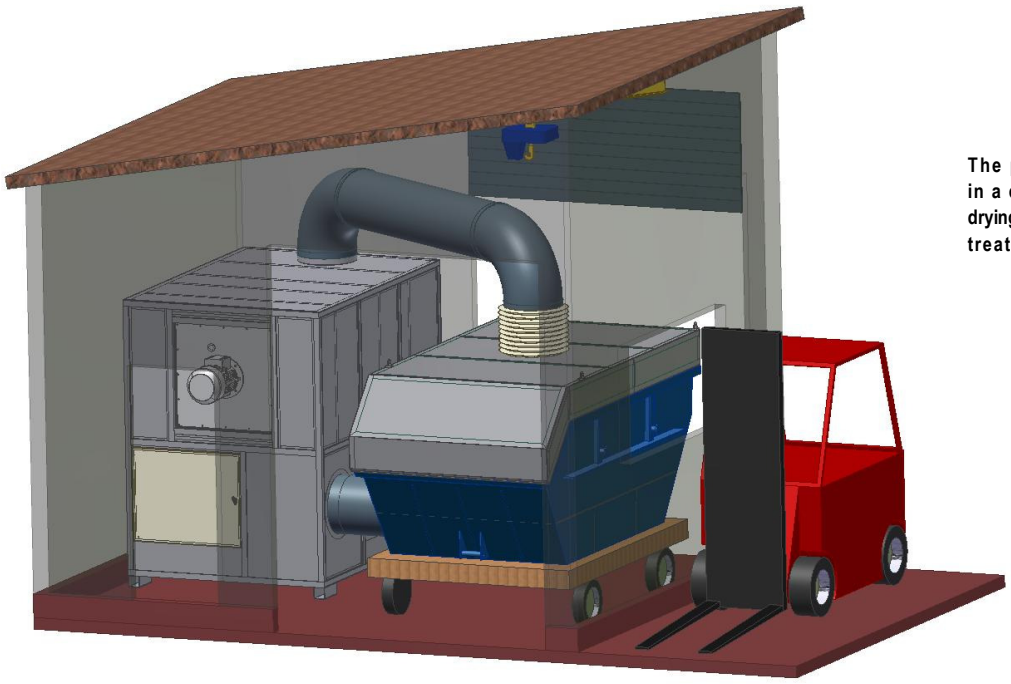
NEVER AGAIN BATTLE AGAINST SLUDGE

Individual solutions for drying sludge **Sludge from the industrial sewage treatment has a very high water content and, therefore, is voluminous and heavy. In order to dry this sludge effectively and efficiently, there are appropriate drying plants. However, the matter is difficult when special architectural conditions must be observed by the construction of such plants, or the operator must exercise certain specifications for the procedure. Then, user-specific solutions are demanded.**



The predrained filter cake is filled in a container and also conveyed for drying in there and transported for further treatment

A multitude of substances are constantly separated from industrial effluents, using a physical or chemical process. Thereby, the result is usually a fine sludge with a water ratio of approximately 95 % – too much in order to use it as a resource, or be cost-effective to dispose of. The wet sludge must be predrained, for example by using a chamber filter press. This generates a filter cake that is mainly firm and compact, but still has a high ratio of water, approximately 65 %. Therefore, because of the high disposal or recycling costs, the predraining is often not sufficient. The filter cake must be further dried. With a remaining water content of 20 to 5 %, the volume and weight of the sludge is reduced, so that the costs for further treatment or disposal are substantially reduced.

Prevent laborious transportation of sludge

Daily, a large quantity of calcium phosphate sludge accumulates in the effluent pretreatment plant of the company BK Giulini at the site in Ladenburg. The company, with headquarters in Ludwigshafen, offers, amongst other things, special products for the pharmaceutical and food industries. The products also include various phosphate compounds, which results in the generation of sludge during their production and treatment. The phosphate products range from phosphates, to the phosphoric acids extending to the special phosphates.

The sludge has a large quantity of water and is heavy, so that further treatment is expensive and, because of the large volume, very laborious. Therefore, the fine sludge is dried. However, the procedure up to now was laborious and much too expensive: The sludge was taken from a filter press, conveyed by a conveyor belt into an intermediate silo and from there, using an eccentric screw pump, into a fine film evaporator. Thereupon, it once again is conveyed by a conveyor screw and was collected in Big-bags. When 24 of these bags were filled, they were loaded onto a lorry and transported away. "Furthermore, the old fine film evaporator and the preselected eccentric screw pump were very susceptible to failure, therefore, cost intensive and not available for a longer period", Armin Etzel, responsible for the project at BK Giulini, stating further disadvantages of the old procedure.

authors

Joachim Bach, Geschäftsführer, Harter Oberflächen- und Umwelttechnik

Armin Etzel, Leiter Energieversorgung und Ingenieurwesen, BK Giulini

"Primarily, we wanted to simplify and accelerate our whole process."

Drying sludge and transportation in a container

For this, Harter offered a special sludge drying plant. This can dry the predrained sludge so that the approximate remaining water content is 20 to 5 %. The containers, in which the filter cake should be dried, were already specified by BK Giulini, so that the plant must be exactly matched. Despite these high requirements, operation with the new plant could already be started after three months: As before, the sludge is predrained using a chamber filter press. However, the filter cake now falls from the filter press directly into a 7 m^3 container. A forklift takes this on a heavy goods trailer to the drying plant. There, the sludge is dried for 24 h until the solid content is 80 %, as required by the operator. Subsequently, the container is transported away and stored temporarily. Using this new process, the quantity of sludge is reduced by approximately 50 %. When the three containers are full, they are loaded onto a lorry and transported away.

Whilst the sludge was very lubricious before drying, it now degenerates after drying by rubbing. "The dried filter cake can now be transported without difficulty in conveyor screws by the company that will carry out further treatment", Etzel happily. "In addition, the drying brings a cost saving for further treatment." This is because the dried and now lighter filter cake is calculated by weight for further processing to fertilizer.

Special solutions on the day's agenda

The drying plants from Harter with their specially developed heat transfer system save two thirds of the energy in comparison to traditional procedures. Furthermore, they are easy to operate and are virtually maintenance free. Control is fully automatic, regulated using electronic humidity measurement. That means, when the desired solid content is attained, the dryer switches itself off. In addition to small and medium sized models, special below ceiling designs, mobile tilt units or the paint sludge drying also belong to the spectrum offered by the dryer manufacturer. In close cooperation with the users, individual solutions are developed, for example, if architectural circumstances or special features in the technical process must be observed. As described in the application case, many large container plants have already been realized, up to batch sizes that are barely limited. In the in-house laboratory, drying tests can be carried out, in order to determine precise data for planning a plant.

For Operators

- Sludge from the industrial effluent treatment usually has a water ratio of approximately 95 % – too much for further treatment or to dispose of cost effectively.
- Sludge drying plants must operate efficiently and effectively. In many companies, additional structural circumstances or special specifications for the procedure must be observed.
- Harter sludge drying plants dry the sludge so that the remaining water content is 20 to 5 %.
- They can be fully automatically controlled. With the assistance of electronic humidity measurement, the dryer switches off automatically as soon as the desired solid content is attained.

■

contact

www.harter-gmbh.de

Harter Oberflächen- und Umwelttechnik GmbH,
Mr. Joachim Bach,
Harbatshofen 50, D-88167 Stiefenhofen,
Fon: +49 8383 9223 0,
Fax: +49 8383 9223 22,
E-Mail: info@harter-gmbh.de