# Evaluation of Sludge Dewatering Device to Lower Moisture Contents

**(Research of FY 2018-2021)**

## 1. Purpose

Last year, the researchers evaluated the performance of the "Type 3 Pressurized screw press dewatering device" as a post-survey after implementing the dewatering device to lower moisture contents.

This year, the study deals with other dewatering devices to lower moisture contents: "Centrifugal dewatering device with inside two coagulants," "Type 2 highly efficient centrifugal dewatering device," and "Type 2 screw press dewatering device." The investigation aims to know their dewatering performance for technical improvement and promotion.

## 2. Outcomes of This Year

The dewatering device's performance is generally evaluated by the dewatered cake's moisture content, the amount of the treated solids, the solids recovery rate, and the chemical injection rate. This study focused on the water content of dewatered cake and the amount of the treated solids. Researchers investigated the performance status of the above four dewatering devices based on JS standard specifications.

(1) Moisture content rate of dewatered cake

Figure 1 shows the water content of dewatered cake during the test operation of each dewatering device by type of sludge. The sludge types are excess sludge from the OD process, mixed raw sludge, and anaerobic digestion sludge. We confirmed that all dewatering devices generally met the

performance criteria for each type of sludge, and in particular, all dewatering devices performed well with mixed raw sludge. Some data for Type 2 highly efficient centrifugal dewatering device with excess sludge from the OD process and Centrifugal dewatering device with inside two coagulants with anaerobic digestion sludge showed below the performance standards. The result may be due to the influence of sludge properties such as VTS and fibrous materials.

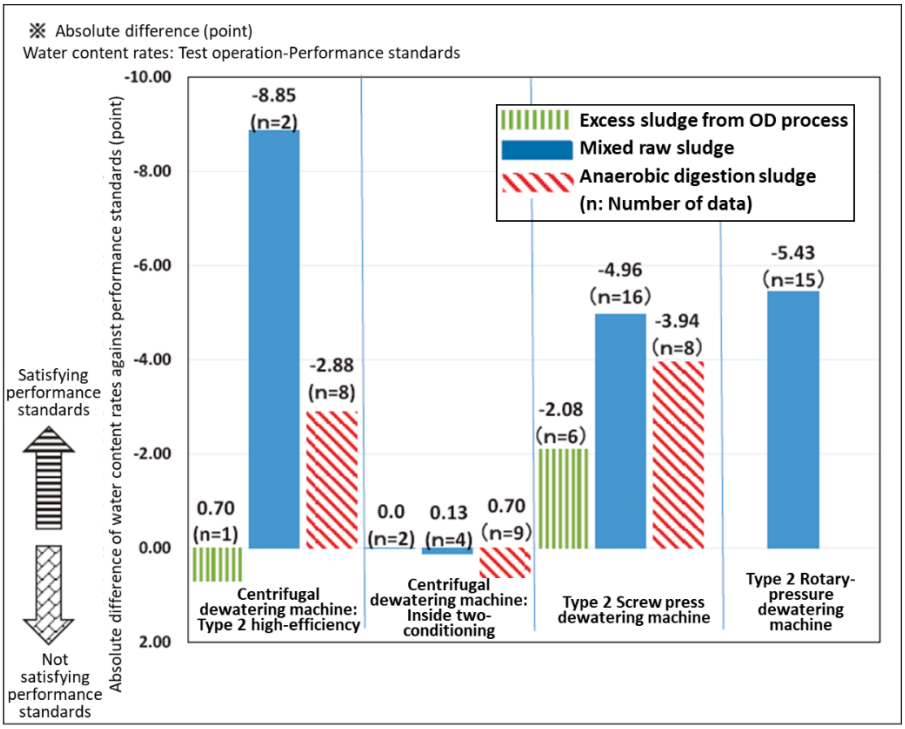


Figure 1 Performance at test operations (water content rate)

(2) Solids volume after dewatering

Figure 2 shows solids volume after dewatering in the same test manner as the above. Here, since a centrifugal dewatering device was evaluated not by its solids volume after dewatering but supplied sludge amount, its data is a reference value. The test result verifies all dewatering devices and types of sludge have shown better deals than the performance standards. However, we found some narrowly acceptable results for the Type 2 screw press

dewatering device against excess sludge of OD process and the Type 2 rotary pressure dewatering device against mixed raw mechanical thickening sludge.

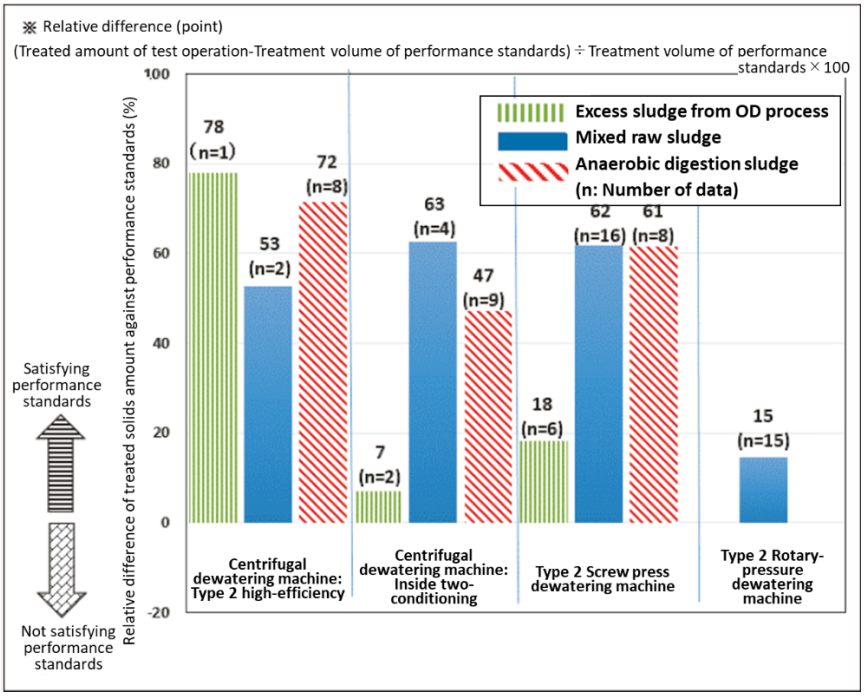


Figure 2 Performance at test operations (treated solids amount)

## 3. Future Schedule

The past follow-up study of the dewatering device to make lower water content sludge has uncovered issues of its performance standards dignified in the JS standards specification documents. Researchers will study how sludge properties, such as VTS or fiber materials, affect dewatering devices and develop technical standards and summarize reports to promote the implementation of dewatering devices.

*We sincerely thank the local governments for their cooperation for this study.

Keywords: **Dewatering device, Follow-up study, Water content rate of dewatered cake, Solids volume after dewatering**