

DRYING OF SEWAGE SLUDGE

# SAVING COST WITH A HEAT PUMP

RELIABLE. EFFICIENT. DUST-FREE. ENERGY SAVING.



# LESS WEIGHT. LESS VOLUME. LESS COST.

Most of the money spent on disposal is actually paid for water. Using our heat pump based Drymex® sludge drying technology you will reduce the weight and volume of your sludge by as much as 60 percent. This means that **your disposal cost will also drop by as much as 60 percent**. And – drying raises the calorific value of your sludge. Even more potential for savings!

Drying may be a solution for challenges posed by existing or future regulatory requirements. Our low energy and carbon emission process meets all your demands both in terms of engineering and finances as well as with respect to major environmental aspects.

Drying of sludge with our Drymex® dryers offers the following advantages:

- Drying at low temperatures between 30 °C and 60 °C
- Drying in a closed system with no resulting exhaust air
- High efficiency through air dehumidification using heat pump technology
- Energy and cost savings through a perfect combination of air conditioning and air routing
- Fully automatic drying process
- Long lasting value of the systems
- Short pay-off periods



BEFORE



AFTER



## DRYING AT LOW TEMPERATURES

Using our technique you will dry your sludge within defined temperature limits. The perfect interaction of extremely dry air and appropriate routing of this air also ensures efficient, reliable, and uniform drying of your sludge.

## DRYING WITHOUT EXHAUST AIR

Dehumidification takes place in an energetically closed system. So, the safe operation of our drying systems is completely independent of climate or weather impacts. This results in highest process reliability.

## DRYING WITH A HEAT PUMP

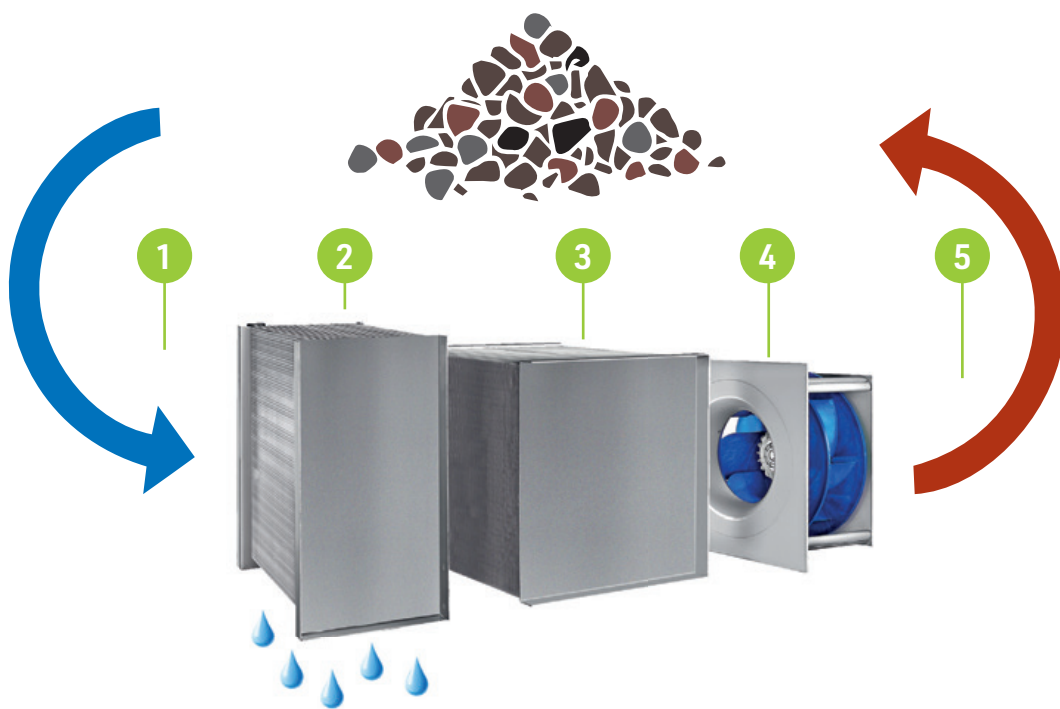
The heat pump technology integrated in all dryers enables dehumidification with highest efficiency. Requiring just 0.5 kWh per litre of water extracted this technology is the only and the best solution for exhaust-air-free drying.

## SAVING ENERGY AND CARBON EMISSION

Our heat pump technology implies a large reduction of your cost of operation. You get a system that is both reasonable and sustainable – in terms of economy and ecology.

# DRYMEX<sup>®</sup> – THE PROCESS

Each of our drying systems consists of a dryer and a heat pump module. The dryer is the room in which the product is dried. The heat pump module provides the process air required and is also responsible for the condensation process: We use extremely dry and thus unsaturated air which we pass evenly through the sludge. Efficient air conditioning combined with appropriate air routing ensures high quality drying results.



- 1** Interface between Drymex<sup>®</sup> heat pump technology and material to be dried: Humid air is taken from the sludge and passed on for dehumidification.
- 2** Humidity precipitates on the air cooler fins, and the condensate leaves the system through the collector and the drain.
- 3** The air heater heats the air to the required process temperature.

- 4** The process air fan provides the necessary exchange of air between the Drymex<sup>®</sup> heat pump technology and the material to be dried.
- 5** Now, the dried, unsaturated air is passed through the material to be dried. The circuit is herewith closed.

# DRYMEX® – ENGINEERING SOLUTIONS

We design customised and modular drying systems meeting your specific requirements and duly reflecting your local conditions, which are of major importance.

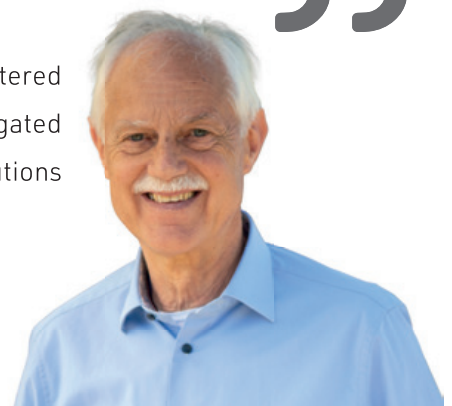
Our drying systems for continuous operation are composed of compact units in modular design. Each unit consists of a drying room and the heat pump module. Alternatively, the heat pump module and the drying room may be installed in separate places. This way, the system may be modified to perfectly fit in the installation space available. Our systems provide maximum versatility.

For these systems, too, a perfect combination of efficient dehumidification and customised air routing is mandatory to obtain best drying results and high process reliability.

All our dryers feature a closed air system. So, the ambient air may not affect the drying quality, and the drying system may not affect the ambient air.

Our Drymex® drying systems are suitable for drying pre-dewatered aqueous sludge. Continuous belt drying is the solution for centrifugated or screw pressed sewage sludge. In-container drying batch solutions may be used if you have a chamber filter press in operation.

*Reinhold Specht, Managing Owner, Harter GmbH*



# DRYMEX® – BELT DRYING

## FOR ALL TYPES OF SLUDGE

Our belt dryers for sewage sludge are modular solutions. We developed a special module that may be placed in line and combined with other such modules. So, you will get a drying system of the size required.

### Sizes

Each individual module is capable of drying about 100 kg per hour of sewage sludge. The system may currently be expanded to process up to 1,000 kg/h. And, being an innovation minded company, we start thinking of the next goal to be achieved once we have finished a given project. So, please ask us.

### Conveyance

Our system requires feeding of the sludge into the hopper above the module and removal of the dried sludge.

Do you have a conveyance system that may be integrated in our technology? Or do you need new conveyance? We will discuss to find out what the optimum solutions for you may be.

## BELT DRYING



*Modular belt dryer –  
for fully automatic operation*

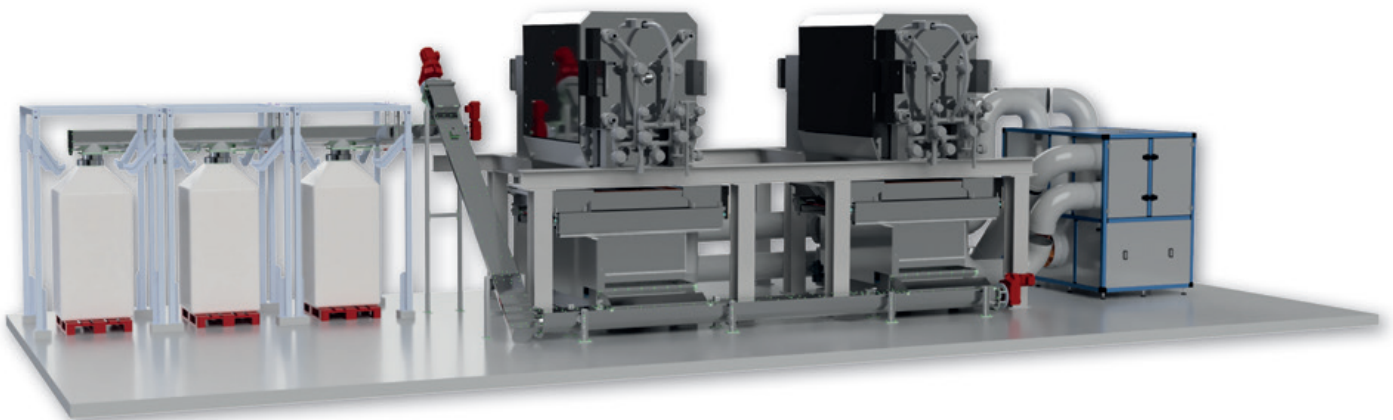
# DRYMEX<sup>®</sup> – CONTAINER DRYING

## FOR CHAMBER FILTER PRESSED SLUDGE



*Container dryer – particularly suitable for chamber filter pressed sludge*

We will adapt our container dryers to fit in your circumstances. A drying container may, for example, stand next to or directly underneath the chamber filter press if the press is placed at a higher level. We may design your system such that the drying containers can also be used for transportation. In this case, the drying container will have a special bottom to allow the passage of air. The dryer shuts down automatically when the sludge reaches the desired dry matter content.



*Automatic sludge drying system – with dust-free filling in bigbags*

Sludge from the chamber filter press falls automatically into the stainless steel container underneath. After drying, the sludge is passed through a conveyance system to the filling station to be filled

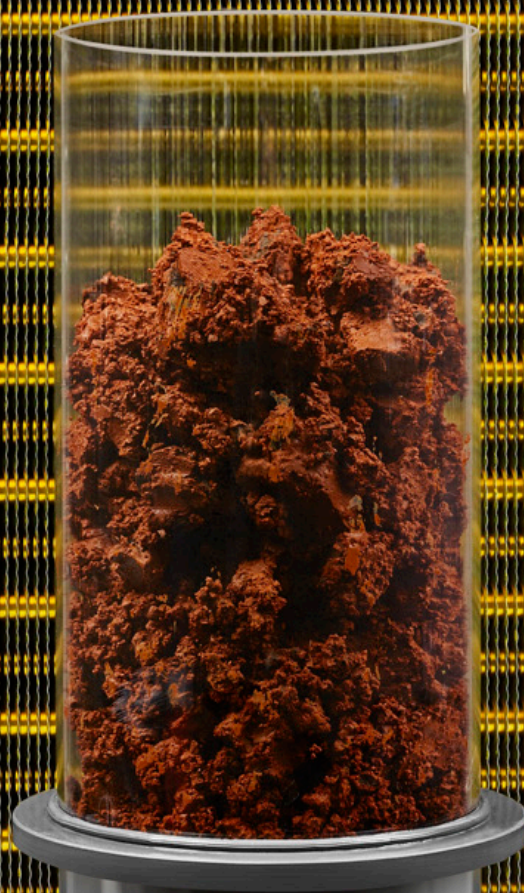
in bigbags. This fully automatic solutions have some sophisticated features such as batchwise emptying through a multifunctional bottom when the dry matter content is reached.

# OUR TEST CENTER

## SMALL-SCALE DRYING TESTS

Drying tests in our Test Center are a reasonable approach to determining the parameters relevant for successful drying. We test your product for response to temperature, humidity, time, air speed and airflow rate. The results form the basis for further layout and design. In this process, we draw on solution approaches from hundreds of

projects in various sectors of industry. Agree with us on the sludge quantity required and send us a representative sample. A sample of 2 to 3 kg will often be sufficient. The drying test will show the potential for weight and volume reduction. The sample will then be returned to you.



## LARGE-SCALE DRYING TESTS

Tests in our Test Center can demonstrate drying feasibility as such. If test results are positive it may appear reasonable for sludge with certain properties to test larger quantities. We offer a system on loan for such tests. This is a belt dryer module

for processing some 100 kg per hours. You may use it to perform on-premise series of tests. You will, of course, be thoroughly instructed by one of our engineers on how to use the loan system.



*You may use our loan system to perform larger-scale tests on your own. It is capable of processing about 100 kg per hour.*

# ENERGY AND CARBON SAVINGS BY HARTER DRYING SYSTEMS

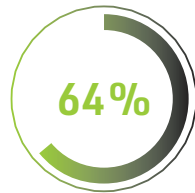
Our heat pump drying is extremely energy efficient. Our customers achieve enormous cost of operation savings. A calculation is worth the effort.

## YOUR BENEFIT

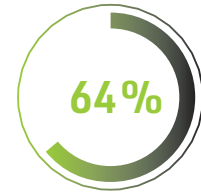
- Lower cost of operation
- Lower consumption of resources
- Independence from fossil energy
- More stable process conditions



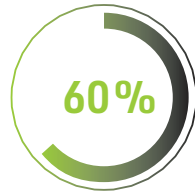
Energy



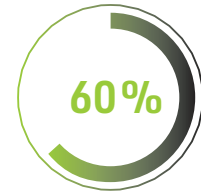
CO<sub>2</sub>



Weight



Volume



# OUR SLUDGE DRYING SYSTEMS HAVE BEEN CONVINCING - FOR DECADES



With this quality drying system, we are very well placed for the future as a sewage treatment plant operator. Besides the high energy efficiency, Harter's absolute reliability and fast availability was a big asset for this project. To have a regional supplier showing great expertise even in tricky situations is invaluable.

*Johann Seiwald, AWV Großache Nord – sewage treatment association*



BK Giulini GmbH has been successfully co-operating with Harter GmbH for some 20 years. We are very satisfied both with the operation and the reliability of the complete system. Considering the positive experience we have made and the very good service provided we invested in another such drying system in 2023.

*Dimitri Baumbach  
ICL Ladenburg –  
Additives for varnishes and  
paints*



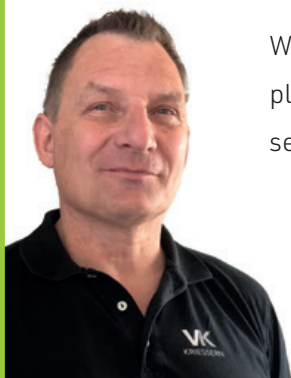
Drying of heavy metal hydroxide sludge in our waste incineration plant has saved us extremely much money. The system is sustainable and easy to service. In retrospect, investment was a very good decision.



*Stefan Ringmann  
KVA Linth –  
disposal contractor*



We have been using a Harter sludge dryer in our subcontract electroplating facility for several decades to our full satisfaction. Operation and service are reliable, and have helped to save a lot of money for disposal.



*Daniel Hutter,  
Verzinkerei Kriessern AG*





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