Environmental Engineering Businesses

Kansai International Airport utilizes seven numbers of the new type tubular pump for rainwater drainage facilities

We have delivered and installed new type tubular pumps for rain water drainage facilities (the third and fifth drainage areas) in Kansai International Airport.

Rainwater on the vast runway and so on of Kansai International Airport is collected into a few culverts, and is discharged to the sea by the new type tubular pumps at the end of the culverts. The new type tubular pumps installed are one of the largest drainage facilities in Kansai International Airport.

Features

 Fit into the compact pit Since the facilities are located in the vicinity of a runway, the pumps are installed in entire underground pits not to disturb the flights. The underground pump pits are required small and shallow in order to save civil construction cost. By adopting a semi-closed suction conduit achieves shallower pit. By adopting a built-in type smallsize synchronous motor with high efficiency permanent magnet achieves small size pump to fit compact pits. (2)Reliability

Since they are the important facilities of rainwater drainage for the airport, the built-in motor in the pump is watertight in order to keep its reliability.

A hard sequence relay is also provided in a pump control circuit as a backup of sequencer in an emergency.



Pump business

(3)Speed control

The pumps are speed controlled in accordance with the difference of inside and external water levels in order to comply with the wide range of inflow (50 to 170 m³ per minute), and in order to avoid cavitation which is harmful to a pump.



New type tubular pumps



Kansai International Airport

Water environmental engineering business

Izumo environmental center, the newest sludge recycling treatment facilities, was completed in order to protect a life and environment in Izumo.

The features of the facilities

- (1)Sludge is recycled to valuable resource after a complete composting treatment.
- *a primary fermentation equipment (Kubota's reverse-conical high-efficiency type)
- *a secondary fermentation equipment (a horizontal aeration agitation type)
- *a stock yard of products ($800\ m^2$)
- (2)Garbage from a center for providing meals is treated.
- (3)Stable water quality can be kept since Kubota's membrane separa-

Outline of the facilities

- Name: Izumo environmental center
- Location: 4295-34, Nishizono-cho,Izumo-shi, Shimane Owner: Wide area business association of six cities and towns including Izumo-shi

Capacity: 193kℓ/day

Night soil: 104kl/day Sludge of septic tank: 89kℓ/day Accepted amount of garbage: 900kg/day tion and highload de-nitrogen treatment system which is used in various facilities is used. (4)Nitrogen, phosphorous

and chromaticity can be removed efficiently.

Construction started in December 2001 Construction completed in March 2004 Discharged water quality: BOD 10mg/ℓ or less COD: 20mg/ℓ or less SS: mg/ℓ or less total nitrogen: 10mg/ℓ or less total phosphorus: 1mg/ℓ or less chromaticity: 30 degrees or less

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Flow of composting

値ガス処理

20-08

構設する 影響工場

山北港北

Melting treatment facilities of illegally dumped waste in Teshima Island

The melting treatment facilities for illegally dumped more than 600 thousand tons of wastes in Kagawa prefectural island of Teshima was completed in September 2003. This is the main facilities of treatment business for about ten vears. Shredder dust. cinders. slag and soil which are contaminated with dioxins and heavy metals are melted at the temperature of more than 1300 degrees centigrade in a rotating surface melting furnace, and are changed into a harmless glass-like slag. In this business, a basic policy is " showing a technology system which could be a model of a recycling society." Melted



and solidified products like slag and so on are used effectively as much as possible. We can not only make a various kind of hazardous wastes harmless but also change them into valuable resources. This slag is used as a concrete aggregate and so on after the metals like aluminum or copper are separated from the slag. Separated metals are also used effectively. Fly ash which generates in a process of exhaust gas treatment is carried to the neighboring smelting factory to reuse heavy metals because fly ash includes a lot of heavy metals such as zinc and lead.

The facilities may suggest the future ones, not only in a technological aspect but also in an operational aspect



Wastes

Slag

Copper

Sewage sludge circulating-fluidized-bed incineration system

In the city of Hamamatsu, dewatered sludge generated in a process of sewage treatment is incinerated to reduce its volume and to make it harmless at present. The incineration ash generated at the process is used entirely as a cement material.

And the city is implementing a renewal and reconstruction scheme of sewage treatment facilities step by step. As a part of the scheme, the city planed to apply a circulating-fluidized-bed incinerator with a capacity of 60 tons a day. We at Kubota received a order, and are constructing it aiming at starting operation in October 2004.

This circulating-fluidized-bed incinerator is the first commercial incinerator of this type at Kubota. The features are as follows:

- Combustion efficiency is high and large combustion load can be adopted. Therefore, the body of the furnace can be compact.
- (2)Distribution of temperature inside the furnace is uniform because combustion heat is effectively disperses in the furnace by circulating fluidizing sand. So the control of combustion and temperature is easy.

(3)Required power of blower for fluidizing sand can be reduced (by 30% compared with conventional one) because accelerated/high speed sand require a little power for fluidizing. Additive fuel can be also reduced (by 15% compared with conventional one) be-



circulating-fluidized-bed incinerator

Drinking water and sewage engineering business

Recycling engineering business

internet.

图和成表面重新

スラグ転標

の肥大ラグ

コンクリート骨材

などに有効利用

with real-time daily operational informa-

tion opening to the public through the

建力法

有効利用

cause of combustion efficiency improvement.

And we can reduce discharge of hazardous substances such as dioxins and cyanide by perfect combustion at high combustion temperature. We can also reduce discharge of N₂O, a greenhouse gas, contributing to global warming prevention.

Specification of incineration plant Capacity: 60 tons/day

Incinerating object: dewatered cake coagulated by polymer Water content: 76 to 84%

Regulated value of exhaust gas Sulfur oxides: K value=7.0 or less Nitrogen oxides: 250 ppm or less Dust: 0.08 g/Nm³ or less Hydrogen chloride: 700 mg/Nm³ or less Dioxins: 1.0 ng-TEQ/Nm³ or less



Imaginary illustration of the completed plant