

TOAST™ EXECUTIVE SUMMARY

TOAST™ (Tertiary Oxygen Activated Sludge Treatment) is a new, state-of-the-art technology for treating wastewater. Now, treating the most concentrated wastewater with sustained high dissolved oxygen levels is possible. The system, erected in August, 1996, began operations January, 1997. A patent issued 1995 has expanded worldwide.

Bacteria can reproduce into very high concentrations at the maximum growth rate because this aeration device is very efficient. The intense compact aeration zone is applied from the farm to the largest meat packing plant or municipal treatment for the largest city. Varying the degree of treatment is now an option. Low levels of treatment effectively eliminate odor. Higher levels of treatment allow for sludge separation, having stable values in a thin and a concentrated liquid can enhance so nutrient handling. TOAST™ makes it possible for the agricultural industry to effectively treat the vast sea of manure that insidiously pollutes our land, air, rivers, and streams. Portable systems can be shared by a group of farmers. The effluent from the process can be sold to other farms as an effective pit additive.

After considering the Agricultural Utilization Research Institute's 1994 initial product assessment, the University of Minnesota began a \$60,000 contract in 1995 to install a full scale system on the Dennis Ward farm, located 10 miles south of Mankato, MN, near Beauford. The 6000 nursery pig barn had received 14 complaints before the machine was started up. The TOAST™ system, by successfully treating wastewater intermittently, has stopped all complaints related to raw hog manure odor. The system converts wastes to single cell protein and utile organic food, while destroying pathogens. When the University of Minnesota and the University of Illinois used similar pathogen reduced effluent as drinking water for finishing pigs, that pork production increased 10 %, and the soya components were reduced by 15%.

The National Soil and Conservation service granted \$35,000 of EQIP funds to Mr. Ward so that the machine could be doubled in size, enclosed, and PVC piping changed to steel. The NRCS recognized that the machine converts the soluble cosphorus into the cell wall of the bacteria. *Nitrogen* is also converted to protein, and buffered to the *carbonate* salt. The process, which saves the ozone layer, captured over 70% of the escaped *nitrogen* gasses.

The TOAST business plan is to have competitive mechanical contractors all over the world assemble the manufactured components and install it on qualified farm sites. Needs of the agricultural market can be met by distributing this product through the individual farmer, implement dealer and/or the feed distribution network or the livestock breeders/brokers and/or the meat packers. The marketing of this product will contribute to the future of agriculture in the United States and the world.

The large municipal and industrial market as well as many small communities can be saved from exorbitant wastewater facilities costs. Our goal at Engineering Concepts is to set up the proprietary engineering and management and market these machines by the third quarter of 1999.

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