AIRLANCE™ AIRFLOW RENDERING

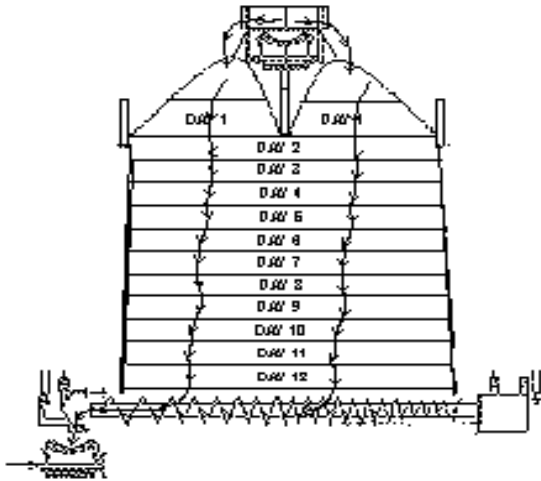
distribution system assures of rapid uniform composting.

Controlling odors should be of prime concern for any composting facility. Odors can be controlled using a comprehensive design approach that takes all potential odor sources into full account and designs to collect all odors. Uncontrolled odors will interfere with the enjoyment of life adjacent to any compost facility, as many composting operations have found out. The hard way being forced to shutdown. The AirLance™ system reduces the amount of air leaving the facility to a small fraction of other systems.

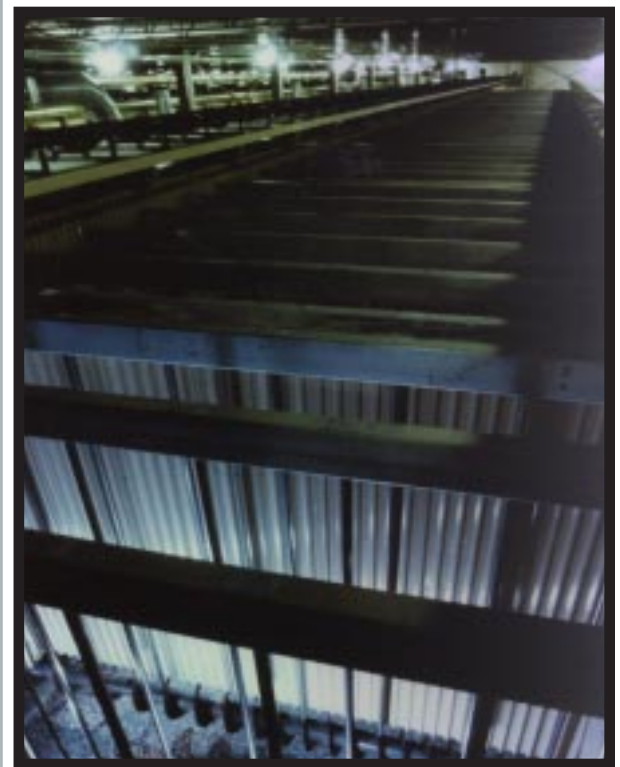
AirLance™ Facility Tour:

The compost layers stack like a deck of cards with the bottom card removed daily and a new card (fresh mix) placed on top to maintain the deck height.

Plug Flow Compost Movement On a daily basis, the following process operations take place:

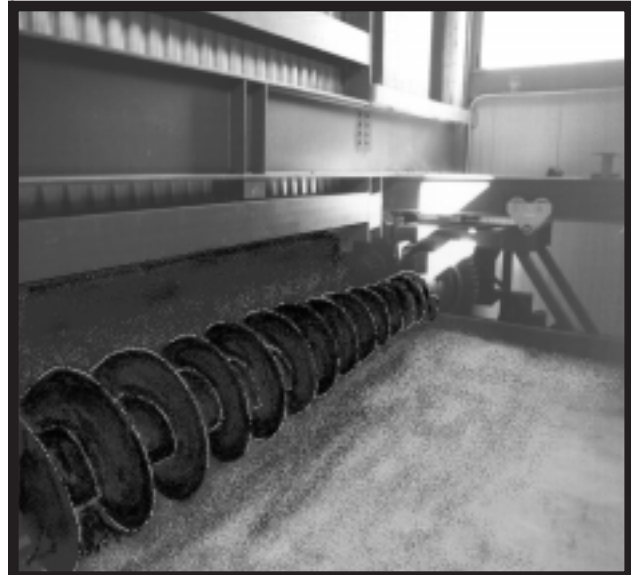


1. A layer of finished compost is removed from the bottom of the cell. Compost above drops to fill the void.
2. As the auger moves across the bottom, a uniform shear mixing action occurs as the compost moves down. Systematically mixing all material daily without releasing moist corrosive air into the building.
3. This makes room on top for the new unstabilized pathogen contaminated compost mix.
4. Fresh Biosolids blended with wood waste are loaded on top of the compost cell. Plug flow helps assure the product produced meets EPA stabilization criteria.
5. Separate loading/unloading devices eliminates recontamination from the pathogens in the primary and WAS biosolids.



TOP OF EMPTY CELLS

Gravity efficiently moves the material above down filling the void and mixing the compost. The AirLance™ process has the highest processing rates per capital and operating dollar of any compost system on the market*.



COMPOST UNLOADING AUGER IN PARK AREA

* Independent engineering study available