BDS Batch Drying System

hoopman equipment & engineering

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BDS

drying

Batch Fluidized Bed Drying System

PATENTED

"***Simple straight forward fluid bed drying system, can be build to your needs!"***

The Batch Drying System combines highly **efficient fluidised bed drying** with 'single batch containment' advantages. This **patented** system is especially used for drying of pelleted products. If your drying time is below 20 minutes, we advise you to consider the RFBD continuous drying system. The BDS Systems are available from 50 – 600 litres per batch. We can also deliver BDS systems integrated into a complete coating/drying system to have a completely automated process.

Another huge advantage of the design is that real-time weighing can take place during the drying in order to have absolute and continuous moisture control independent of often inaccurate in-line/real time humidity control.

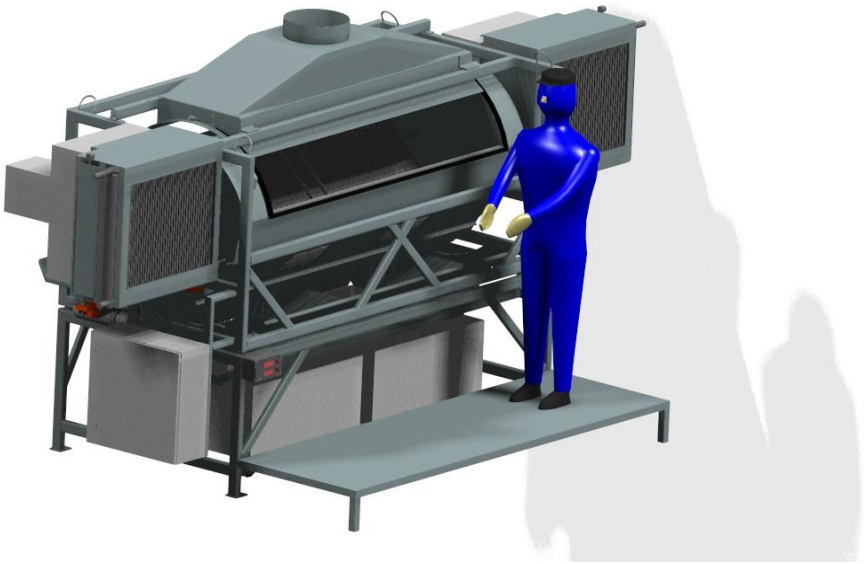
The dryer empties out 100% because it rotates 180 degrees, so there is no cross contamination between batches!

Normally vibrating fluidised bed systems are, when compact, extremely costly or when simply built (reciprocating drive) extremely long. The E&E Automated Batch Drying System is extremely **compact, efficient and moderate in cost.**

If you want to know more about our automated batch dryer, please contact us.

Advantages:

- Specially for encrusted and pelleted seed
- Rapid drying because of fluidised bed principle
- Automated discontinuous system; traceability/containment guaranteed
- Real time humidity control
- Compact



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BDS-50 Batch Drying System

"Easy batch drying system for average lots of coated and/or pelleted seed"

The Batch Drying System **combines highly efficient fluidised bed drying with 'single batch containment' advantages.** This system is especially used for combined coating/ drying of **coated or pelleted product**. The BDS-50 has a capacity of approx. 50 litres per batch.

The BDS-50 is specially build to dry a batch of 1 million pellets. Which makes it an perfect drying machine to be combined with your conventional pelleting process. Due to the **technical** design we have **immediate** fluidised bed which **significantly** improves the drying process and **reduces** the drying times.

The dryer empties out 100% because it rotates 180 degrees, so there is no cross contamination between batches!
Normally vibrating fluidised bed systems are, when compact, extremely costly or when simply built (reciprocating drive) extremely large. The **E&E** Automated Batch Drying System is extremely compact.

Standard features :

- Mild steel frame
- 2x 1.1 KW fan
- Standard ready/plug-in to use (400V 3Phase 50Hz 8,5A).
- Control-panel
- Air-outlet 200mm
- Integrated Weighing system (Accurate measuring of weight decrease during drying process)

Options

- 2x9 KW Electrical heating system with PID control
- PLC controlled system based on humidity
- Frequency controlled fan

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BDS-600 Batch Drying System

"High capacity batch drying system for up to 600 liters per batch"

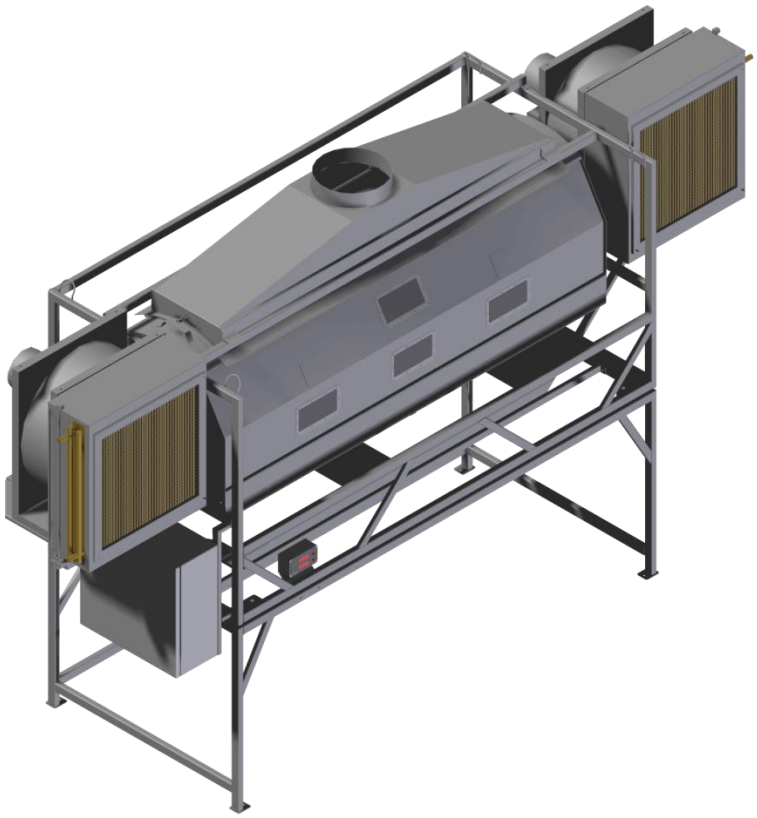
The BSD-600 drying system is the biggest batch drying system available. It is capable to dry up to 600 litres per batch. This gives the dryer the availability to dry several batches of a HR1250 rotary coater together (approx 120litres per batch), or dry just one batch of seed. The BSD-600 is a relative compact drying system especially for encrusted and pelleted seeds, for film coating and encrusting we have also a continuous system available.

Standard equipped with

- Process air fans
- Standard ready/plug-in to use (400V 3 phase 50Hz)
- Control panel
- Integrated weighing system (accurate measuring of weight decrease during drying process)
- 360º rotating system to empty out completely
- Swinging during startup of the drying process (approx 5º)
- Frequency controlled air fans
- Seed temperature control system
- **REALTIME MOISTURE CONTROL!!**

Options:

- PLC controlled with Touch Panel
- Several air conditioning units (from electrical heating op to preconditioning systems)



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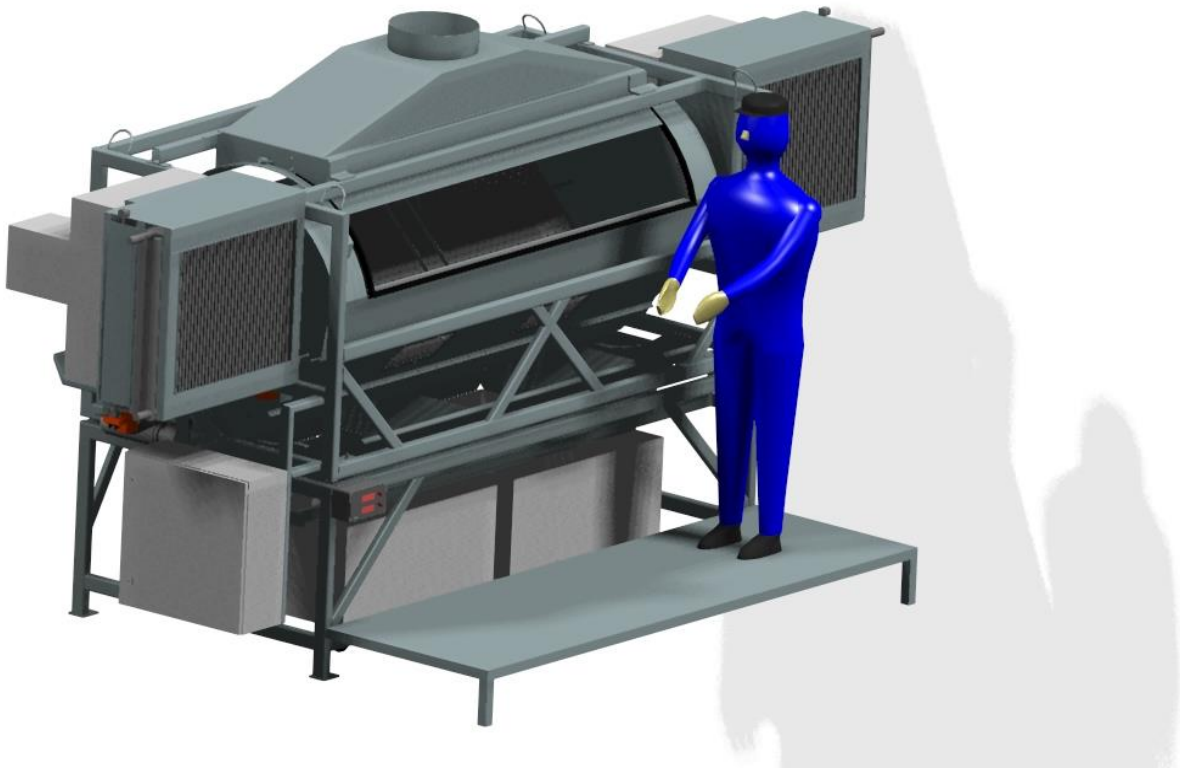
BDS-300 Dryer

According to the details, the BDS-300 dryer is the best option for drying the 200-300 kg batches in approx. 2-4 hours. The dryer will be manually loaded and optionally Hoopman can deliver carts to fit underneath the dryer.



The heating can be done in several ways, the most simple way is to use Hot Water Heat Exchangers.

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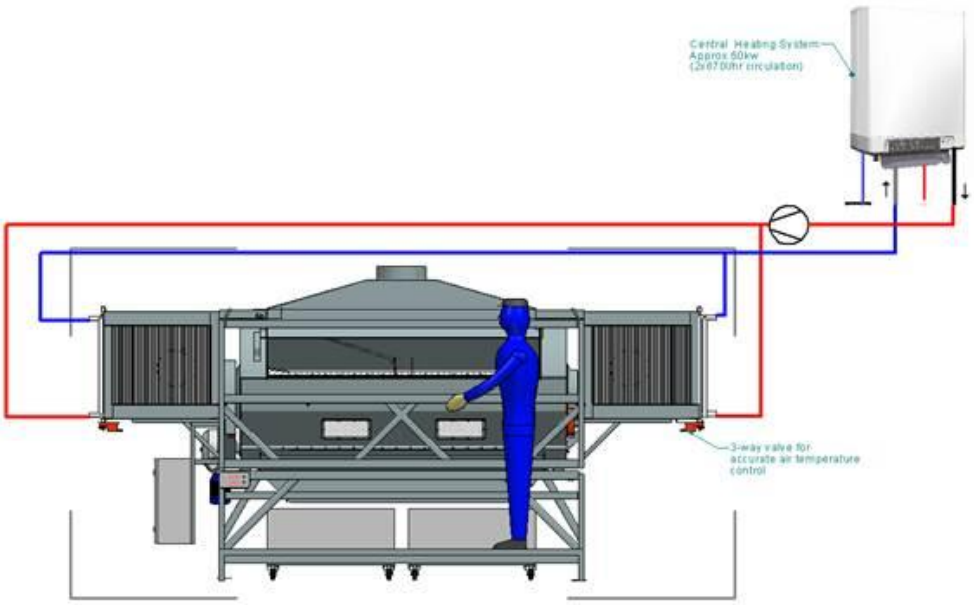
Hot water heat exchanging system

With below explained system we can circulate hot water (70-80 degr. C) through the heat-exchanger and provide hot air of 55-65 degr. C to the dryer.



Boiler:
Steam is not necessary at all and expensive in purchase, installation, maintenance and in EU heavy regulated (safety etc.)
We use very energy efficient but basic home central heating system boilers of companies like Vaillant, Bosch, Buderus etc.

(Example of cascade system of 4x75KW =>300kw)

These are available at http://www.bdrthermea.com/boilers/
We need about 45-60 kW boiler as above explained per dryer to increase ambient air to above mentioned 55-65 degr. C.
For more dryers, we use larger boilers, or more individual boilers 'in cascade' as explained above.

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Condensor drying system

Condensor drying unit combined with hot water heating

We can supply a standard condenser drying unit which is cheap and chearfull, but at **bad** summer conditions it will not dry as efficient as a complete “on spec” system. In winter conditions it is not necessary to dry back the air, but at summer conditions of 35°C 75% RH, it is necessary to dry/condition this air.

With a simple system we can dry it back to 45% relative humidity at 38 degrees. However, we need an extra additional steam heating unit. The best way is to combine it with the steam option mentioned above to have a system which is capable to dry at winter conditions as well.

“On Spec” Complete system for constant air conditions

This is a complete system which is capable to constantly give you the best drying conditions. Because it is built on spec, it will regulate the air humidity when it is too high and it will heat the air as well. This way you only need the combined system and do not have separate systems and in summer conditions it is capable to dry back more.

This system is capable to condition the air to 35ºC/23%RH in summer conditions of 33ºC/ 75%RH. When combined with an steam/air exchanger it will provide conditioned air of 60ºC / 6.6%RH.

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Regarding Drying time:

Your client is currently drying in two stages; the ‘easy water’ is dried off in relative quick time. The ‘difficult moisture’ is dried off with more or less static air. This takes a long time.
We do the complete drying in one real fluid bed dryer with high level of control of air-flow (high in the beginning and low at the end), product temperature including real time moisture reduction monitoring.

With pelleting materials mentioned; clay, perlite, woodflower we have 100% solid experience regarding dyring fully saturated pellets to < 2% AM.

You client might be using clay’s with higher hydrophilic/hygroscopic properties such as bentonite etc.
We are sure however that with the maximum Temperatures mentioned 60 degr. Air Temperature and 35 degr. Surface (product) temperature, the pellets should be dry within 2 hrs.
It all depends a bit on moisture content of the ambient air. If the ambient air is extremely hot and moist, we can offer air dryers, to be used prior to the existing heating system; but as mentioned; with the both T max mentioned (60 degr. Air Temperature and 35 degr. Surface (product) temperature) you should not have any problem.

BDS300 Energy Consumption

Beneath you can find more information on the energy consumption of the BDS300 system.

Electrical components:

- 2x Process fan 3kw each = 6 kw
- 1x Rotation motor 0.55kw =0.55 kw

Total electrical consumption = 6.5kw

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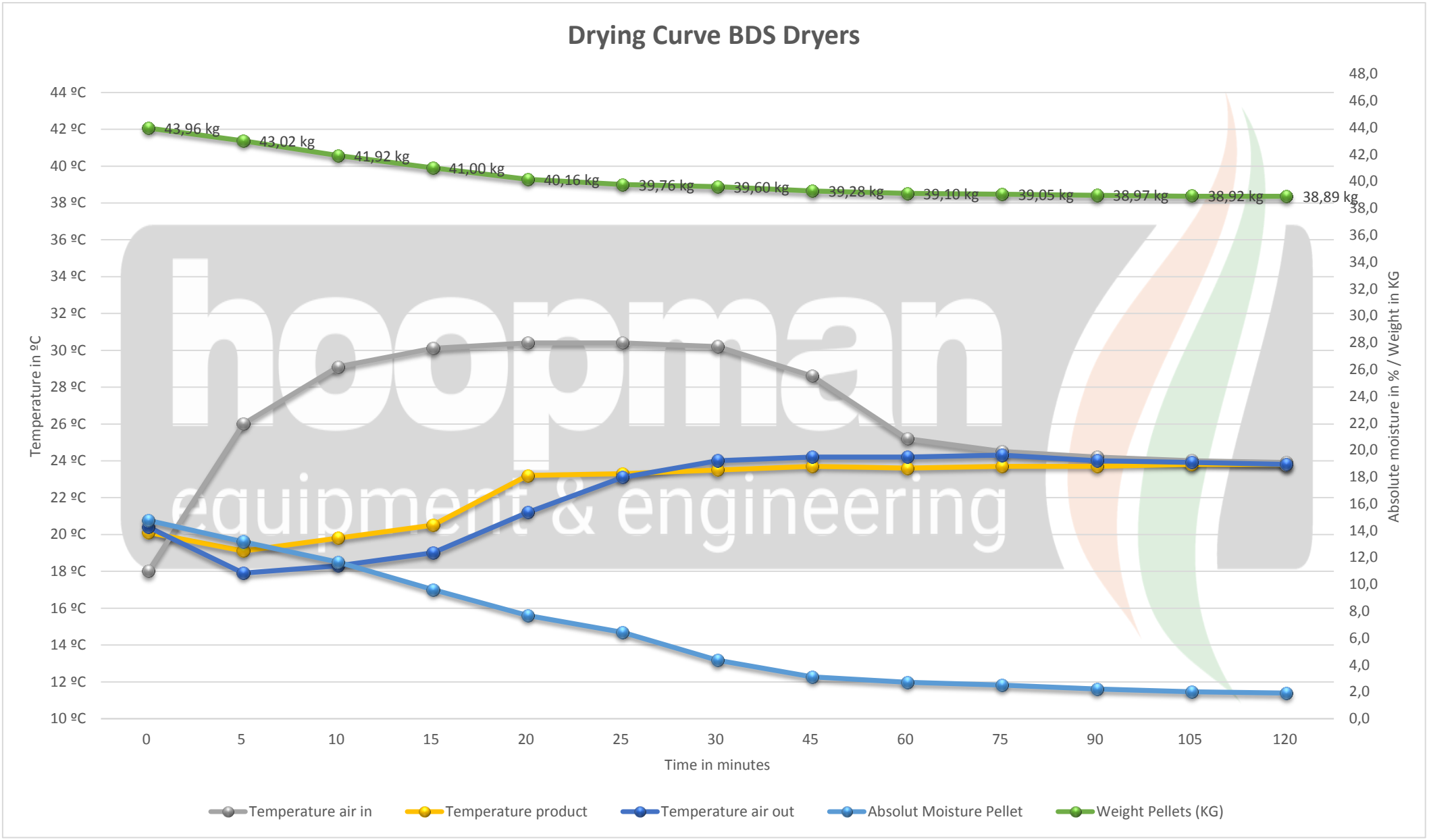
Drying Curve BDS Dryers
Temperature in ºC
Absolute moisture in % / Weight in KG
Time in minutes
44 ºC
42 ºC
40 ºC
38 ºC
36 ºC
34 ºC
32 ºC
30 ºC
28 ºC
26 ºC
24 ºC
22 ºC
20 ºC
18 ºC
16 ºC
14 ºC
12 ºC
10 ºC
48,0
46,0
44,0
42,0
40,0
38,0
36,0
34,0
32,0
30,0
28,0
26,0
24,0
22,0
20,0
18,0
16,0
14,0
12,0
10,0
8,0
6,0
4,0
2,0
0,0
0
5
10
15
20
25
30
45
60
75
90
105
120
43,96 kg
43,02 kg
41,92 kg
41,00 kg
40,16 kg
39,76 kg
39,60 kg
39,28 kg
39,10 kg
39,05 kg
38,97 kg
38,92 kg
38,89 kg
Temperature air in
Temperature product
Temperature air out
Absolut Moisture Pellet
Weight Pellets (KG)

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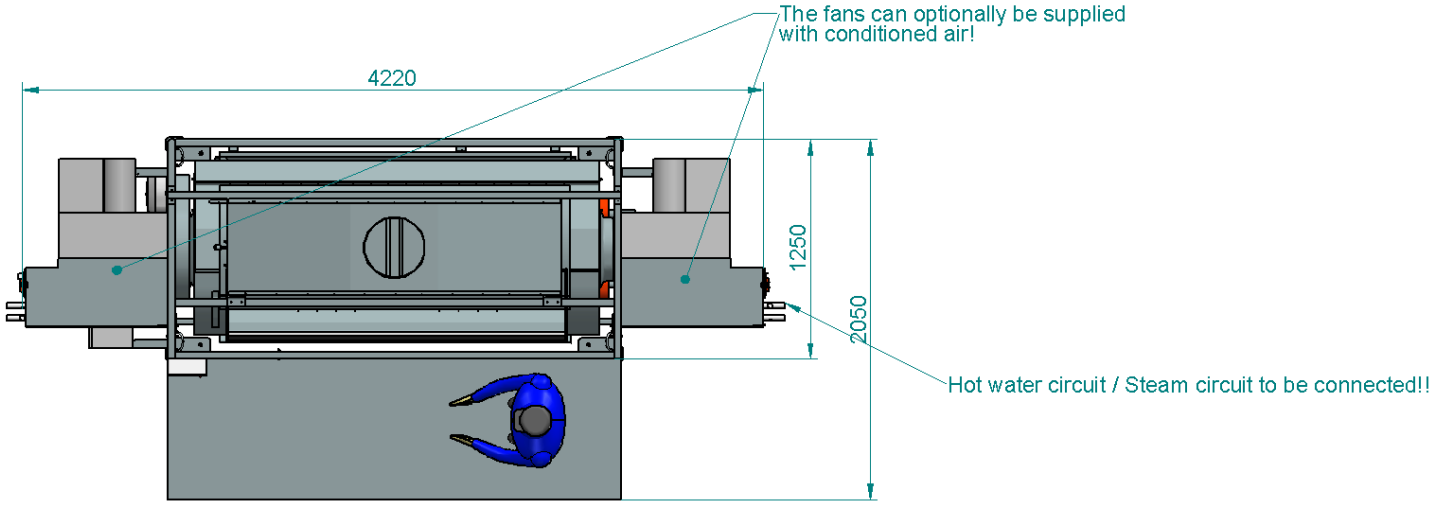

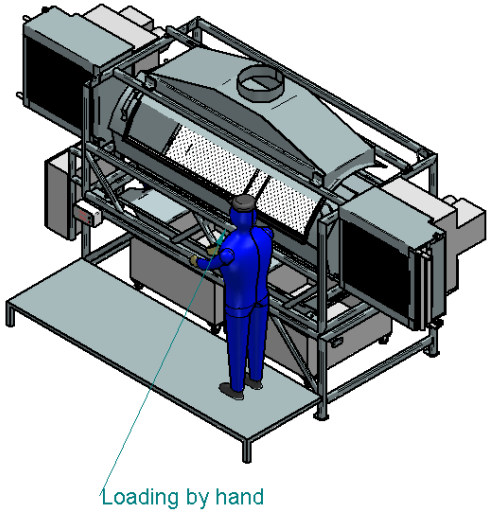

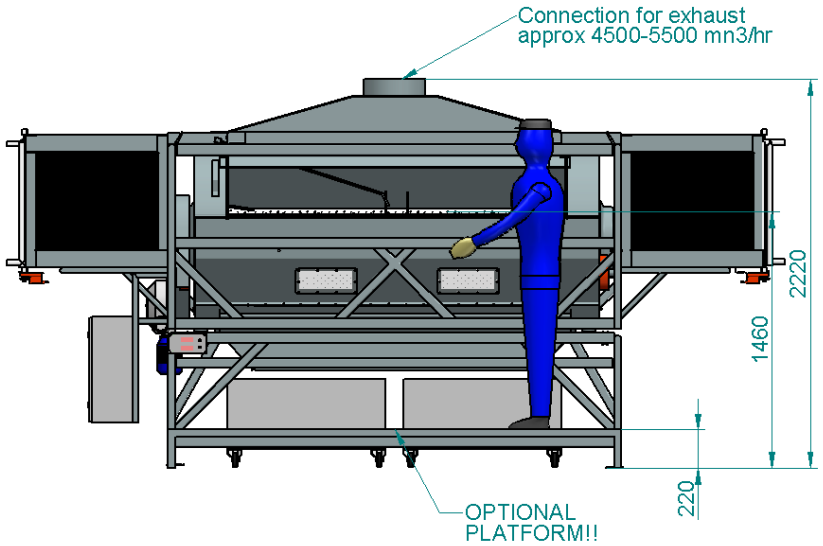

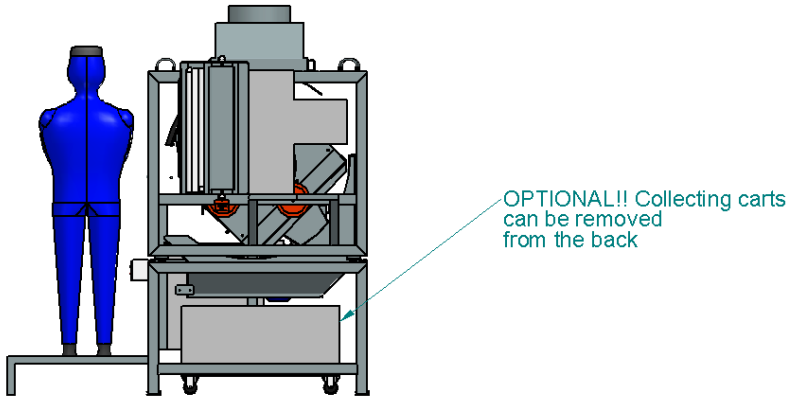

BDS300 Dimension Sheet

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