DORSET GM
GREEN MACHINES

DORSET DRYING SYSTEM FOR BIOMASS AND POULTRY LITTER

- Drying of
  - Biomass
  - Poultry manure
  - Biogas Digestate
  - Woodchips
  - Sewage Sludge
  - Food Waste etc.
- Organic fertilizer plants
- Green energie
- Waste treatment

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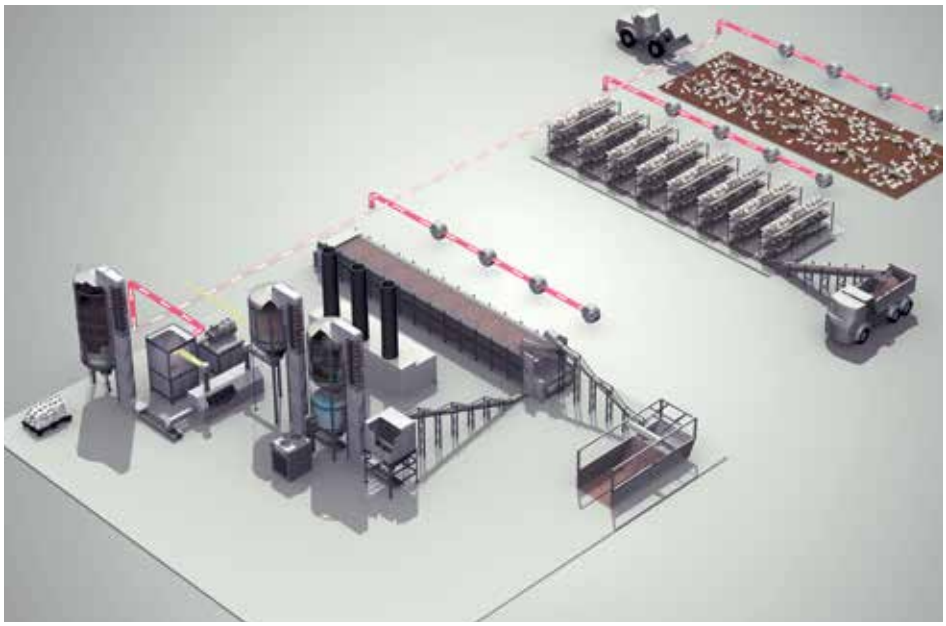
Dorset Green Machines BV, a Dutch manufacturing company, is a world leader in designing and manufacturing manure/sludge drying technology and industry related products. The Dorset drying technology utilises the residual heat from (green) power plants to efficiently dry a variety of wet materials. Residual heat from power plants and the warm ventilated air from poultry houses can be used to dry poultry manure converting it into a valuable organic fertiliser or fuel.

Pollo Two: 200 cm wide
Pollo Three: 300 cm wide
with multiple layers (2, 4, or 6) of manure with a maximum drying surface of 460 m^2. These models are suitable for 30.000- 270.000 hens per dryer.
Container version:
The Tomo dryer is a single layer dryer which comes in a plug-and-play version for external use.

Poultry manure drying at the farm or at a centralised plant

The smooth coated perforated steel plates are the core technical advantage of the Dorset Belt Dryer. The robust construction of the belt permits a thick layer of manure (15 – 18 cm) to be evenly distributed across the full width of the plates, guaranteeing a highly efficient drying process.
The efficiency of the belt allows the dryer to be constructed in a compact configuration.
When air from the poultry house is used for drying, the size of the dryer is calculated based upon the number of hens resident in the house.

The number of hens per m^2 of drying area is climate dependent and can vary between 400 – 600 hens per m^2. Only a minimal amount of the poultry house air passes through the dryer (1 or 1, 5 m^3/hr./hen). The remainder of the air (summer ventilation) leaves the house directly via exhaust fans.
As an example a dryer on a farm with 80.000 - 120.000 hens would require a dryer 27m long x 2m wide x 3m high. The Drying system operates fully automatically and requires no manual input. The equipment can be monitored remotely if required.



Animation:

A complete overview of the manure drying process at a poultry farm

See www.dorset.nu

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Drying with the exhaust air from the farmhouse

Dried and pelleted poultry manure is an extremely good fertiliser with significant levels of P (Phosphorus) and K (Potassium).
The pre-drying of manure in the poultry house is no longer a common practice. By removing the need to pre-dry significantly reduces the cost of electricity. The poultry house air at 20 degrees or more is normally sufficient to dry all the manure produced each day. The efficiency of drying process varies depending upon the external atmospheric condition, air with a high temperature and low moisture content provides the best drying results. The drying system can be situated either at the back or along the side of the house.

Dorset Pollo Poultry Manure Dryer reduces particulate matter emmisions from the barn air

A dosing belt delivers the manure directly on to the smooth perforated plates of the dryer. There is no requirement for pre-drying therefore the electricity costs are low.

The manure is removed from the poultry house on daily basis. It is deposited onto the belt within the dryer where it is remains for approximately two days. This limits the conversion to ammonia and optimizes the nitrogen content in the end product. The result is less ammonia in the air and a higher value end product.

The dryer has 1 – 6 layers of perforated plates which are pulled through the dryer by means of a rolling chain. The drying process starts on the top-layer of the dryer. The manure is carried through the upper level of the dryer, when it reaches the end it drops down onto the belt below. The process is repeated until the dried manure finally reaches the bottom-layer where it has achieved the required DM content. The dried material is then removed by an auger/screw system into the storage area.

The Dorset drying system is acknowledged by the Dutch government as a system that reduces ammonia emissions in poultry houses. It also removes dust and especially fine-dust is filtered from the poultry air by the manure layer. The (fine) dust reduction is 70% of the total stable: 55%. (E.6.4.2)

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The Dorset Organic Fertilizer Plant

Typical Dorset pellet plant consists of:
- Intake bunker
- Augers
- Crusher
- Dosed input, frequency controlled
- Pellet press
- Sanitation unit
- Cooling unit with cyclone
- Sieve
- Elevators
- Control panel incl. cabling

Weighing/bagging installation, consisting of:
- Elevator
- Storage container
- Weighing system
- Filling system
- Sealing/sewing system for bags

Big Bags:
- Weighing and filling system for big bags

The organic fertilizer plants are available in the following production sizes:
- **400 kg/h**
- **800 kg/h**
- **2.000 kg/h**
- **5.000 kg/h**

Including Certification process for safe organic fertilizer

A totally integrated solution of drying, pelletizing and sanitation. This is **a government approved system for the production** of a product that is not hazardous to humans and is a biologically safe, stable, organic fertilizer.

It has an "accredited" **certification** stating that the pellet has been heated for one hour at 70°C and therefore all bacteria etc. have been eliminated. Data logging for governmental approval and check.

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Drying in Containers

Drying Procedure

Dry Substance

From	4w%	->	12%
From	8%	->	85%
From	12%	->	85%
From	25%	->	85%

Biomass drying systems for biogas, gasification and pyrolysis

Drying of Solid Substances from a Separator
After drying these materials can be utilised as a fuel or as bedding material in dairy farms.

Drying of Sewage Sludge
For the drying of sewage sludge, Dorset designs totally integrated plants which include a reception pit and a biological purification of the exhaust air (tricklebed reactor). These plants can also be supplied as containerised solutions.

Drying of liquid
Liquid with a minimum TS-content of approx. 8% can be dried without prior separation in order to use the excess heat. This is an excellent way of producing fertiliser.

Drying of woodchips
The Dorset Dryer Tomo is specially designed for drying wood chips. The drying of wood chips increases the combustion value and lowers storage costs.

Dorset Green Machines is developer and producer of drying equipment, air cleaning systems and control panels.

Dorset Green Machines B.V.
Weverij 26
7122 MS Aalten
The Netherlands
Tel. +31 (0) 543 47 21 03
Fax +31 (0) 543 47 53 55
gm@dorset.nu

WWW.DORSET.NU

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DORSET ID
IDENTIFICATION
RFID-Technology, electronic identification

DORSET GM
GREEN MACHINES
Drying equipment to make use of residual heat

DORSET FS
FARM SYSTEMS
Air cleaning, and sorting systems