

Operating Description Biomass Dryer CF-500

The biomass dryer CF-500 consists of the following components:

1. Containment
 1. A 45 foot (12m) steel container forms the truck-loadable enclosure for the CF-500 biomass dryer

The containment includes three separate areas for the operation of the biomass dryer CF-500.

1. Area Biomass Dryer CF-500
2. Area Neutralization, Product Tank
3. Area Controlling and Electrical Installation

The three areas are structurally separated from each other in the steel container. All three areas are accessible from the outside through doors.

Area 1 with the CF-500 biomass dryer occupies the largest space. This is where the actual CF-500 drying system is positioned.

Area 2 contains on the one hand the storage tank, and on the other hand the so-called tube flocculator, in which iron III sulphate is added to the inflowing biomass according to the chemical composition in order to neutralise both the ammonia contained and any hydrogen sulphide present.

In addition, the two power units for lifting the CF-500 biomass dryer in the event of emptying are arranged in this area.

Area 3 is intended for the control cabinet with the entire measurement, control and regulation technology. The entire drying process can be controlled from here.

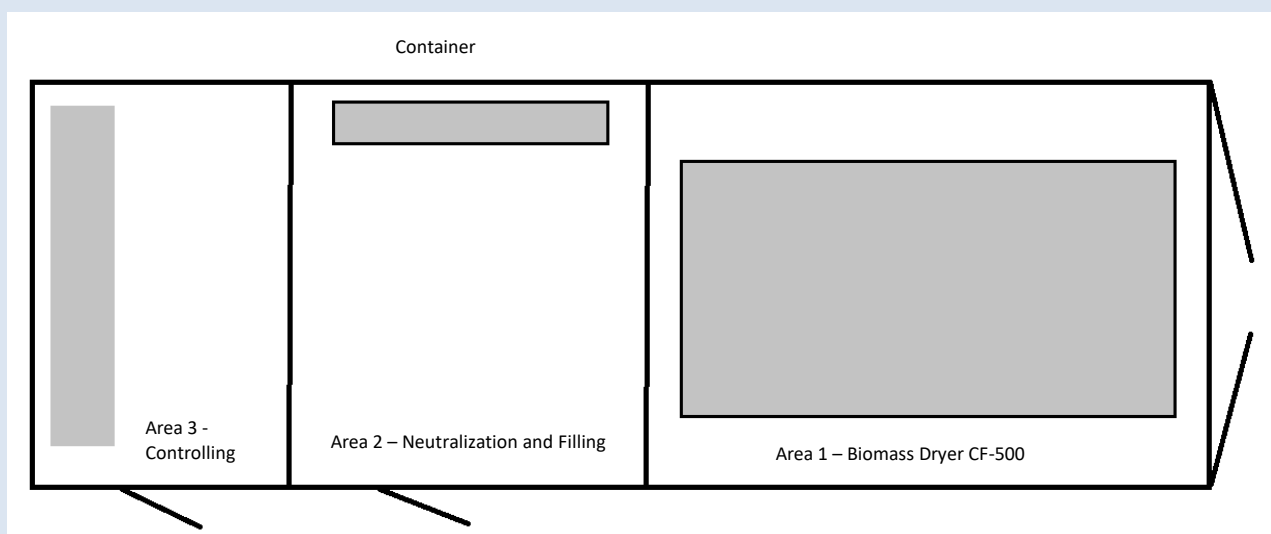


Image 1: Overview Biomass Dryer CF-500

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External Description

The CF-500 dryer measures 12m x 2.4m. The total weight is approx. 10 tons empty-weight.

The dryer is equipped with a connection for the feeding of liquid materials in the liquid manure conveying system nominal size DN 160.

It also has an exhaust air and a hot gas connection with connection dimensions of at least DN 200. On the inflow side for the supply air and outflow side for the exhaust air.

On the side facing area 2 there are also the connections for filling and supplying the hot gas.

The exhaust air connection is mounted in area 1 of the dryer on the side with the outlet pointing upwards to above the container.

The exhaust fan is installed in the duct after the air washer.

The storage container for neutralization is set up in area 2 as an IPC container in a sealed tank in accordance with § 19 I WHG.

The storage tank, which is also installed in area 2, is filled by means of an external connection piece for the slurry delivery system nominal size DN 160 and the associated pump. Ventilation is via the roof. A manure slide valve is installed towards the dryer, which opens and feeds further manure only after the dryer has been emptied and the weight data of the dryer have been checked.

The emptying-outlet is located at the front of the access doors and is modified according to customer requirements during installation. A wide range of emptying options are available, e.g. storage pit, drum system, conveyor belt, etc.

The entire dryer can be pulled out by means of a rail system after loosening the electrical and mechanical connections.

The CF-500 is also distinguished by its CHP bonus capability. A calibrated measuring system can be installed for special precision when measuring the CHP bonus values.

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Functional Description

The material to be dried is fed to the feed container of the dryer via the material connection. This ensures that the substrate to be dried can be applied frost-free even at low outside temperatures. During the actual filling of the dryer, a neutralising agent (e.g. Ferrifloc) is added to the raw material to bind the ammonia and any hydrogen sulphide present. The material fed in this way is now in the tank of the dryer.

The special exhaust gas routing ensures that the evaporating water is removed from the liquid with the dry hot gas stream which has cooled down in the meantime.

During the entire drying process, the material to be dried is permanently circulated and mixed with the aid of a patented system.

The exhaust air generated during the drying process as well as the steam is led into an air scrubber. There it is freed from any air-dried suspended particles and remaining olfactory contamination by means of circulating spray humidification. The air leaving the air scrubber can now be released into the environment.

In order to ensure proper functioning, a temperature of at least 200°C of the entering hot gas is required with a minimum mass flow of 5000 kg/h. The temperature of the hot gas must be at least 200°C.

The filling quantity is verified by level sensors and weight monitoring. Temperatures are monitored, including protection against overheating, by means of temperature sensors and safety temperature limiters.

The desired degree of drying is achieved by monitoring filling level and weight.