Cost-efficient, low wear: HUBER ROTAMAT® Screw Press RoS 3Q in Finland

Screw Press RoS 3Q 620 beside the maintenance-prone decanter

Centrifuge rotor on the balancing stand

Maintenance costs caused by wear often impair the economic efficiency of centrifuges. Screw presses offer clear advantages in terms of costs and availability. But the operators of screw presses additionally benefit from other advantages.

Decanter centrifuges are one of the most frequently used systems for sewage sludge dewatering. Their well known advantages, such as high dewatering degrees even with high throughputs, are due to the effect of the separation of heavy solids and the lighter water phase in the centrifugal environment with the three thousandfold of the gravitational acceleration. A drum rotation between 2,000 and 4,000 rpm is necessary to create such a strong centrifugal environment. Such a high rotation leads to abrasion and wear inside the centrifuge. As, due to wear, such fast running units can be a safety risk for the operating staff, centrifuges should be equipped with systems that monitor vibrations and the temperature of bearings. In addition the limitation of drum speed should be regulated. This will no avoid wear but ensure that wear is reliably detected. Also the dismounting of centrifuges at regular intervals by specialists contributes to high operating costs. In many markets this sort of wear test is even prescribed. Maintenance of a worn centrifuge usually includes the repair of the drum, renewal of the wear protection on the rotor and a bearing test. Also the sealing surfaces are renewed before the plant parts are balanced on a test stand. The costs for all these measures can easily amount to 10,000 € or more. Besides, this time-consuming and material-intensive work usually cannot be executed on site with the result of longer centrifuge shutdowns and possibly additional costs for bridging the shutdown periods by commissioning subcontractors.

The operators of STP Hämeenlinna in Finland experienced exactly the same scenario as described before. Due to increasing maintenance costs and frequent failures due to wear they wanted to relace the centrifuge they had installed six years before. It has beer well known in Scandinavia for years that HUBER Screw Presses cause far less maintenance costs thatn decanters. The reason for the low abrasion is the low rotational speed of the Screw Presses, which is < 1 rpm.

The analysis of the sludges in the HUBER laboratory showed satisfactory guarantee values, e.g. cake DR contents > 28% with a throughput of 200 kgDR/h and a polymer consumption of 9 g/kgD. In addition, the numerous HUBER reference installations in Finland reinforced their decision to choose a ROTAMAT® Screw Press RoS 3Q size 620.

All guarantee values were met already during the first provisional start-up: With a polymer dose of 8 g/kgDR and a solids throughput of 280 kgDR/h DR contents of 33 % were measured. These values were even better than the performance data achieved by the six year old centrifuge on site with a low load and optimal settings. But whereas the centrifuge consumes 12 kW to achieve these performance data and shows a noise level in excess of 86 dB(A), the Screw Press needs only 1 kW with a noise level below 68 dB(A).

Besides, a performance test proved that the Screw Press achieves significantly higher dewatering results: We wanted to maximize throughput and minimize polymer consumption. In fact, the RoS 3Q 620 achieved an unbelievable cake DR of 38.5% with a solids load of 350 kgDR/H and a polymer dose of 6.5 g/kgDR – a far better result than that achieved by the centrifuge.

Dewatered sewage sludge from the RoS 3Q 620 screw press

It remains to be seen in how far maintenance costs will decrease in Hämeenlinna which were the decisive factor for the customer to buy the HUBER product. On the basis of the experience we have made over many years with our ROTAMAT® Screw Press RoS 3Q units, however, we expect savings of 70 to 80% compared to the centrifuges.

Related Products:

- HUBER Screw Press Q-PRESS®
- Sludge Dewatering

Related Solutions:

- HUBER Solutions for Sludge Dewatering

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