



cannabis-drying.com

professionals in drying

TOP-DOWN DRYING INSTALLATIONS

*Lower Production Cost
Higher Quality
Better & More Control*

Established 1974 • Selling in six continents

**Drying & Curing
Installations For Cannabis**

As a producer of the finest cannabis, you are constantly striving for the best quality cannabis, grown and processed at the lowest cost with an easy-to-manage process. Without a doubt, a smooth continuity of your process is high on your priority list. Deploying a quality system of Cannabis-Drying helps you to achieve this. In this catalogue, we present our improved, innovative system for the drying and curing of cannabis.

Cannabis-Drying is a subsidiary of a Dutch-based, privately owned company, founded in 1974. From day one, our company played a substantial, innovative role in the niche market of drying and storing agricultural products. Our focus, experience and in-depth knowledge resulted in an ever-growing quality of end-products for our clients.

We have developed and implemented new, groundbreaking techniques for the drying and storing of flower bulbs, seed, garlic and other agricultural products. Doing this thousands of farmers saved money and time considerably.

Innovative & Worldwide presence

The systems of Cannabis-Drying holding company are used in over 50 countries on all six continents. Our clients are both multi-billion-dollar, stock listed companies (USA & Europe) and small local farms as well.

Cannabis-Drying is staffed by a team of draughtsman and engineers, with each expert having an average experience of over 10 years. Continuous improvement is in our DNA and you, the innovating client, benefits from this.

CANNABIS-DRYING.COM



Cannabis-drying's office in the Netherlands




TOP-DOWN DRYING INSTALLATIONS



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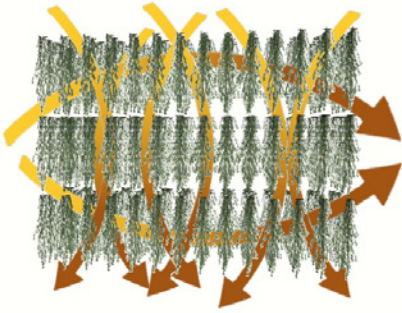
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In the life cycle of every agricultural product, innovation plays a vital role. Though cannabis is grown and processed for some millennia, the real growth of the cannabis market only started substantially in the 2nd half of the 2nd decade of this millennium. The market grew but some techniques did not grow along with the market.

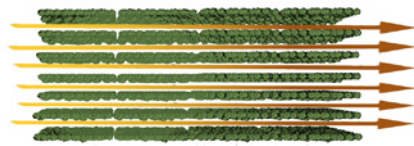
The conventional drying methods of cannabis are hang- and rack drying. In this brochure, we present our top-down drying systems for wet trimmed or bucked flowers. The images below showcase the airflow for each drying method. With hang drying, the airflow is uncontrolled. It will seek the path of least resistance which leaves the risk of wet spots emerging. With rack drying, the airflow is limited to a horizontal airflow going over and under the buds, but not through the product which also makes it an uncontrolled airflow. Uncontrolled airflow leads to uneven drying. Our top-down drying method makes sure each part of the buds receives the same amount of airflow. The process air is sucked through and along each bud. This results in an evenly dried end-product.

Now is the time to switch to the top-down drying method of Cannabis-drying.com. It is true innovation. Get the best end-product of your precious cannabis harvest.

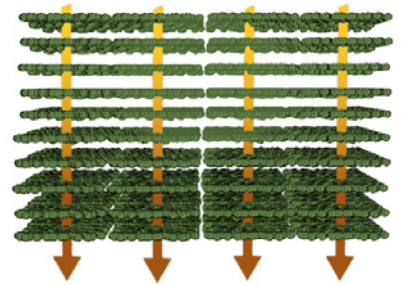
UNCONTROLLED AIRFLOW HANG DRYING



HORIZONTAL AIRFLOW WITH RACK DRYING



TOP-DOWN AIRFLOW GOING THROUGH AND ALONG EACH BUD USING OUR DRYING METHOD



STRENGTHS OF OUR TOP-DOWN DRYING METHOD

- AIR FLOWING THROUGH AND ALONG EACH SINGLE BUD (RESULTING IN AN EVENLY DRIED, SUPERIOR END-PRODUCT)
- 85 – 95% MORE SPACE-EFFICIENT THAN HANG DRYING
- SAVING ON LABOR COSTS
- CLEAN AIR THROUGH NANO-FILTERING (HEPA & PAD) REDUCING MOLD, MILDEW, PESTS AND BACTERIA TO PRACTICALLY ZERO
- (REMOTE) & FULLY CONTROLLED CANNABIS DRYING MANAGEMENT
- RIGHT AFTER HARVEST UNTIL PACKAGING, ALL CANNABIS CAN STAY IN TRAYS AND IN A CLEANROOM ENVIRONMENT

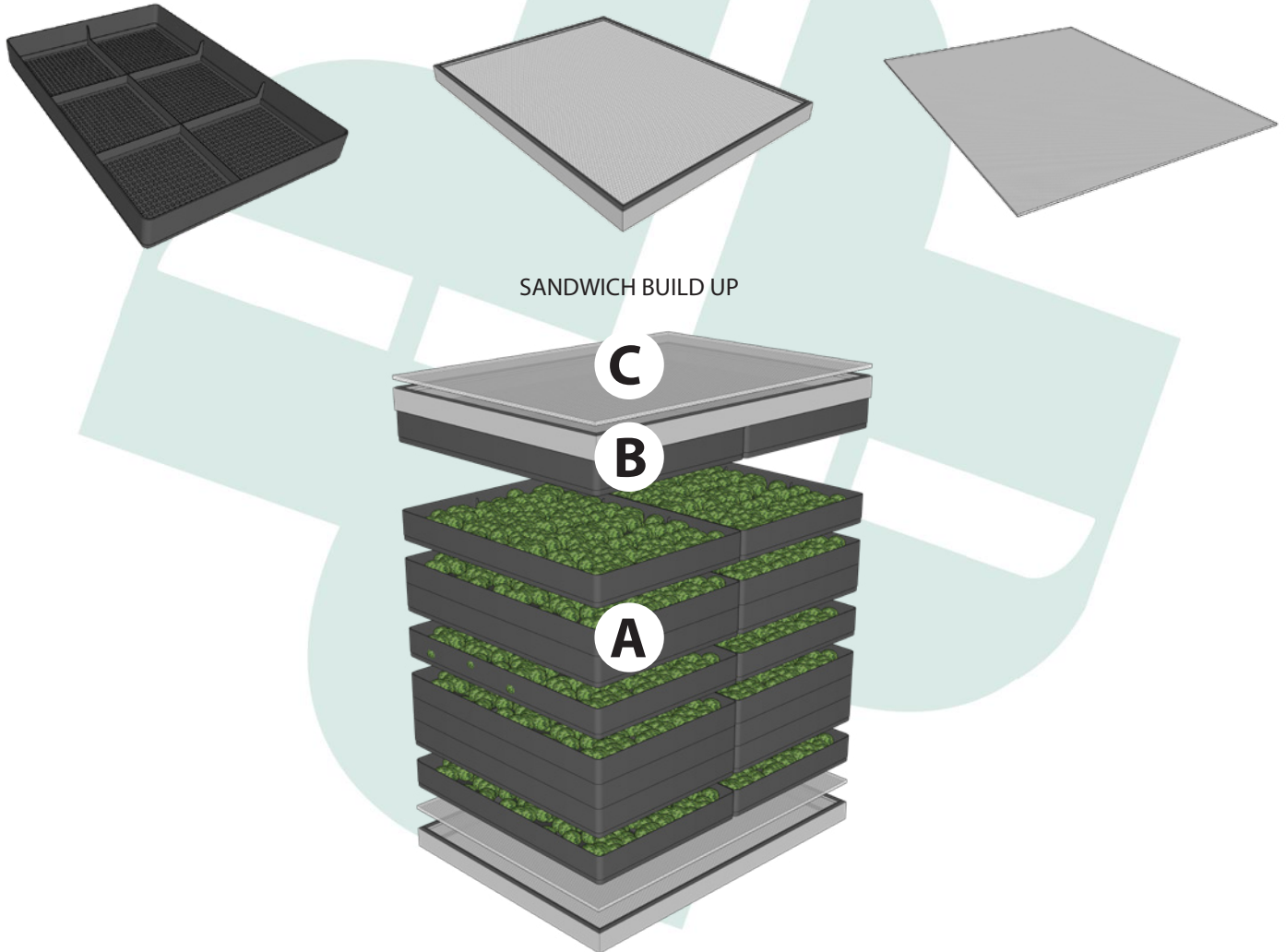
The foundation of our top-down drying systems is the Sandwich unit. It consists of two stacks of our Canna-trays and two types of filters on the bottom and on top. Altogether, this creates an airtight unit which is placed in our various systems. The Canna-trays can be filled with wet trimmed or bucked flowers.

Buildup of the sandwich-unit

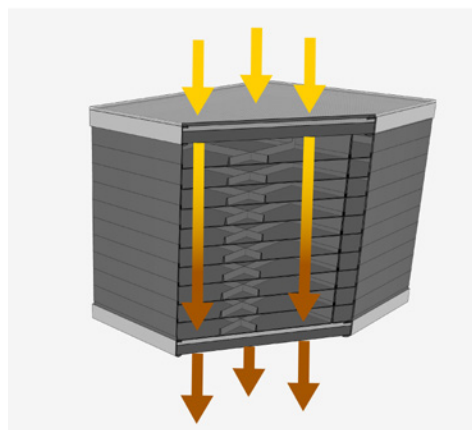
A: Canna-Trays (page 5)

B: HEPA Filter (page 6)

C: Filter Pad (page 6)



TOP-DOWN VENTILATION



For our hang drying solutions,
go to page 17

A Canna-Tray is where the cannabis is placed after harvest. Each tray is divided into six low compartments preventing the cannabis from moving around and to make sure all the cannabis is evenly dried.

A tray is made of an anti-static ABS thermoplastic compound. The Anti-static component prevents the plant material from sticking to the tray.

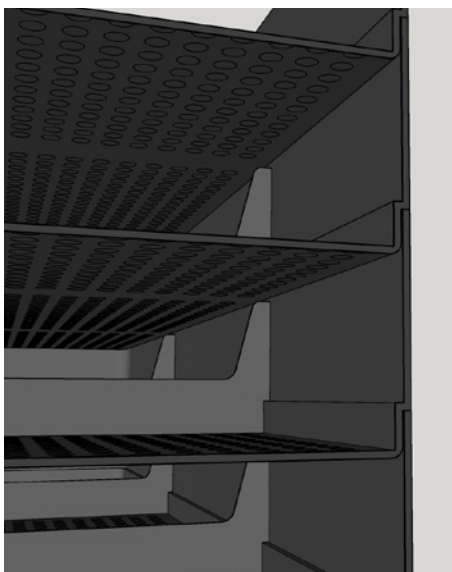
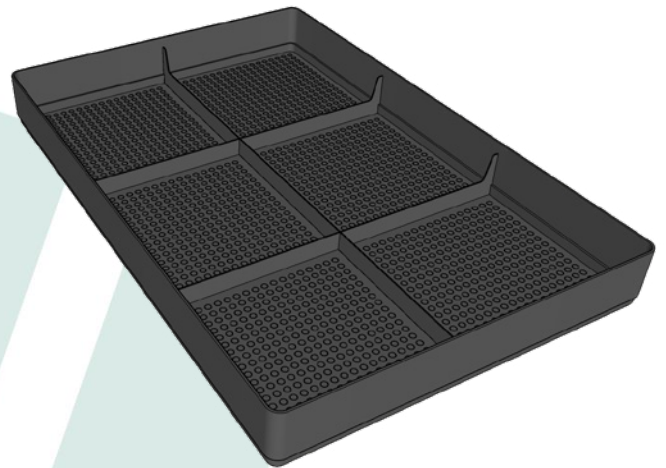
Each tray has 1944 round holes of 6 mm (0.24-inch diameter) in the bottom of the tray. The holes ensure a continuous and equal top-down flow of controlled and cleaned process air throughout the duration of the drying (& curing) process.

Properties of the Canna-Tray:

- Anti-static ABS (acrylonitrile-butadiene-styrene) thermoplastic
- Resistant against chemicals like thinned acid, alkaline, oils, fat and aliphatic hydrocarbons
- Food Safe
- Lego is made of ABS as well
- Easily stackable with exact precision and simplicity
- Very strong
- Easy cleanable
- 100% recyclable
- Size 600x400x60 mm (23.5 x 15.5 x 2.4")
- Maximum service temperature 77 °C

How is the Canna-Tray used?

A Canna-Tray is filled with wet or dry trimmed cannabis. The Canna-Tray is placed on a HEPA filter and is the middle layer of the sandwich-unit. A maximum of 29 layers of trays can be placed in the sandwich unit.



B. HEPA FILTER & C. FILTER PAD

To get the best clean air conditions --- eliminating all risks: viruses, pests etc. --- www.Cannabis-Drying.com uses two types of filters: a HEPA (nano) filter and a filter pad.

The **High Efficiency Particulate Air** (HEPA) filter is made of micro-glass fiber sheet, meeting the highest European and U.S. standards. HEPA filters are used for specific clean rooms in hospitals, pharmaceutical, nuclear and micro-electronics industry. So they are suitable for medical and recreational cannabis. It filters out:

- Bacteria
- Mold
- Dust
- Pests
- Mildew
- Pollen
- Exhaust gases
- Hair

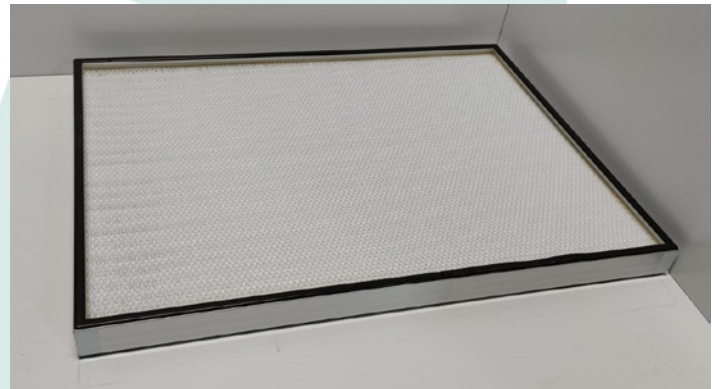
Properties of a HEPA filters:

- Consistent high performance.
- Large filter surface.
- Low energy consumption, thanks to smart pleating methods.
- Proven quality, in cleanroom environments in hospitals, the pharmaceutical industry and the micro-electronics industry.
- Filtering category ePM1 according to ISO 16890 (the world standard) .
- Filters particulate matter of $0,3 \leq x \leq 1$ micron.
- 1 micron = $1\mu = 0.001\text{mm}$.
- Filtering category H13, filtering ePM1 99.95%.
- Size of the frame: 600x800x45 mm (23.5 x 31 x 1.8").
- Robust extruded aluminum frame



The ePM1 HEPA Filters of Cannabis-Drying.com filter particulate matter of less than 1 micron = $1\mu = 0.001\text{mm}$.

Filters all air before it reaches the cannabis and when the air leaves the cannabis. This ensures the cannabis remains in a clean room environment.



How the HEPA Filter is used?

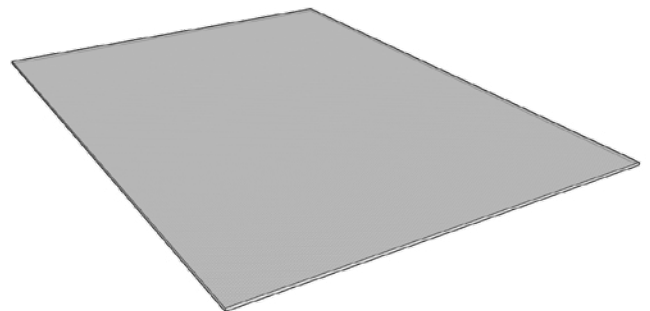
- As the bottom layer of a sandwich unit.
- Perfectly designed to stack 2 piles of Canna-Trays on it.
- As the top layer of a sandwich unit.

C. FILTER PAD

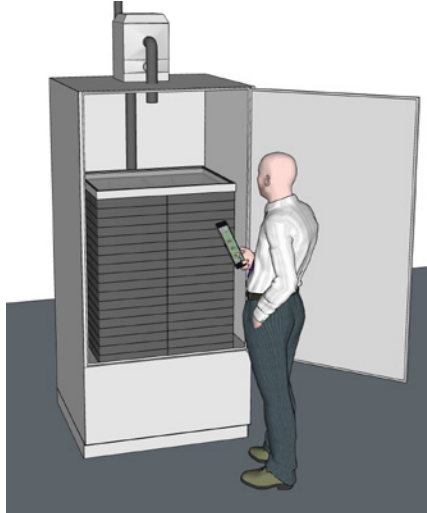
Each Sandwich has 2 layers of filter pads. Both are right above each HEPA filter layer (bottom & on top)

How the Filter Pad is used?

At the bottom, any plant material that fall off the cannabis during the drying (& curing) process are collected. On the top of the sandwich, it protects the HEPA filters against dust.



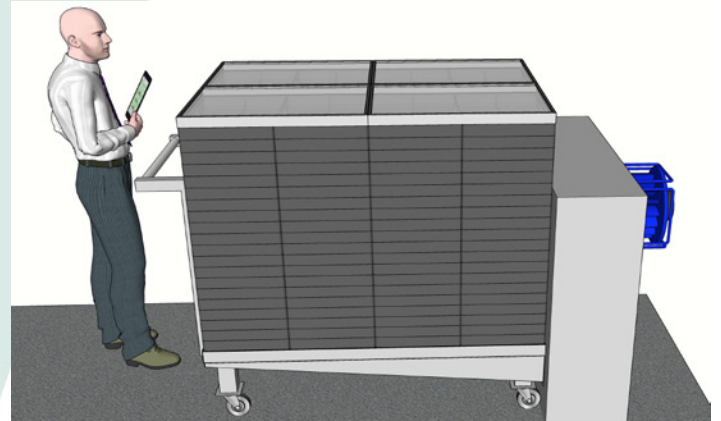
Cannabis-Drying has a drying solution for small and large quantities



DRYING CABINET

- 1 or 2 sandwich units
- 8kg / 18 lbs. or 16kg / 35lbs. dried cannabis
- For individual drying of smaller quantities

For medical & recreational cannabis.
(Pages 9-10)



MOBILE DRYING PALLET

- 4 sandwich units
- 32kg / 71lbs. dried cannabis
- For existing and new drying rooms
- A large number of Mobile Drying Pallets can be placed in a drying room

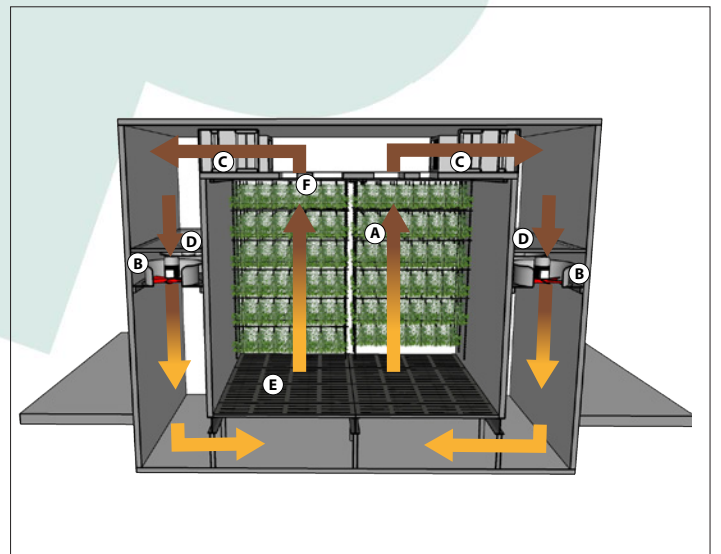
For medical & recreational cannabis.
(Pages 11-12)



DRYING CELL

- 4 sandwich units on one Pallet-Sandwich
- 1-4 Pallet-sandwiches in one cell
- 75-92kg / 165-203 lbs. dried cannabis (depends on configuration)
- Optimal logistics

For recreational cannabis.
(Pages 13-16)



HANG DRYING CELL

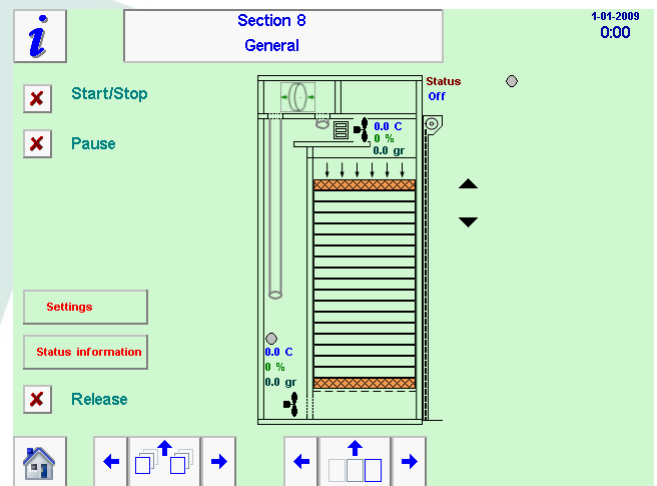
- Modular system, from 20kg or more
- the products goes straight from the growing room to the drying room

For medical & recreational cannabis
(pages 17-18)

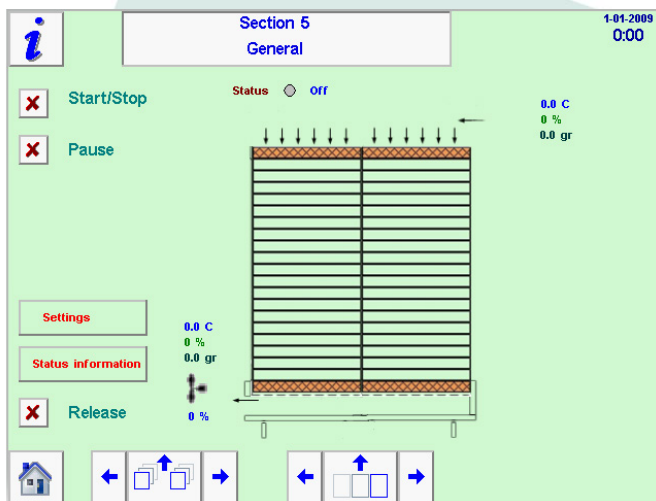
The ABC-processor allows you to dry according to your preferences. The system consists of a processor and a software program. It is operated by a touch panel on the installation itself or by a (remote) mobile device. To arrange drying automatically; the temperature, humidity levels and amount of airflow can be set in multiple pre-sets on the ABC-processor. Each of our installations have a different version of the ABC-software. Every version is very visual and informative, making the configurations understandable and easy to operate.

ABC-processor for the drying cabinet:

- As air is extracted top-down through the product, the desired airflow is controlled by adjusting the RPM of the ventilators.
- 2 sensors to measure temperature and absolute humidity. The first sensor measures the ingoing air, the second sensor measures the outgoing air.



An ABC controller page of a drying cabinet



An ABC controller page of a Mobile Drying Pallet

ABC-processor for the Mobile Drying Pallets:

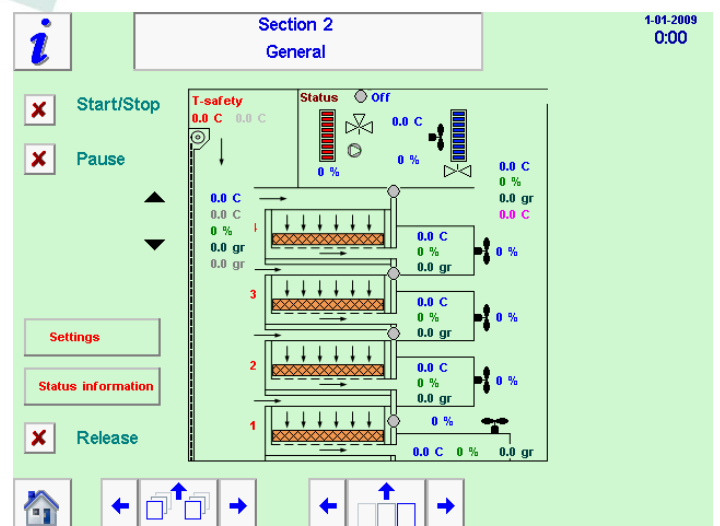
- The amount of airflow can be controlled for each Mobile Drying Pallet individually; more moisture means more airflow.
- each Mobile Drying Pallets has it's own sensor to measure the temperature and absolute humidity of the outgoing air. Multiple sensors (amount varies for the size of the drying room) to measure the temperature and humidity of the ingoing air.

Note:

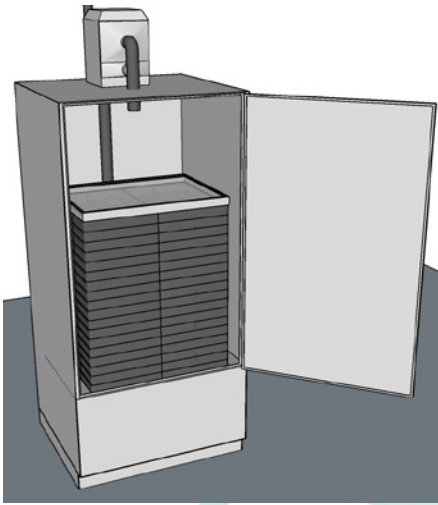
Mobile Drying Pallets can be used in existing and new drying rooms. The ABC-processor can be implemented in an existing drying room.

ABC-processor for the drying cell:

- The ventilators are set at the desired amount of airflow, these can vary between the units.
- One sensor measures the temperature and absolute humidity of the air that enters the units.
- Multiple sensors measure the temperature and absolute humidity of the outgoing air of the units.
- One sensor measures the air before it goes through the condenser and heater.



An ABC controller page of a drying cell



Single Drying Cabinet

A Drying Cabinet is used to dry small volumes of cannabis buds of around 8 kg / 18 lbs. of dried cannabis per drying cycle. Drying cabinets with a double capacity are available.

- The temperature and humidity are controlled with the ABC-processor.
- The amount of airflow can be easily set.
- Suitable for R&D purposes.

It is possible to control the drying cabinets with a control panel on the drying cabinets or with the ABC software on your phone, tablet or computer.

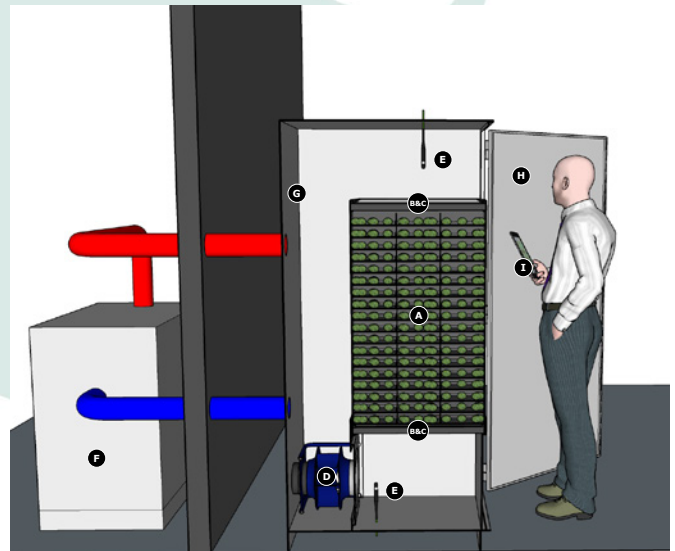
It is possible to produce a triple cabinet as well.



Double Drying Cabinet

Components of a full drying cabinet:

	Single Drying Cabinet (8kg)	Double Drying Cabinet (16kg)
A.	40 Canna-Trays	80 Canna-Trays
B.	2 HEPA-Filters	4 HEPA-filters
C.	2 filter pads	4 filter pads
D.	Ventilator	2 Ventilators
E.	2 Temperature + humidity sensors	3 Temperature + humidity sensors
F.	Conditioning Unit	Conditioning Unit
G.	Isolation panels	Isolation panels
H.	Airtight door	Airtight door
I.	ABC-software on a tablet	ABC-software on a tablet
Size of the drying Cabinet	985x905x1950mm (L39xW36xH77")	1970x905x1950mm (L78xW36xH77")



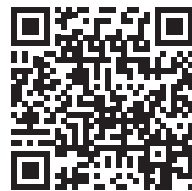
Transparent view of a Drying Cabinet



How is the drying cabinet used?

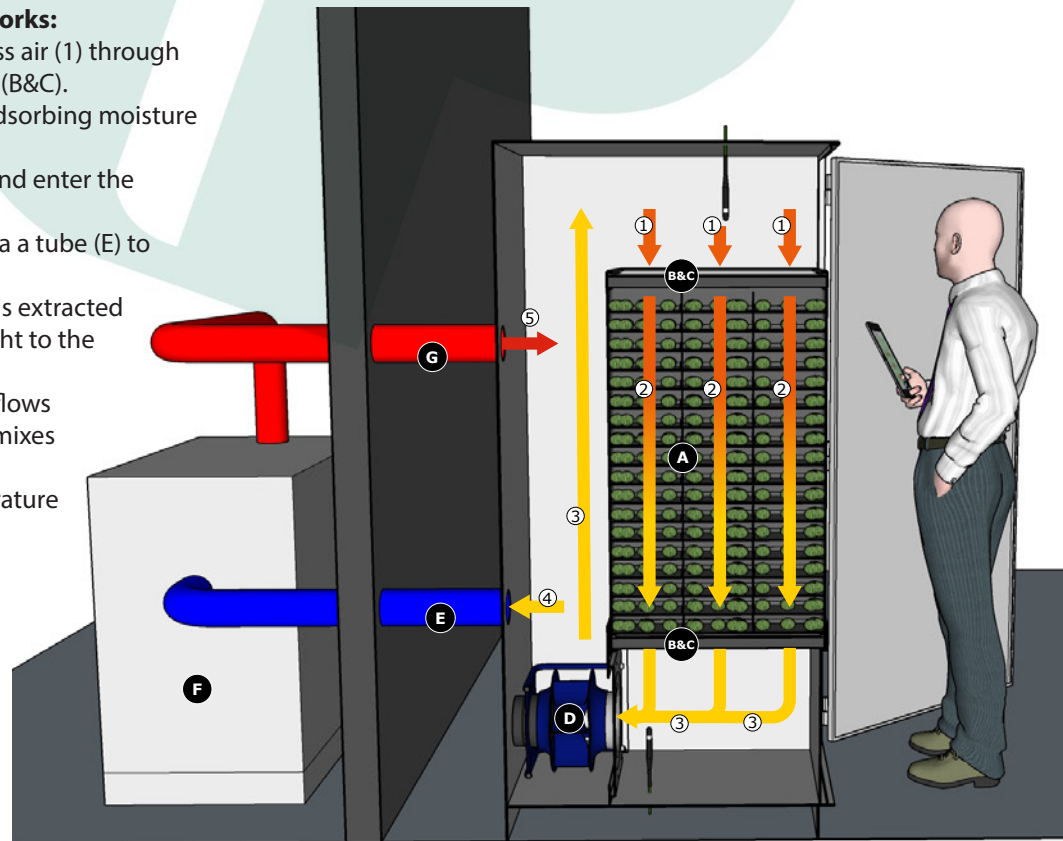
- The operator opens the door.
- 2 piles of Canna-Trays are placed on the HEPA filters & filter pads. When the piles are full, the HEPA-filters are placed on the piles of Canna-Trays.
- The manager closes the door.
- The drying process is activated and managed on the software of the remote device or on the touch panel

Watch a video of how it works here



Drying cabinet – Details of how it works:

- The ventilator (D) sucks the process air (1) through a set of Canna-Trays (A) and filters (B&C).
- The air (2) dries the cannabis by adsorbing moisture from the cannabis.
- A part of this air (3) will circulate and enter the Canna-Trays (A) again.
- Another part of this air (4) flows via a tube (E) to the conditioning unit (F).
- In the conditioning unit (F) water is extracted by adsorption and the air is brought to the desired temperature.
- Via tube (G) this controlled air (5) flows back into the drying cabinet and mixes with the process air (3).
- The air (1) is at the desired temperature again and can start drying the cannabis further.



A Mobile Drying Pallet is used to dry large volumes of cannabis buds in an existing or new drying room.

The main difference with traditional cannabis drying methods is that the air is sucked top-down through the product by a ventilator, instead of blown over the product. Top-down drying results in an evenly dried end-product.

For medical and recreational cannabis.

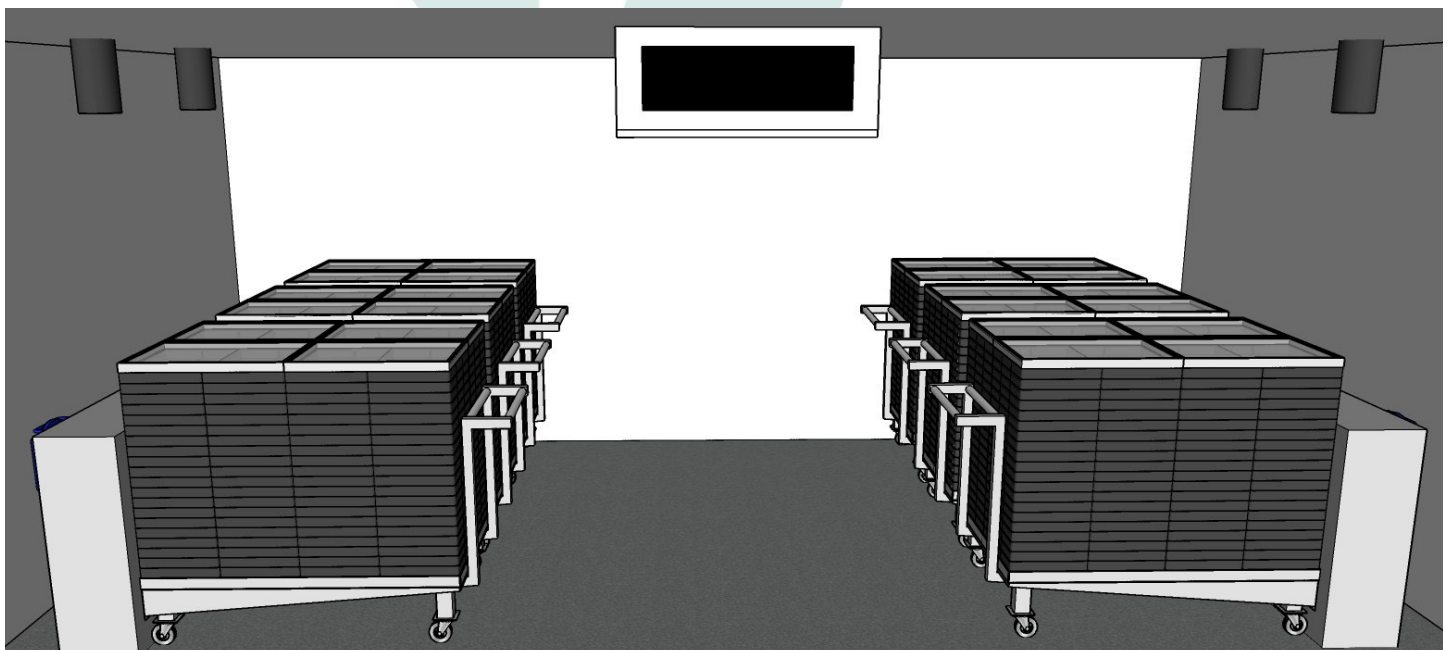
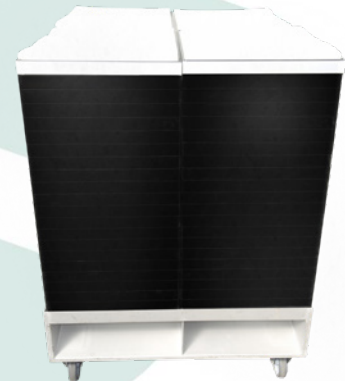
In the Mobile Drying Pallet, 4 sandwich units are placed. The Mobile Drying Pallet is designed in such way that the air is evenly distributed over the different piles of Canna-Trays.

One Mobile Drying Pallet is capable of drying 32kg (71lbs) per drying cycle. A drying room can be filled with 1 to 12 Mobile Drying Pallets.

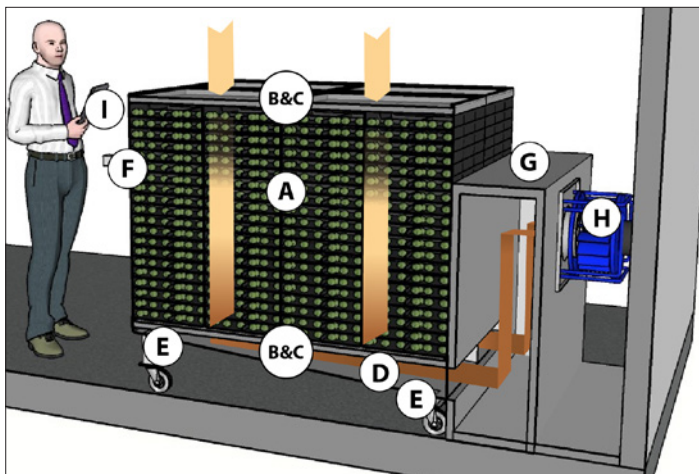


How is the Mobile Drying Pallet filled?

- 4 filters are placed at the bottom of the mobile ventilation pallet.
- 8 piles of Canna-Trays are placed on the filters.
- 4 filters are placed on the piles of Canna-Trays.



Overview of a drying room filled with Mobile Drying Pallets



Transparent view of the Mobile Drying Pallet

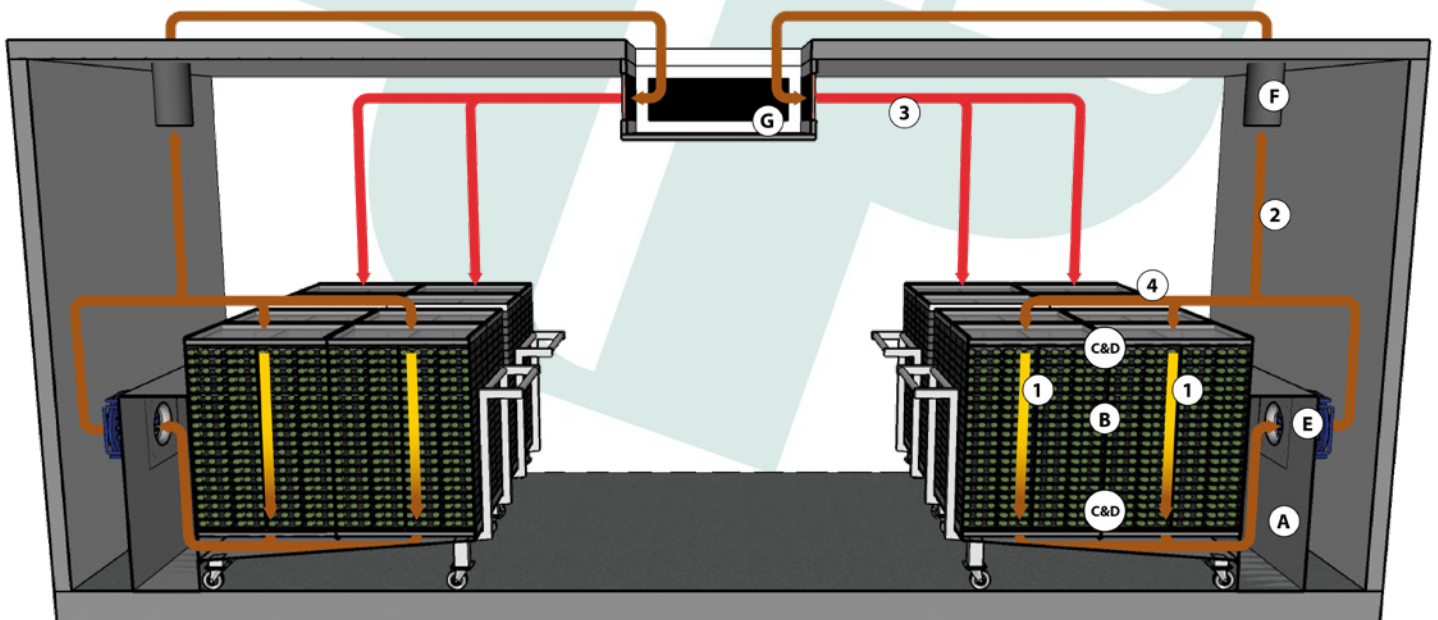
Components of a full Mobile Drying Pallet (32 kg of dried cannabis)

- A. 160 Canna-Trays
- B. 8 HEPA-filters
- C. 8 filter pads
- D. Ventilation Pallet
- E. 4 wheels with brakes
- F. Handgrip
- G. Plenum
- H. Ventilator (placed in the plenum in the wall)
- I. ABC software on a tablet

Size of the Mobile Drying Pallet (filled with sandwich units):
L1610 x W1210 x H1600 mm (L 63.4 x W 47.6 x H 63")

It is possible to make the pallets custom made to your demands (different sizes).

Watch a video of how it works here



Mobile Drying Pallet – Details of how it works:

- The Mobile Drying Pallet is placed against a plenum (A).
- The ventilator in the plenum (E) sucks the process air (1) through the Mobile Drying Pallets.
- The process air (1) goes through the filters (C&D) and the Canna-Trays (B) where it dries the cannabis by adsorbing moisture.
- A part of the wet process air (2) goes through the tubes (F) towards the conditioning unit (G).
- In the conditioning unit (G), water is extracted from the air by condensation and then reheated to the right temperature.
- This conditioned air (3) mixes with the circulating process air (4).
- The mixed air is at the desired temperature and humidity again and enters Mobile Drying Pallets (1).

The Drying Cell is made for easy handling of large quantities of cannabis.



Properties of the drying cell

- Central in the Drying cell operation is a forklift carrying a Pallet-sandwich.
- Capable of drying 75-92kg (165 – 203 lbs.) of dried product per drying cycle.
- Easily scalable.
- Easily cleaned.
- Temperature can reach 14 to 28°C (57-82 °F).
- Humidity levels can be controlled from 30-90%.
- Airflow is set to a desired volume (m3/ft3).

For recreational cannabis.

Drying cells can be used for curing as well.

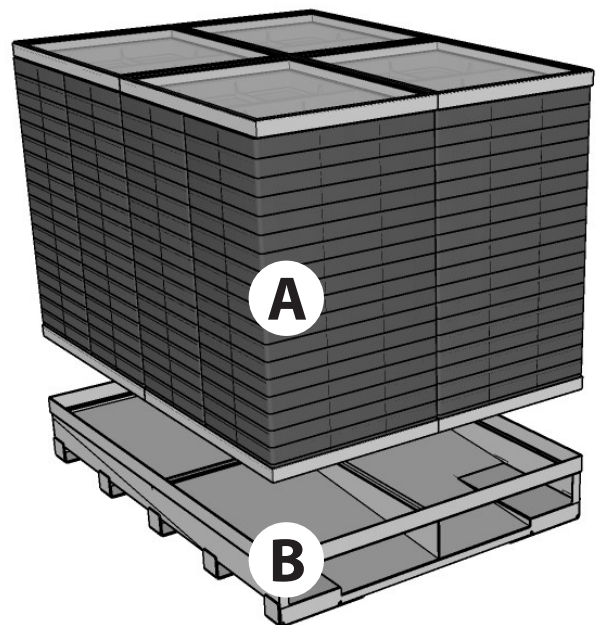
Watch a video of how it works here



In the drying cells, the sandwich units are stacked on a ventilation pallet. The pallet with 4 sandwich units is called a *Pallet-sandwich*.

Components of a Pallet-sandwich:

- A. 4 sandwich units with 24-58 Canna-Trays
- B. Ventilation pallet



Overview of a Pallet-sandwich

Ventilation Pallet

A Pallet-sandwich is built on the Ventilation Pallet. The Ventilation Pallet ensures easy, safe & efficient transport with a forklift.

Properties of the Ventilation Pallet:

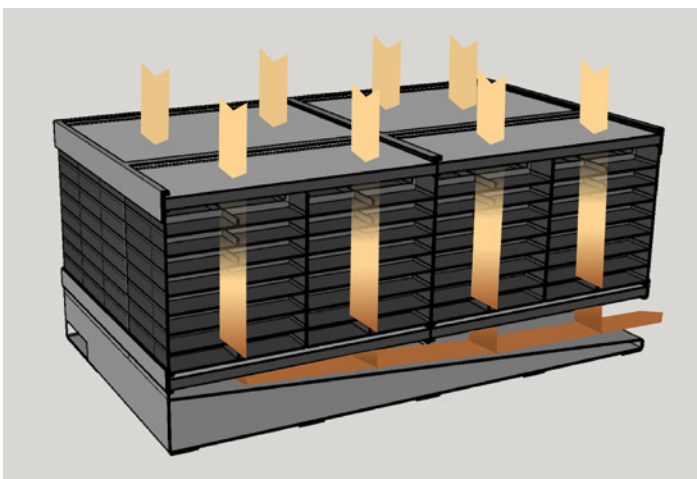
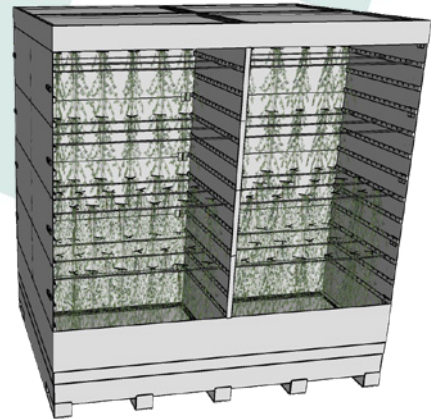
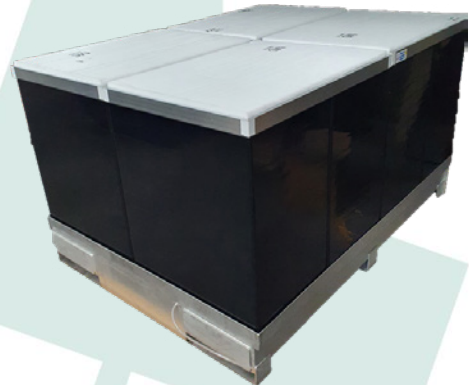
- Made of Stainless steel.
- Front has 2 openings for easy & efficient transport by a forklift.
- The back has big openings for process air to leave the Pallet-sandwich.
- The top has a frame for 4 HEPA filters.
- Easy to clean.
- Size: 1600x 1220x 240 mm (65 x 48 x 9.5").
- Net weight: 110 kg (240 lbs.).

How is the Ventilation Pallet used?

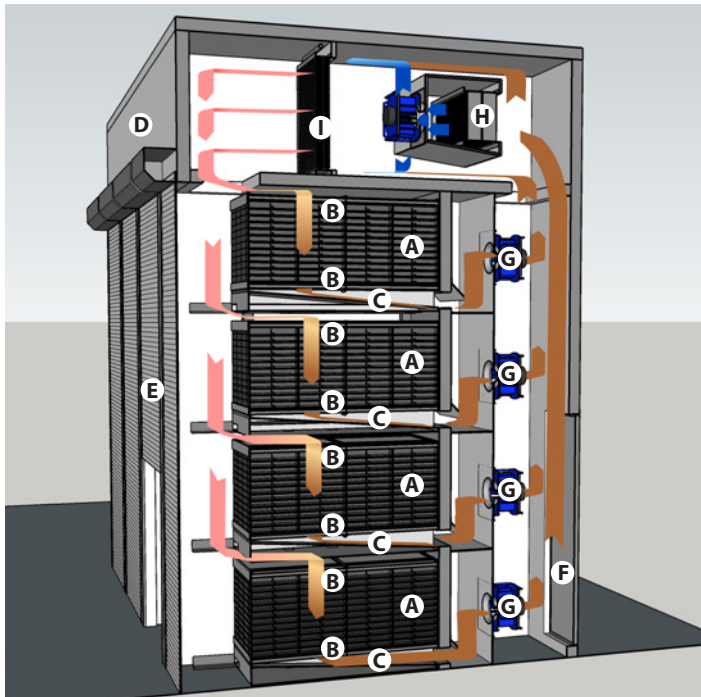
- 4 HEPA filters with filter pads are placed in the Ventilation Pallet.
- 8 piles of Canna-Trays are placed on the filters.
- 4 HEPA filters with filter pads are placed on the piles of Canna-Trays. The filled Ventilation Pallet is called a Pallet-sandwich.
- A forklift places the Ventilation Pallet in the drying cell.

Hang drying unit for the Ventilation Pallets

- A hang drying unit can be placed on the Ventilation Pallets.
- The racks in the hang drying unit are adjustable so they can fit branches or whole cannabis plants.
- The ventilation pallet with hang drying unit can be placed in the same drying cell as the ventilation pallet with Canna-Trays.



In a Pallet-sandwich, the filtered air goes top-down through the cannabis in a dark and clean environment. Drying in this manner preserves the aromas, terpenes and cannabinoids.

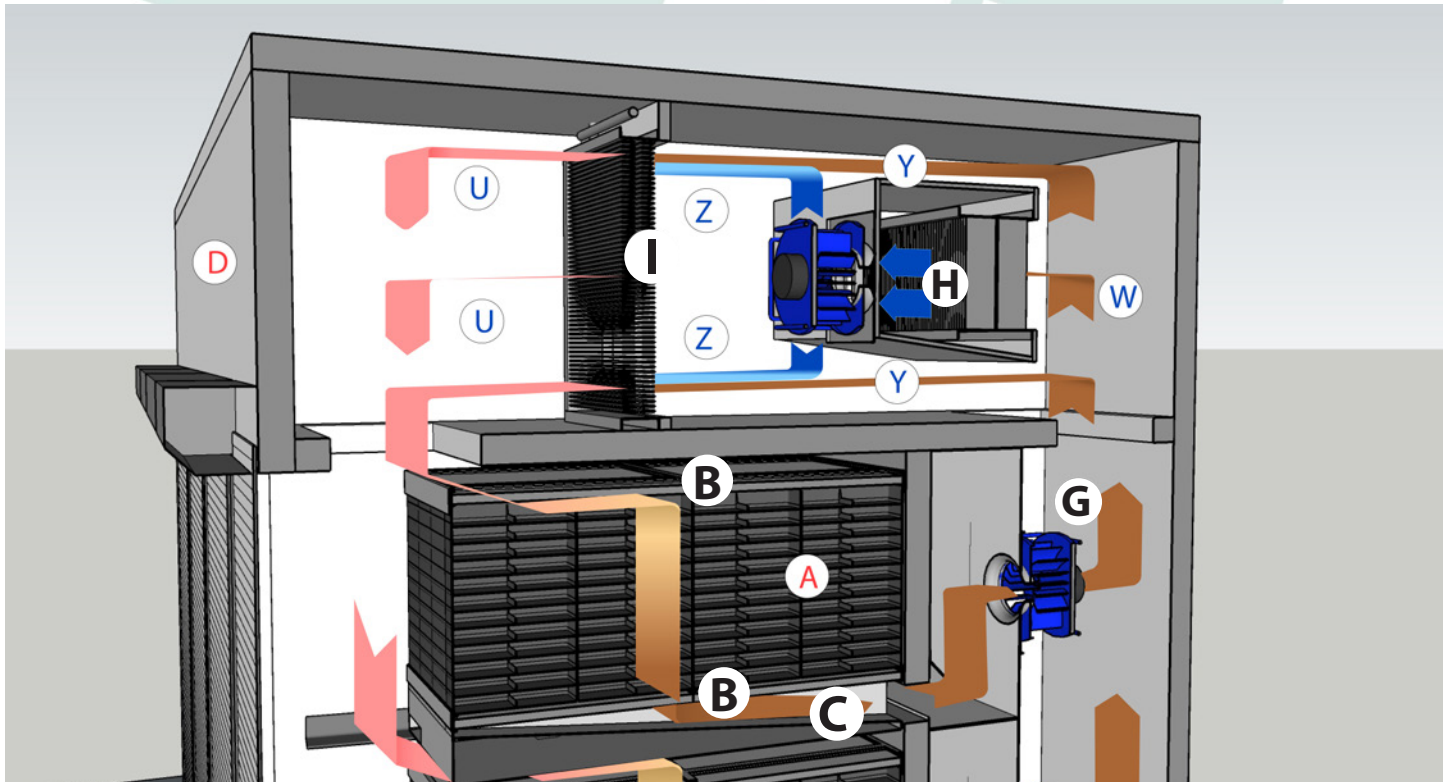


Main parts of a clean Drying cell:

- A-B-C: Pallet-sandwich consisting of Canna-Trays (A), Filters (B) and a ventilation pallet(C)
- D: Isolation panels
- E: Roller shutter
- F: Maintenance door
- G: ventilators
- H: Condenser
- I: Heater

How is the Drying cell used?

- A forklift driver, moving a Pallet-sandwich, approaches the drying cell.
- On the ABC software the driver remotely (on a tablet) opens the roller shutter. Automatically, all devices in the drying cell turn off immediately.
- The driver places the Pallet-sandwich in an empty space.
- On the tablet, the driver closes the roller shutter of the drying cell. Automatically, all devices in the drying cell turn on.
- The manager controls the process from his/hers device (mobile phone, tablet, PC or screen on the switchboard).



The Drying cell – Details of How it Works:

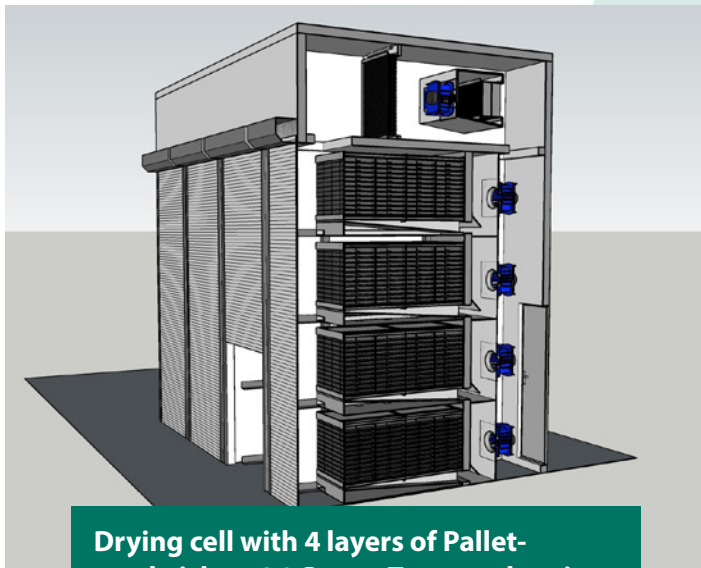
- The ventilator (G) sucks the process air (U) through the Canna-Trays (A), filters (B) and ventilation pallet (C).
- The air dries the cannabis and the absolute humidity of the air increases.
- A part of the wet process air (W) flows through the condensation unit (H).
- In the condensation unit (H), the air cools down and water condensates.
- The cooler air (Z) blends with the process air (Y).
- The blended air goes through the heater (I) where the air is again brought to the desired temperature.

CONFIGURING YOUR OWN DRYING CELL

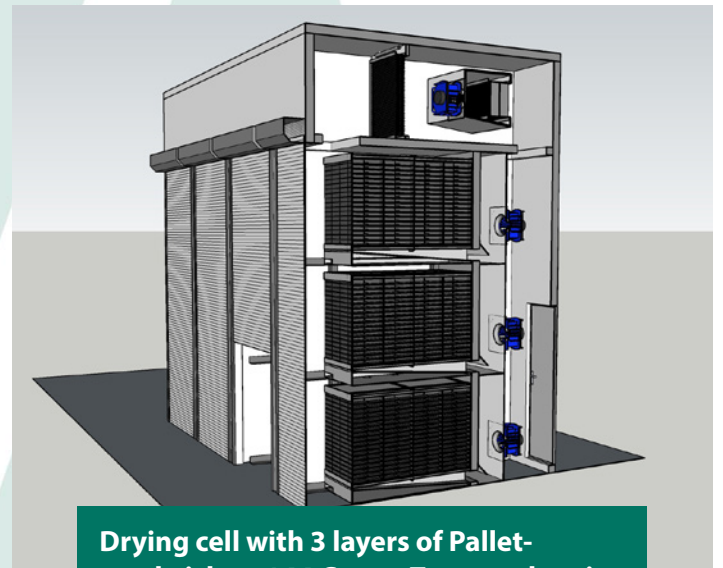
The size of the Drying cell depends on your needs. The standard configuration is 5.24 meters (17.2 ft) high, 3.56 meters (11.7 ft) deep and 1.73 (5.7 ft) meters wide. The standard size is suitable for two to four Pallet-sandwiches.

A configuration with two Pallet-sandwiches has the highest capacity.

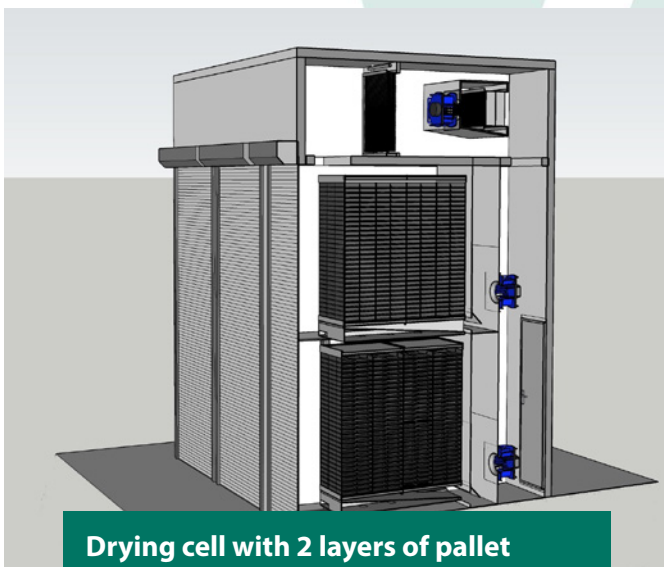
A configuration with four Pallet-sandwiches has a higher flexibility for your business operation.



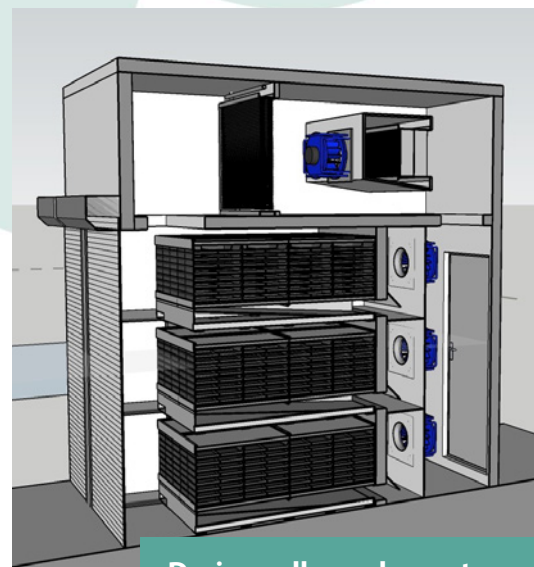
**Drying cell with 4 layers of Pallet-sandwiches. 96 Canna-Trays each unit
Total = 384 Canna-Trays per drying cell**



**Drying cell with 3 layers of Pallet-sandwiches. 144 Canna-Trays each unit
Total = 432 Canna-Trays per drying cell**



**Drying cell with 2 layers of pallet sandwiches. 232 Canna-Trays each unit.
Total = 464 Canna-Trays per drying cell**



Drying cells can be custom made in a variety of sizes. The amount of Pallet-sandwiches can vary from 1 to 4.

To supply the demand of the entire market, we developed hang drying solutions as well. Some growers prefer hang drying, so they can start the drying process directly after harvest.

To have an optimal aeration through the plants, we use a **Bottom-up** airflow. The plant is conic, and this airflow forces the air to really go through the plants, instead of bend of and go besides the plants. Whereas a laminal airflow will seek the path of least resistance, and will result in wet spots.

The hang drying cell can be filled in multiple ways:



The hang drying cell can be filled with drying racks.

It is important to completely fill the drying room, to prevent air pockets.

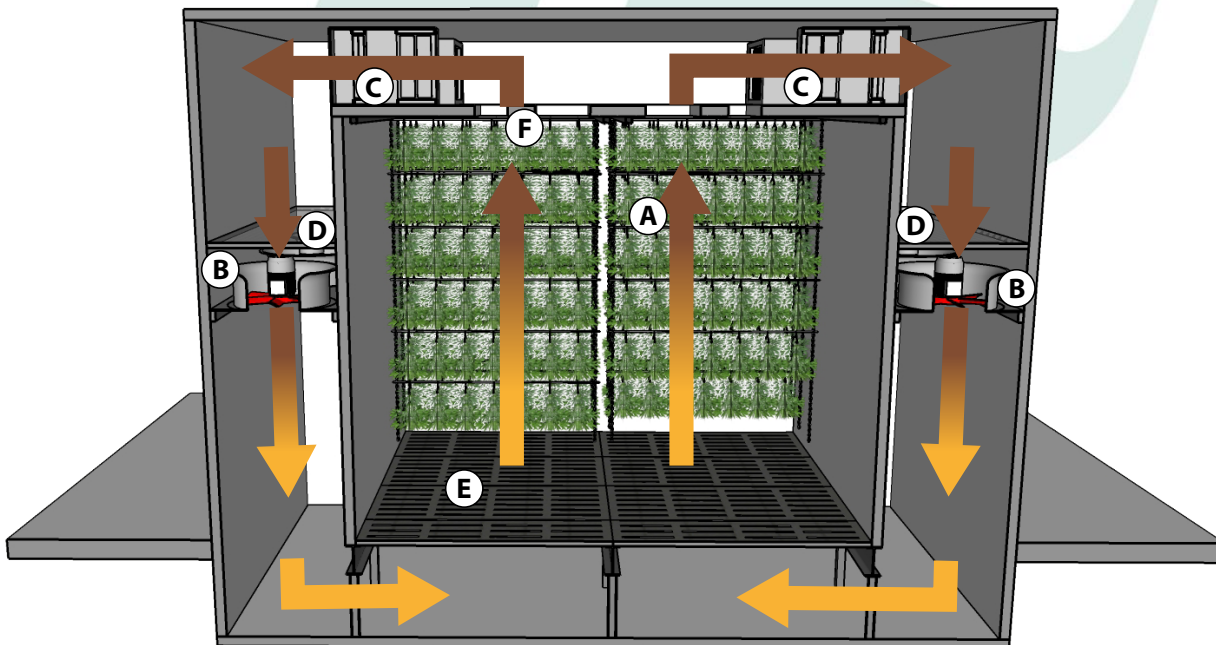
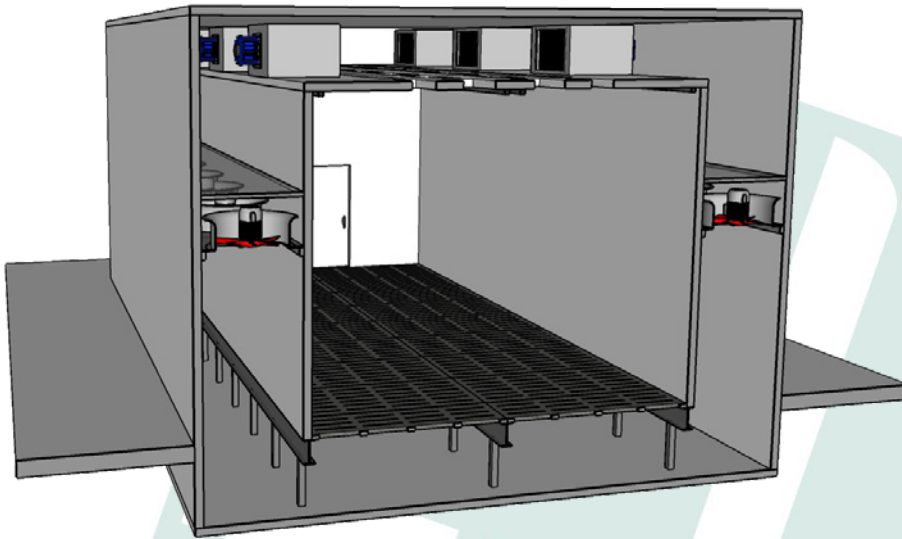
The other possibility is to fill the hang drying cell with these bars.

Harvesting is done on the bars and the bars are lifted into the drying cell. In this manner the plants can be hung higher, giving a larger quantity per square meter.



Components of the hang drying cell:

- A. Bars (or racks) with hanging plants
- B. Ventilators
- C. Conditioning unit
- D. Filters
- E. Perforated floor
- F. Perforated ceiling



Hang Drying Cell – Details of how it works:

- The bars (or the drying racks) are placed in the hang drying cell (A).
- The ventilator (B) sucks the air Bottom-up through the hanging plants.
- In the conditioning unit (C) water is extracted from the air by condensation and later reheated.
- A layer of filters (D) is placed on both sides of the hang drying cell, to filter out all dust, pollen, mold, mildew and a part of the viruses.
- To evenly divide the air a perforated floor (E) and ceiling (F) are placed in the hang drying cell.

Canna-tray washers

After each drying cycle the Canna-Trays have to be properly cleaned. To erase 100% of the plant material of the trays, we offer a tray washer with an alkaline cleaner. The Canna-Tray washers are modular tunnel washers. They can also be used to clean other equipment from the growing facility such as pots and harvest trays. Cannabis-drying.com offers three different washers that vary based on capacity of trays per hour: The Canna-tray washer 150, 350, and 550.

To reduce operating costs the machines apply numerous features to minimize the water- and power consumption. The washing water is collected, filtered and reused to minimize usage of water, chemicals and heating energy. Furthermore, the washers can be equipped with a wide range of options to extend the functionality of machine Cannabis-drying.com is happy to advise you in detail how to get the best machine for your application.

Canna-tray washer 150



Dimensions:

Capacity	Up to 150 crates/h
Length	1.500 mm
Width	900 mm
Height	1.400 mm
Weight	500 kg

Dimensions:

Capacity	400 - 600 crates/h
Length	3900 mm
Width	1400 mm
Height	1500 mm
Weight	800 kg
Footprint	5900 x 2400 mm

Canna-tray washer 350



Canna-tray washer 550



Dimensions:

Capacity	600 - 900 crates/h
Length	5900 mm
Width	1400 mm
Height	1500 mm
Weight	1200 kg
Footprint	7900 x 2400 mm

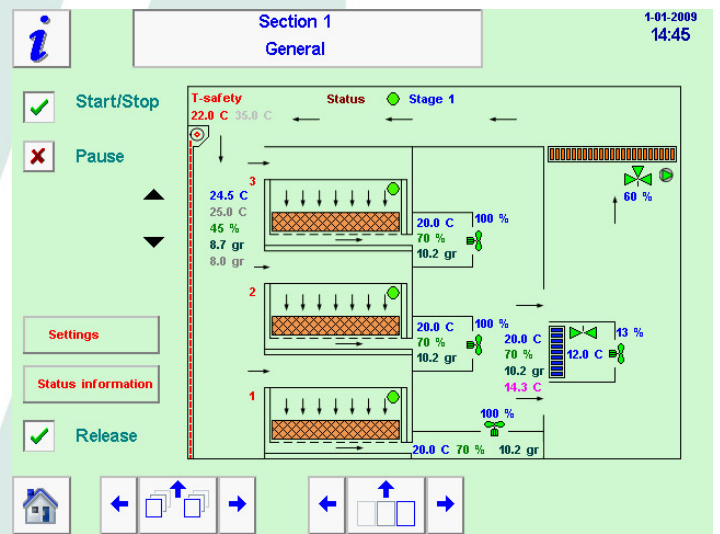
Other post-drying equipment

The next step after drying in the post-harvest process of cannabis is bucking and trimming. Cannabis-Drying.com has grown an extensive network of suppliers over the past years. If you need advice, we can help you find the supplier of bucking and trimming machinery that suits the need of your product.

Our promise to you – is also our mission-: labor costs ↓ Quality ↑ Control ↑.

Our ABC-processor is made and maintained in-house. It holds over 35 years of proven innovations. It is implemented in various agricultural sectors worldwide - to control the HVAC. Our ABC-processor and software enable convenient management of the drying and curing process to your preferences. It gives detailed visual information about real-time measurements and actual settings. Colours are used to clarify this. The possibility of storing multiple presets with specific drying configurations is very useful when processing multiple strains. You can easily adjust the process on a touch panel on the system itself or by using a connected device (tablet, laptop, mobile phone, or PC) from a remote location:

- Adjust the temperature, absolute/relative humidity and airflow.
- Flexibility: You can create presets for various processes and special strains.
- Our technical engineering department can produce tailor-made processes, if needed.
- MCM module: control the ABC-processor from a tablet or mobile phone (optional).
- PC software: operate the ABC-processor from your PC.
- Real-time and immediate support is given by our own support engineers via your pc with TeamViewer.
- SMS alert (optional).



Example of a preset cross section with 3 Pallet-sandwiches

Curing during drying with the Auto-Pause-function:

A special feature has been implemented in the ABC-processor to make curing during drying possible: The Auto-Pause function.

The Auto-Pause function allows the user to set a 'Vent time' and a 'Pause time' for each stage of the drying process. The Vent time is the time that the ventilator is running and the Pause time is the time that the ventilator is not running and there is no airflow. In the moment where there is no airflow, the moisture content in the cannabis comes in equilibrium with itself, making curing simultaneous with the drying process.

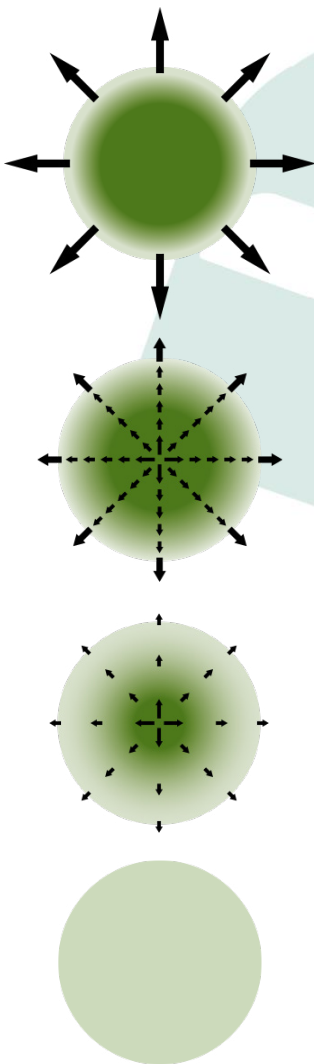
	Stage1	Stage 2	Stage 3	Stage 4	Stage 5
Auto-pause on	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vent time	0:00	0:00	1:50	1:20	0:30
Pause time	0:00	0:00	0:25	0:30	1:50

Example of a preset in the Auto-Pause menu

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Active stage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Stage on/off	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Target AH	8.3 gr	9.3 gr	8.3 gr	7.6 gr	7.3 gr
Calc. target RH	53 %	62 %	56 %	53 %	53 %
Delta AH	0.0 gr	0.0 gr	0.0 gr	0.0 gr	0.0 gr
Target T°	21.0 C	20.5 C	20.0 C	19.5 C	19.0 C
Min. airflow	5 %	5 %	5 %	5 %	5 %
Max. airflow	50 %	35 %	30 %	25 %	20 %
Min. period	10 day	2.0 day	2.0 day	2.0 day	3.0 day
Max. period	10 day	2.0 day	2.0 day	2.0 day	3.0 day
Duration	10 day	2.0 day	2.0 day	2.0 day	3.0 day
Total period stage 1.5	239.1 hrs				

Example of a preset with 5 stages

In nature, everything wants to gain balance. When the humidity of an agricultural product like cannabis is high and the humidity of the airflow passing through it is low, the cannabis will release its moisture to the air. Thus, creating an equilibrium of moisture. When an equilibrium has been reached, moisture exchange is stopped. At this point, the cannabis will not dry any further, no matter how much airflow (of that same quality) passes through the cannabis. So, with the correct temperature and RH (and therefore, the correct Absolute Humidity, AH), the cannabis will never become too dry. Consider that the drying of cannabis should not take place too fast. Our ABC-processor allows you to set 5 stages of drying. In each stage, a different AH, airflow and temperature can be set. The next stage will only start after a set time and after reaching a set AH. The ABC drying process is what we call 'Optimal', meaning it occurs gradually and at a certain speed.



1ST STAGE

In the 1st stage of drying, it is important to remove the moisture on the outer layers of the cannabis as quickly as possible. This prevents problems with mold and bacteria.

With the ABC processor, this is realized by:

- setting a large difference in moisture content (high delta AH) between the air and the cannabis for a short time.
- Creating an intensive air flow.

The 1st stage ends after a set amount of time.

2ND STAGE

The first stage leaves a kind of disbalance of moisture between outer and deeper layers of the bud. The 2nd stage restores the balance between them, moisture in the core of the bud comes in equilibrium with the dryer outer layer. The outer layer wants to come in equilibrium with the air. To ensure this process does not go too fast, A lower Delta-AH must be set in the ABC processor. The drying happens in a controlled and gradual manner. The moisture is adsorbed by less but more than enough air. The whole unit with cannabis is dried top-down under control with an intensive airflow, evenly distributed over all layers.

3RD STAGE

Only after a set minimum time is passed and a set AH is reached, the 3rd stage starts. In the 3rd stage, the cannabis continues to be dried gradually by setting a lower Delta-AH.

4TH STAGE

To maintain the gradual drying, the Delta-AH is set even lower in stage 4.

5TH STAGE

In the 5th stage, the AH in the air reaches the desired equilibrium with the cannabis. It is the stabilizing stage.

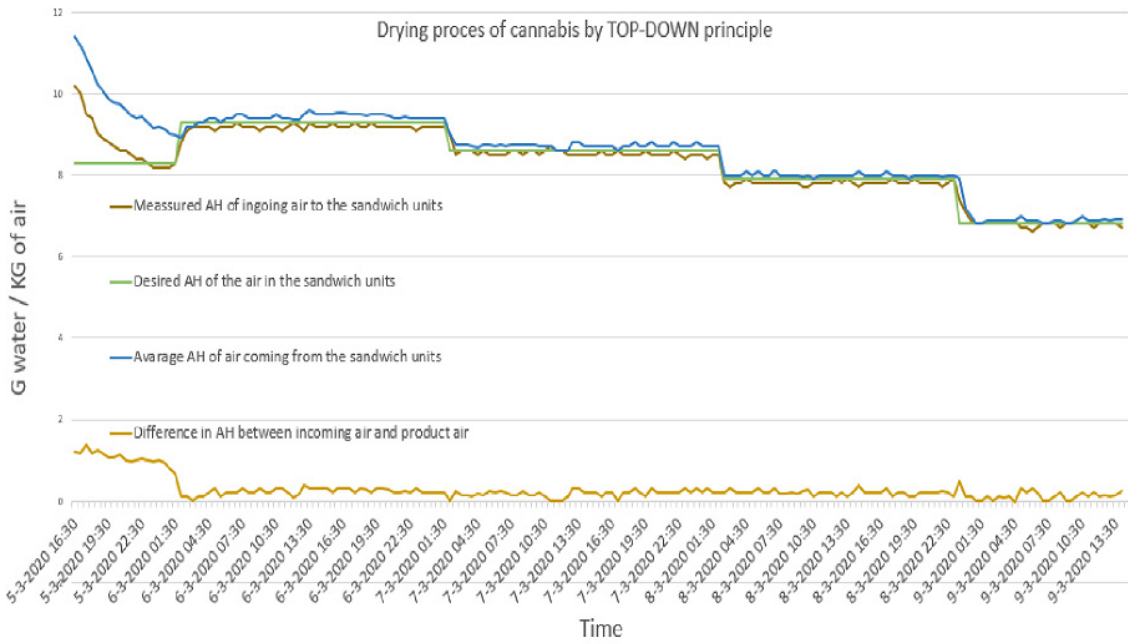
In this stage, the air quantity decreases more and more to a minimum airflow. The moisture content of the cannabis is then completely stable in the buds and over all layers. At this point the Delta-AH is 0. The 5th stage ends after a set time.

CONCLUSION

- Due to the intensive airflow, the product dries evenly over all layers of the drying installation.
- Because a desired lower moisture content is set in each stage, the cannabis is gradually dried.
- A minimum drying time is set at each stage so that the cannabis has enough time to transform from CBGA to THCA, CBDA and CBCA.
- With the correct moisture content of the air per stage, the product never becomes too dry and dries evenly over all drying layers.
- With an optimal drying process, mold and bacteria are reduced to a minimum.
- The ABC processor enables this controlled drying in 5 stages:
 - o 1st stage: removes sufficient moisture to prevent the development of mold and bacteria.
 - o 2nd to 4th stage: gradually drying the product to a lower moisture content per stage
 - o 5th stage: achieving the desired moisture content of the cannabis.
 - o Each stage employs a set time, so that drying takes place in the desired time.

Example of our drying process in five stages.

The graph shows that the desired AH is reached at an early part of each stage. The AH of the air coming from the sandwich units quickly reaches a point where it is similar to the AH of the ingoing air to the sandwich units. The fact that the AH of the ingoing air is the same as the outgoing air means that the cannabis does not dry any further. If the cannabis does not dry any further, the cannabis in the trays on the top will have the same moisture content as the cannabis in the trays at the bottom.



Graph 1: Drying process in 5 stages

Absolute humidity of air

This table shows the Absolute (real) Moist content/Humidity (AH) in the air, related to the different temperatures (T°) and relative Humidity (RH) of the air. AH is in grams per kg air (about 1.1-1.2m³). On top (horizontal) the different RH values. And on the left and right column (vertical) you see the temperature.

Moisture will stay in the air because moisture molecules can move. They can move thanks to the energy in the air. Warm air has more energy and therefore can hold more moisture than cold air. When the air is saturated with moisture (AH maximum) we say; we have 100% moisture content. A lower AH is reported in relation to the maximum moisture content; so 40% RH means that the air contains out of 40% moisture related to the maximum moisture content at that Temperature. Also: Air with 30% RH at 20°C (68°F) is much drier than Air with 30% at 30°C (86°F) (4,4 to 8.15 gr/kg air). Only RH gives no information of the moisture content when temperature is not mentioned!

Absolute moist content of air (g water / kg air)		% Relative Humidity (RH)																			
T° C/F	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	T° C/F
15° 59.0°	0,53	1,06	1,60	2,13	2,66	3,19	3,72	4,26	4,79	5,32	5,85	6,38	6,92	7,45	7,98	8,51	9,04	9,58	10,11	10,64	15° 59.0°
16° 60.8°	0,57	1,14	1,70	2,27	2,84	3,41	3,98	4,54	5,11	5,68	6,25	6,82	7,38	7,95	8,52	9,09	9,66	10,22	10,79	11,36	16° 60.8°
17° 62.6°	0,61	1,21	1,82	2,42	3,03	3,64	4,24	4,85	5,45	6,06	6,67	7,27	7,88	8,48	9,09	9,70	10,30	10,91	11,51	12,12	17° 62.6°
18° 64.4°	0,65	1,29	1,94	2,58	3,23	3,88	4,52	5,17	5,81	6,46	7,11	7,75	8,40	9,04	9,69	10,34	10,98	11,63	12,27	12,92	18° 64.4°
19° 66.2°	0,69	1,38	2,07	2,76	3,45	4,13	4,82	5,51	6,20	6,89	7,58	8,27	8,96	9,65	10,34	11,02	11,71	12,40	13,09	13,78	19° 66.2°
20° 68.0°	0,73	1,47	2,20	2,94	3,67	4,40	5,14	5,87	6,61	7,34	8,07	8,81	9,54	10,28	11,01	11,74	12,48	13,21	13,95	14,68	20° 68.0°
21° 69.8°	0,78	1,56	2,35	3,13	3,91	4,69	5,47	6,26	7,04	7,82	8,60	9,38	10,17	10,95	11,73	12,51	13,29	14,08	14,86	15,64	21° 69.8°
22° 71.6°	0,83	1,67	2,50	3,33	4,16	5,00	5,83	6,66	7,49	8,33	9,16	9,99	10,82	11,66	12,49	13,32	14,15	14,99	15,82	16,65	22° 71.6°
23° 73.4°	0,89	1,77	2,66	3,55	4,43	5,32	6,21	7,09	7,98	8,87	9,75	10,64	11,52	12,41	13,30	14,18	15,07	15,96	16,84	17,73	23° 73.4°
24° 75.2°	0,94	1,89	2,83	3,77	4,72	5,66	6,60	7,54	8,49	9,43	10,37	11,32	12,26	13,20	14,15	15,09	16,03	16,97	17,92	18,86	24° 75.2°
25° 77.0°	1,00	2,01	3,01	4,01	5,02	6,02	7,02	8,02	9,03	10,03	11,03	12,04	13,04	14,04	15,05	16,05	17,05	18,05	19,06	20,06	25° 77.0°
T° C/F	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	T° C/F

The drying process of cannabis is one of the most important processes in the production of cannabis, but it is also the most overlooked process in the cannabis industry. Most facilities still dry their cannabis by hangings stems of the plant upside down in a drying room. Cannabis-drying developed a new drying system where the bucked or wet trimmed flowers of the cannabis are placed in Canna-Trays and a ventilator sucks the conditioned air Top-down through the Canna-Trays. Results with regard to the terpene and cannabinoid content of the flowers that were dried with Cannabis-Drying.com's system were compared to flowers that were dried by hanging the stems upside down. Both systems were placed in the same drying room, so the temperature and humidity of both drying methods were the same, making the results comparable. Very few differences in cannabinoid and terpene content were found. The bucked flowers in the Canna-Trays consume 89% less space than the hanging plants in the drying racks.



Cannabis-Drying testing unit in a drying cell with hanging plants

Component	Cannabis Strain 1		Cannabis Strain 2		Cannabis Strain 3	
	CD	H	CD	H	CD	H
alpha-Bisabolol	0.12	0.13	0.10	0.10	0.10	0.10
trans-Caryophyllene	0.22	0.23	0.53	0.53	0.29	0.29
alpha-Cedrene	0.05	0.05	0.12	0.12	0.08	0.08
Endo-fenchyl Alcohol	0.05	0.05	-	-	0.06	0.06
alpha-Humulene	0.09	0.09	0.33	0.33	0.11	0.11
Limonene	0.23	0.20	0.15	0.16	0.36	0.34
Linalool	0.08	0.08	0.10	0.10	0.17	0.17
beta-Myrcene	-	-	0.11	0.12	0.20	0.20
alpha-Pinene	-	-	-	-	0.04	0.03
beta-Pinene	0.04	0.03	0.03	0.03	0.06	0.06
Terpineol	-	-	-	-	0.07	0.07
Total Terpenes	0.95	0.91	1.53	1.54	1.54	1.52
THC-A	12.62	12.64	22.19	22.70	19.12	19.57
delta 9-THC	0.14	0.18	0.16	0.18	0.38	0.41
CBG-A	0.72	0.75	1.38	1.49	0.44	0.45
CBG	-	-	0.14	0.15	-	-
Total THC	11.20	11.27	19.60	20.08	17.14	17.56
Total Cannabinoids	13.56	13.63	23.87	24.51	20.02	20.51

Table 1: Overview of the cannabinoid and Terpene contents of cannabis-drying test unit (CD) and hang drying (H) per cannabis strain. On the left side, all the components present are listed. The numbers show the amount of the component present in percentages (%). Orange boxes indicate significant differences between the amounts per component between treatments within one cannabis strain.

Benefits of Top-Down Canna-Tray drying

- Each part of the cannabis receives the same amount of airflow, resulting in an evenly dried end-product.
- No wet spots will show on the cannabis, preventing the activation of mold and bacteria.
- Top-Down Canna-Tray drying is 85-95% more space-efficient than hang drying.
- Cannabis-drying systems for Top-Down Canna-Tray drying offer a precise control of temperature, humidity and airflow - allowing the user to perfectionate the drying process.
- Cannabis-drying ABC-processor allows the user to dry in 3 to 15 days, depending on the chosen settings.



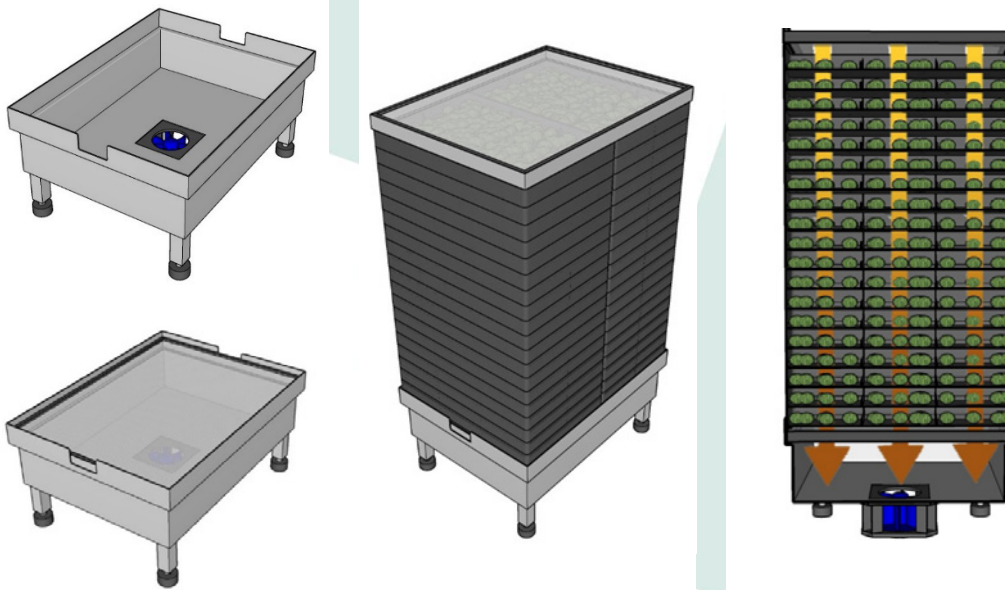
Read the full report here

The Test unit is designed to introduce the top-down drying method of cannabis to cultivators. This method is the result of 45 years of experience in drying technology. It consists of a table with a built-in ventilator on which a sandwich unit can be placed. The ventilator creates a top-down airflow that sucks the process air through the cannabis buds. The Test unit can dry small volumes of cannabis buds of around 7 kg / 15 lbs using only half a square meter of space. The filters ensure that the ventilator nor the cleanroom are polluted by particles of the cannabis.

By putting the Test unit in your existing dry room, you can simulate the research we did comparing top-down drying with hang drying.



Test unit filled with buds



How is the Test unit used?

- The Test unit is put in an existing drying room and the ventilator is plugged in.
- A HEPA filter is put on the table, followed by two stacks of Canna-trays, and topped by another HEPA filter, creating a Sandwich unit.
- Once the ventilator is turned on, it creates a top-down airflow evenly divided through the cannabis buds.

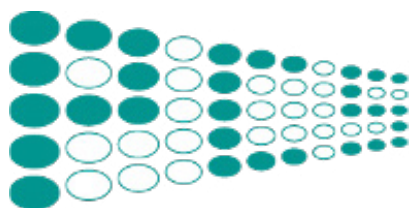
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TOP-DOWN DRYING INSTALLATIONS



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**CONTACT US TO
ORDER YOUR TEST UNIT**



PHARMACEUTICAL CONSULTANCY SERVICES

PCS is our partner in EU GMP compliance for medicinal cannabis. Founded in 1990, PCS has helped the international pharmaceutical industry with GMP certification and GMP training.

What PCS does

If you want to export medicinal cannabis products to the EU, you have to implement the EU GMP. PCS knows the EU GMP inside out. Using their experience in the pharmaceutical- and medicinal cannabis industries, they implement the EU GMP in your organization, from A to Z.

PCS trains your people, writes your documents, and ensures that your process is under control. You will achieve consistent and medicinal quality. The core business of PCS is to transfer their GMP knowledge and experience to your team.

When PCS is done, you will be EU GMP compliant and ready for inspection. The inspection is the last step before you can export your products to the European Union.

Why they do it

Many medicinal cannabis companies struggle with regulatory compliance; GMP is almost always synonymous with “Great Masses of Paper” or “Get More People.” Helping the medicinal cannabis industry achieve the EU GMP efficiently is what PCS does. PCS has been helping companies worldwide, from vaccines, biologicals, OSD, and liquid capsules to medicinal cannabis.

Expertise

The PCS team consists of ex-EU GMP government inspectors, cultivation experts, pharmacists, and engineers who have built hundreds of factories and facilities.

PCS & Cannabis-Drying

PCS has helped Cannabis-Drying to get their products to a GMP-level. The products from Cannabis-Drying come with all the necessary SOP's for cleaning and operating the drying installations.

Want to know more?

Please email us at info@pcs-nl.com,
get more information at www.pcs-nl.com
or speak to us directly by dialing +31(0)182 503 280.



Legal Cannabis Coalition

The Legal Cannabis Coalition (LCC) is a unique collaboration between companies from the fields of plant cultivation, lab research and regulatory affairs. All members of the LCC are located in the Netherlands. Each of the members is an expert in his own market, ranging from building greenhouses and installing cannabis drying systems, to lab testing and registration of a new medicine. The members of the LCC gained their expertise in the general markets of plant cultivation and medicine, but in recent years they have increasingly become involved with the world of legal cannabis. Combining these strengths and experiences, the LCC offers a reliable and experienced one-stop shop for all your medicinal cannabis questions.

Why The Netherlands?

- One of the first national medicinal cannabis programs in the world, since 2001.
- Many research opportunities under cannabis licenses for scientific purpose.
- A hotspot of horticultural companies with a known reputation for quality products.
- Source of many famous cannabis genetics used worldwide today.
- Major innovator in the recreational cannabis space, thanks to the Dutch coffeeshop system.
- Famous for its agricultural innovations and second largest exporter of fruits and vegetables in the world.
- A strong culture of companies working together to solve larger problems.
- A country where IP is strongly respected. Your knowledge is yours; we just help.

Legal Cannabis Coalition & Cannabis-Drying

Cannabis-Drying joined the LCC to learn from everybody's expertise and to add their drying solutions to the one-stop shop that the LCC is offering. The LCC also organizes many events wherein Cannabis-Drying will participate.

For more information, visit www.legalcannabiscoalition.nl
Send an email to info@lcco.nl or call directly at +31 71 7370278



Delphy (Team Cannabis)

Delphy stands for Worldwide Expertise for Food & Flowers. Through this, Delphy is the top company in knowledge and expertise for our partners in plant sectors, worldwide.

Since the authorization of Cannabis in Canada and parts of the United States in 2018, Delphy has been involved in Cannabis cultivation. Universities in Canada and the United States were the first to reach out to Delphy because knowledge and practical information for this relatively new crop was needed.

To respond to this still increasing demand, Delphy has set up a Cannabis team. Delphy "Team Cannabis" consists of twelve people, who all have their own specialism regarding Cannabis cultivation. Delphy Team Cannabis comprises of specialists for propagation, crop protection, climate control, fertilization, business plans and technical specialists.

Disciplines: Research at our own indoor facility, turn-key projects, training, education and advice on cultivation strategy.

Delphy & Cannabis-Drying

To further perfectionate the drying process, Cannabis-Drying is doing research at Delphy's indoor facility. Different drying schedules are tested and will be perfectionated.

Want to get in touch? Feel free to contact us <https://delphy.nl/en/teams/team-cannabis/>.

Contact

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E: Cannabis@delphy.nl

CannaBREEZE

CannaBREEZE

CannaBREEZE is your trusted partner for cannabis cultivation and processing. From plant to medicine, we provide expert guidance and solutions to help you succeed in the industry. Compliant with EU-GMP guidelines, our consulting, expertise, and equipment cover every aspect of cultivation, processing, and packaging. Whether you're starting or improving, we're here to meet your requirements and maximize your potential in the growing cannabis market.

Cultivation: Tailored Solutions for Your Needs

Our cultivation solutions include HVAC, grow lights, genetics, greenhouse or indoor proposals, cultivation tables, grow mediums such as coco and rockwool, nutrients, and fertigation systems. We work closely with our clients to create customized cultivation solutions.

Post-Harvest: Ensuring Quality and Compliance

We provide a variety of post-harvest solutions, including drying, curing, trimming, sorting, decontamination, milling, extraction, winterization and dewaxing, solvent recovery, distillation, centrifugal partition chromatography (CPC), analytical instruments, and packaging. Our goal is to ensure that your final products meet the highest standards of quality and safety.

Unlock Your Potential with CannaBREEZE

Partner with CannaBREEZE today and unlock the full potential of your cannabis cultivation and processing operations. Contact us to learn more about how we can support your cannabis cultivation and processing needs.

Part of BREEZE COLLECTIVE

CannaBREEZE is part of BREEZE COLLECTIVE, which encompasses four branches—AgroBREEZE, CannaBREEZE, PharmaBREEZE, and TechBREEZE—to better assist cultivators, pharmaceutical companies, and research entities.

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CannaBREEZE, Thoukididou 8 164 52 – Athens Argiroupoli – Greece



Cultivators, Vertify, and the World Horti Center have committed themselves to a 4 year research and representation program on cannabis cultivation for medicinal purposes.

Together with our dedicated partners, who have strong experience in the medicinal cannabis market, **we have created a world-class set up for medicinal cannabis cultivation.** The goal with this is to further increase our knowledge in the cultivation and post-harvest processing of (medicinal) cannabis grown for compounds. **The facility is equipped with top of the line hardware** allowing us to conduct research according to the highest standards and newest techniques ensuring **repeatable and reliable results.** Trimming and drying takes place in-house, whilst all analysis are done by an accredited lab. This all allows us **control from seed to end product.**

At the World Horti Center we have set up an interactive pavilion about medicinal cannabis. The pavilion gives the visitor historical background about the changing societal role the plant has played and showcases modern applications of medicinal cannabis. **The pavilion is developed for education and promotion purposes and visited by tens of thousands of business visitors each year.**

WHO ARE THE PARTNERS?

We are proud to be partnered with front runners in the medicinal cannabis industry. Companies with years of experience in the legal cannabis industry. Their products cover all aspects of cultivation including; plant material, light, substrate, fertilizer, climate control, IPM, fogging, screening, track and trace software, trimming, drying, and analysis.



Sounds interesting? Contact us!

Does our project sound interesting to you? Do you want more information, would you like to visit the pavilion or participate in the research project?

Feel free to reach out to us:
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