

Investigation and research on utilization of the rotary dewatering- dryer

Whole term

1998. 12~ 2000.3

(Purpose)

This study was planned to define the effect of inducing a dryer for each use; to summarize positive and negative matters in the rotary dewatering-dryer that unites both dewatering and desiccating processes, basic outline and matters to be concerned in design and maintenance such as the parts of the system for each use and the method of selecting equipment, etc.; and finally to plan for standardizing the design of the rotary dewatering-dryer.

(Results)

1) Summary of the rotary dewatering-dryer

This facility unites the rotary dehydrator and the air stream dryer, and can stably discharge dried sludge in 1mm granular size when the water content is 10 ~ 50%.

2) Sewage sludge treatment, disposal and effective usage

It is difficult to obtain landfilling sites to dispose of the sewage sludge and the trend for effective recycling will accelerate because recently the sludge has been recycled to cement ingredients and construction materials.

3) Needs for dried sludge

- In the case of disposing of sludge in landfills: Though the rotary dewatering-dryer is an alternative in the situations such as high cost for landfilling, the method should be made ready to be utilized in case of a sudden rise in the disposal cost and insufficiency of landfill sites.

- In the case of incineration of sludge by mixing with urban wastes: when sewage sludge is incinerated with urban wastes, the water content in the sewage sludge creates negative effects on heat dynamics. However, desiccation that leads the calorific value rise to be at low levels, could improve the efficiency of the aforementioned type of incineration.

- In the case of using as a pre-treatment for the pyrolysis: When the rotary dewatering-dryer is used as pre-treatment means for the pyrolysis, it is advantageous with respect to the cost of the facility and size of the ground for installation. Also the characteristics in operation and maintenance could be upgraded.

- In the case of effective usage of dried sludge:

(1) Possessing a heat value, the dried sludge has an added advantage that is to minimize the consumption of plastic fuel, in case of it being used as an ingredient for cement.

(2) Sewage sludge could be effectively used as a fuel in place of RDF (waste fuel) that has the same fuel value as the waste sludge.

4) Basic matters on the design

There are seven kinds of facilities lined up and each facility has the capacity of 2~60 m³/h and the water content of the dried sludge that is drained could be optionally controlled.

(Future task)

After inducing the actual facility, the stability of the system would be able to be verified by operating data.

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Keywords

Rotary dewatering-dryer, Effective use, Compacting, Recycling to cement, Combustion mixed with waste