

Abstract:

In 2001, JFE Engineering was licensed to use the Bigadan process biogas system. This highly efficient methane fermentation process is suitable for energy recovery from livestock manure, food-industry waste, kitchen waste, and presorted household organic waste. JFE Engineering is currently conducting tests with a demonstration plant for livestock manure digestion and has also constructed and delivered a commercial biogas plant for food-industry waste. This paper describes the features of the Bigadan process, test results at the demonstration plant, and the features of the food-waste treatment plant.

1. Introduction

A variety of recycling laws have been enacted in Japan in recent years in a national effort to reduce waste.

renewed interest as a basic technology for recovering energy (electricity, heat, fuel) and fertilizer (liquefied fertilizer, compost) from highly concentrated wastes such as sewerage and human waste sludge, livestock manure, kitchen waste, and presorted household organic waste.

The methane fermentation process has long been used, and has been the object of extensive research and development. However, the use of this process for the treatment of household waste.

generation (high decomposition rate) and reduction of the post-treatment load. In general, it eases efficient heat rec

Center.

2. Outline of Bigadan Process

The Bigadan Process consists of the following equipment:

- (1) Pretreatment

The heat exchangers were cleaned in the middle 10-day period of Dec. 2002. With the exception of

5.2 Features of Plant

In addition to the common features of the Bigadan process, distinctive features of this plant include the following:

- (1) **Effective Use of Existing Steel Works Infrastructure**

Infrastructure in the adjoining steel works is effectively used in power generation and water treatment, eliminating the need for separate equipment in the biogas plant. The biogas produced by the plant is not used to generate power in the facility itself; rather, the entire output is used as an energy source in the steel works. The steel works supplies the power and steam necessary for operation of the biogas plant, and water separated from the digested liquid by dehydra-