

FEATURES OF DEHYDRATION OF SEWAGE SLUDGE ON A SCREW DEHYDRATOR

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Pilot tests of sludge dehydration were carried out at sewage treatment plants with a consumption of excess activated sludge of 170 m³/day on the screw dehydrator MDQ-101 manufactured by EKOTON-Tsurumi. The equipment was located near the sludge treatment plant and was connected to various technological networks. The compacted sludge was fed to the device by a pump from the process network to the pilot tank.

The flocculants used for dehydrator dehydration were selected from different types of polyacrylamide (PAA): anionic, cationic, nonionic and ionic strength and molecular weight. As a result, several best flocculants from different manufacturers were selected: SNF FO 4800, FO 4800 SH and Kemira 683 CHH.

During the tests on the screw dehydrator MDQ-101, the optimal parameters for the dehydration process were selected. The following results were obtained:

- cationic flocculants with high cationic capacity and increased molecular weight proved to be the most effective. The dose of 8.8 kg/t of dry matter were chosen as optimal;
- tests carried out on condensed sludge with optimal operating parameters of dehydration, allow to obtain up to 18 % of dry matter in the cake, obtaining high efficiency of the device in accordance with the dry matter;
- the study showed that after using the screw dehydrator for sludge dehydration, its volume decreased by 5.8 times;
- the removed filtrate was characterized by high clarity and total suspension in the range of 50÷100 mg/l;
- screw dehydrator allows to reduce consumption of the electric power, water, space, requirements to service.

Based on laboratory and pilot tests, the feasibility of using a screw dehydrator for mechanical dehydration of domestic wastewater sludge has been confirmed. The use of this equipment has reduced sludge by 5.8 times.

The sludge has a humidity of about 82÷83 %, which allows it to be easily transported. The studied technology of sludge dewatering will improve the ecological situation of the treatment plant area; reduce the anthropogenic load on land and water resources.