

Research on Effective Rotary Pressure Dewatering Equipment

Year of Research

2007

(Purpose)

In wastewater plants, various kinds of dewatering equipment are used, but lower cost and more efficient dewatering machines are required to address the difficult challenge of global warming.

In this research, we intend to verify that the new high-efficient type centrifugal dewatering machine saves more power and space in than the ordinary type and high-efficiency type, clarify its features, scope of application, and performance, and summarize technical matters related to planning, design, maintenance, etc.

(Results)

(1) Feature

Figure 1 shows the structure of the effective rotary pressure dewatering equipment. Narrowing the radius of the effluent discharge port and reducing its fluid acceleration reduces power used by the new high-efficient type, saving more electricity.

- 1) Changing curvature radius from 1200 mm to 900 mm
- 2) Changing back pressure mechanism to vertical restrictor
- 3) Changing the dewatered level detection method to load cell

To save space, the motor installation location was changed so the new high-efficient type requires a smaller area.

(2) Research target

The following are the target items. It is intended to process mixed sludge, digested sludge, and oxidation ditch processed sludge, achieving performance in Table 1 with treatment capacity (quantity, moisture content, chemical rate, solid capture rate) equal to that of conventional dewatering equipment.

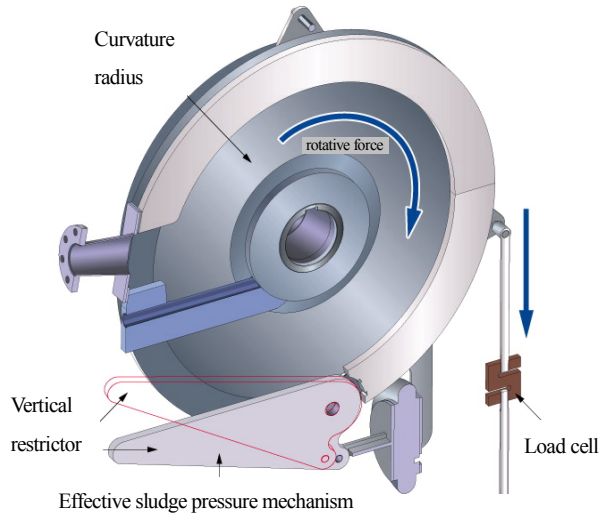


Figure 1 Structure of effective rotary pressure dewatering equipment

Table 1 Research Target

Items	Research target
Filtration rate	1.5 times or higher
Main body installation rate	reduction 10% or more

(3) Research Result

Table 2 shows the test results in summer and the result of a comparison of its installation area with that of a centrifugal dewatering machine A type.

Table 2 Result of Summer Test and Comparison of Installation Areas

Model	Result of Summer Test (Digested Sludge)						Comparison of Installation Areas						
	Filtration rate		Ratio of chemical feeding	Collect rate %	Moisture content		Filtration count	Filtration area m ²	Filtration rate Kg-DS/m ² /h	Area m ²	Area reduction rate	weight t	Motor kW
	kg-DS/m ² /h	Times			%	%							
High efficiency type	95	1.5	0.86	96.4	77.9	-0.1pt	1	1.0	21~210	2.52	13	2.8	2.2~3.7
Conventional type	63.3	-	0.86	96.8	78	-	1	1.5	17~140	2.88		3.6	2.2~3.7

Through this research, we confirmed that the machine achieved the target and assembled the results as technical manual “Technical Manual of Effective Rotary Pressure Dewatering Equipment”.

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Key words

High-efficient type centrifugal dewatering machine, New high-efficient type centrifugal dewatering machine, Power saving, Space saving, Global warming measures