



# Big Dutchman®



## **OptiPress**

Liquid-solid separation  
of slurry and biogas digestate

# OptiPress – simple separation of slurry and digestate

**OptiPress** is a newly designed Big Dutchman system for the separation of slurry, biogas digestate (digestate = digested material) and other materials to be separated – as for example water resulting from cleaning cattle trucks.

In cattle and pig management, slurry is a by-product which has to be stored in large storage tanks until spread on the fields. In regions of high animal density, the quantities that may be spread are often limited, because the nutrient requirements of the soil are already satisfied (eg. phosphorus). Moreover, the slurry con-

stantly has to be kept stirred during storage, so that sediment layers cannot build up.

Operators of biogas plants have the same problems, since they also have to store the digestate before spreading it on the fields. With OptiPress I and II, Big Dutchman offers its customers innovative systems which satisfy the requirements of the respective area of use that have decisive advantages. Please let our experts advise you in detail.

## Our solutions so as to achieve dry matter contents of 2 to 15 %



OptiPress I for materials with a low dry matter content and a homogenous structure (ie. of even particle size)



OptiPress II for materials with increased dry matter content and a more coarse structure

We offer **OptiPress** in two different versions depending on DM content and homogeneity of the basic material.

**OptiPress I** is a spiral filter press ideally suited for separating slurry with a dry matter content of 2 to 10 %.

**OptiPress II** is a screw press mainly used for separating materials with a high dry matter content (5 to 15 %) from coarser structures (long-fibred material).

For both versions the separated solids reach a dry matter content of 25 to 30 % and can be used as low odor, spreadable fertilizer.

The filtrate only has half the dry matter content of the original material.

Since phosphorous is mainly bound to solids, it is separated more easily than nitrogen and potassium which mostly remain in the filtrate. This can then be spread for example as valuable liquid fertilizer by means of irrigation systems on to the fields. When storing the liquid phase it is no longer necessary to stir the mixture since hardly any floating and sinking layers are created.

## Advantages

- ✓ separated solids with approx. 30 % DM can be used in many ways
  - as spreadable fertilizer worth transportation
  - provides a suitable material for biogas plants
  - provides energy-rich, combustible pellets;

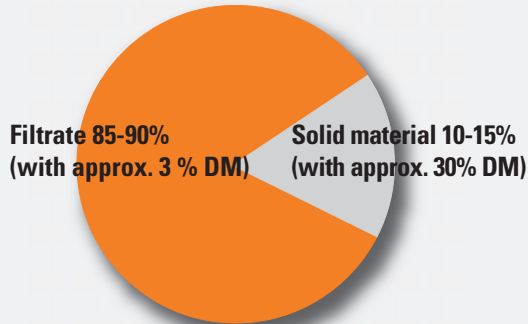
- ✓ compact construction, requires only a little space;
- ✓ simple cleaning and maintenance;
- ✓ only high-quality materials are used → minimum wear, long service life.

# What results are possible from separation by OptiPress I and II?

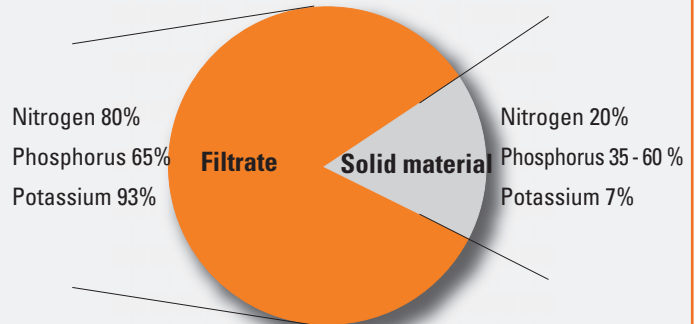
If the basic material – slurry or digestate – has approx. 6 % DM, separated solids of approx. 30 % DM and filtrate of approx. 3 % DM. Approx. 35 % to 60 % (depending on the basic material) of

phosphorous is present in the solids. This can be transported at low cost into regions of higher demand.

## Partitioning between filtrate and solid material after separation



## Distribution between nutrients (as % of input)



# OptiPress I – for low dry matter content and well-mixed substrates

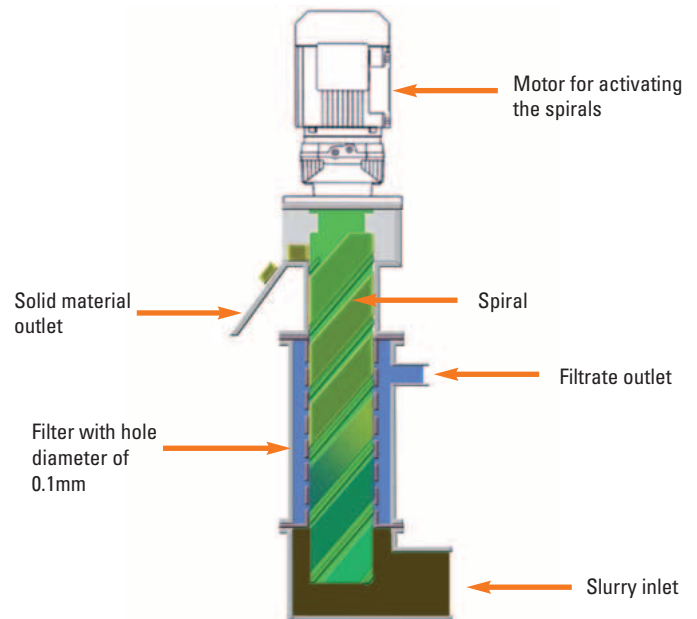
## Advantages of OptiPress I

- ✓ high degree of separation (0.1 mm diameter of filter holes)
  - very low sedimentation of filtrate
  - a higher proportion of phosphorous due to a greater quantity of solids;
- ✓ modular system (1 to 4 filter columns) → OptiPress I is tailor-
- made to the requirements on the farm;
- ✓ low energy requirements → 0.55 kW per filter column;
- ✓ vertical spiral → OptiPress I is immediately ready for operation, no start-up phase;
- ✓ low-noise level, easy to operate, ideal for permanent operation.

## How it works

It is best to install the spiral filter press with storage tank between the house and the reception pit. This allows direct separation of the slurry, thus only the filtrate is pumped into the reception pit.

A compensation tank with level sensors ensures that the pump of the spiral filter press can always process the basic material uniformly. The vertical filter column captures the basic material by its turning motion, lifts it upwards and thus removes solids by passing the liquid phase through the filter supported by a filtrate pump. Depending on the quantity of material to be separated (approx. 1.5 m<sup>3</sup>/filter column/h) then 1 to 4 filter columns can be installed on the divider pipe. Each filter column is activated by a separate motor. The solid material is released at the top of the spiral.



Individually planned control box



Solid material outlet

The speed of the spiral is frequency-regulated so that the spiral can always take up the right amount of basic material. The machine is controlled by a control box which is made and supplied as customer-specific.

**Attention:** It is important to keep the basic material free from extraneous material (e.g. earmarks). If this is not possible we recommend installing a suitable separator for extraneous material.

# OptiPress II – for higher dry matter contents and non-homogeneous substrates

## Advantages of OptiPress II

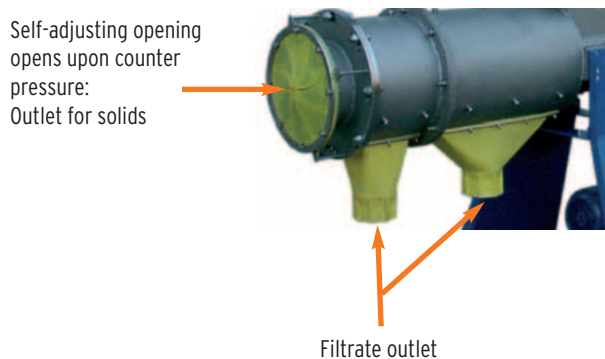
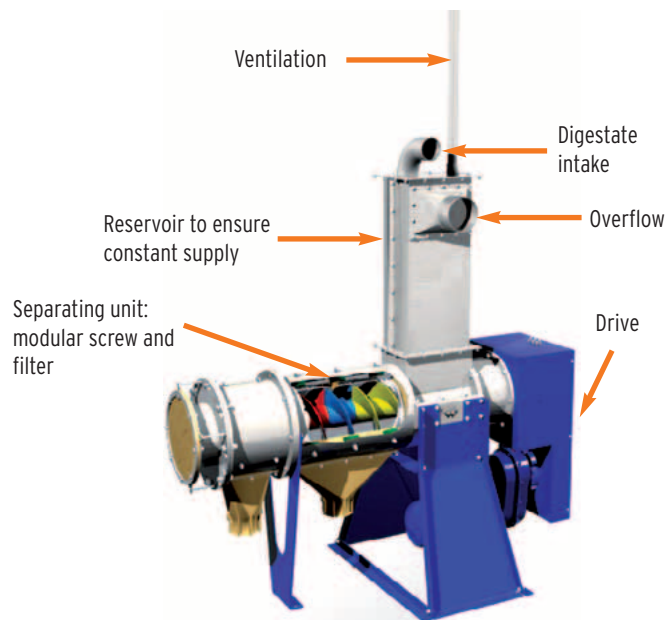
- ✓ easily accommodates larger quantities with increased dry matter contents;
- ✓ the degree of separation depends on the filters used (0.5 to 0.7 mm filter hole diameter);
- ✓ the modular spiral consists of stainless steel and a special plastic shell → high resistance against wear; if it occurs,

- only individual parts of the spiral have to be replaced;
- ✓ low energy consumption;
- ✓ good cost/performance ratio;
- ✓ robust technology, suitable for continuous operation.

## How it works

OptiPress II should also be installed between the biogas plant and the digestate store. This allows the separation of the digestate before the liquid is transferred to the digestate storage tank. Other areas of use are, for example, separation of cleaning water from cattle trucks.

OptiPress II works in horizontal direction. The basic substrate is pumped from the storage tank to the reservoir of the screw press. This ensures constant supply to the separating unit. The filter provides good separation. The solid matter outlet only reacts to a certain counter pressure created by the separated solid matter. The 5.5 kW drive creates the maximum output of 30 m<sup>3</sup>/h. The scope of delivery also comprises a control box that is individually planned and manufactured.



# Big Dutchman®

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