

Research on New High-Efficient Type Centrifugal Dewatering Machine

Whole term

2006. 5~2007. 7

(Purpose)

About 800 units of centrifugal dewatering machines have been used at wastewater treatment plants to date. But as recently global warming has become problematic, power saving has been required in addition to low moisture content. Therefore, the "new high-efficient type centrifugal dewatering machine" has been developed to meet the needs of the age.

In this research, we intend to verify superiority of the new high-efficient type centrifugal dewatering machine in power saving and space saving by comparison with the ordinary type and high-efficient type, clarify its features, scope of application, and performance, and conclude technical matters relating plan, design, maintenance, etc.

(Content of Research)

Figure-1 shows a comparison between the high-efficient type and new high-efficient type. By making the radius of effluent discharge port smaller and reducing its fluid acceleration, the new high-efficient type requires lower power and saves more electricity.

For space saving, the new high-efficient type requires smaller area by changing the motor installation place.

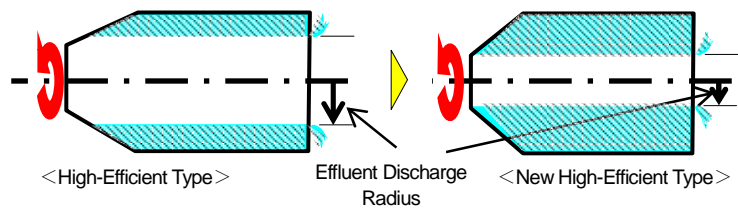


Figure 1 High-Efficient Type and New High-Efficient Type

(1) Research items

Compare the high-efficient type and new high-efficient type and verify superiority of the new high-efficient type for the following items.

Incidentally, as 3 types (A, B, and C types) of the new high-efficient type centrifugal dewatering machines are available, each type will be checked.

- ① Dewaterability (moisture content, polymer dosage, and SS recovery rate) shall be equivalent or more.
- ② Power consumption shall be lowered by 20% or more for each type.
- ③ Installation area of equipment surface configuration shall be lowered by 10% or more.

(2) Research Result

Through the comparison between the high-efficient type and new high-efficient type, we confirmed that the dewaterability was equivalent or more, the power consumption was lowered by 20% or more, and the installation area was lowered by 10% or more.

Table-1 shows the test result in summer and Table-2 shows the result of comparison on installation area for centrifugal dewatering machine A type.

Table 1 Result of Summer Test on Centrifugal Dewatering Machine A Type (Digested Sludge)

Centrifugal Dewatering	Feed Rate	Power Consumption			Polymer Dosage	SS Recovery	Moisture Content	
	m ³ /h	Basis kWh/m ³	Result kWh/m ³	Lowering Rate %	%	%	%	Difference
New High-Efficient	5.0	1.4 *1	1.22	-20.8	1.50	99.5	78.5	-2.4
High-Efficient	5.0	1.7	1.54		1.50	99.2	80.9	

*1: Target

*2: Converted actual value in case of sludge conc. 3%

Table 2 Comparison of Installation Area for Centrifugal Dewatering Machine A Type

Centrifugal Dewatering Machine A	Installation Area (m ²)	Lowering Rate
New High-Efficient (5m³/h)	3.15	-21% (Target -10% or more)
High-Efficient (5m ³ /h)	4.00	

Both B and C types also achieved the results succeeding in lowering power consumption and installation area.

(Study schedule)

We will sort comparison results for each field, conclude design, enforcement scheme, and maintenance of the new high-efficient type centrifugal dewatering machine, and issue the technical manual.

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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