



SOARING WITH THE HEMP MARKET

Gentle, reliable and fast drying of cannabis buds – What seemed to be a freakish idea only a couple of years ago hemp for medical purposes has become a worldwide trend. The production of the green preparations, however, requires special processes and procedures. Particularly when it comes to the sensitive buds, drying and processing must be done with utmost care.



Better quality, higher reliability, lower power consumption by drying buds with the H01 Trolley Dryer

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Many countries have legalized the cultivation of hemp for medical purposes in recent years. Uruguay and Canada were the first to change their legislation in 2001. Many European countries, too, have meanwhile followed their example or are about to do so. The opening of this market, however, implies very special challenges to producers – they need to subject every phase of the production process

to high scrutiny to ensure proper quality. One of the most important pre-extraction process stages is bud drying.

Air for Drying

We are talking about the so-called heat pump based condensation drying method. Its success is based on two pillars. One is the use of a heat pump for highly efficient air dehumidification. A dehumidifica-

tion module generates extremely dry and thus unsaturated air. This air is subsequently passed over or through the product to be dried, in this case buds or other parts of the hemp plant. As the air supplied is very dry, it quickly absorbs the moisture present on the product. The now moisture-laden

* Contact to Harter: Tel. +49-8383-9223-0

air is returned to the dehumidification module to be stripped of the water it carries. The moisture condenses and the condensate is drained off the system. The cooled air is reheated and returned to the drying chamber in a closed loop. The drying cycle is thus independent of the climate and almost emission-free. Production and clean room environments are not affected. The drying temperatures range between 20 °C and 75 °C as required for the particular product or process. For cannabis buds, the drying temperature is even lower.

The second feature ensuring the success of this drying method is proper air routing. This is done by providing an air recirculation system customized for the specific process and/or product. Air, by nature, takes the path of least resistance. So, it must be forced to take the path right to the place where moisture is present. This way, the products are not only dried gently but also reliably and, above all, uniformly to desired residual humidity. It is only by the joint action of the two features – air dehumidification and air routing – that condensation drying may be fully effective.

Trolley Dryer Developed

A highly specialized producer of hemp bud extracts, the Swiss company AI Fame, learned about this drying method. To owner Daniele Schibano, the operation of the Harter technology seemed to be ideal for his application, for which he desperately needed a good solution. So, Daniele Schibano and Jochen Schumacher of Harter decided to develop, in a joint effort, a trolley dryer to meet the special requirements of hemp bud drying. The prototype manufactured by Harter was installed at the AI Fame site to run extensive series of tests. The findings relating to thermal lift and design were used to build today's model H01. This trolley dryer finally

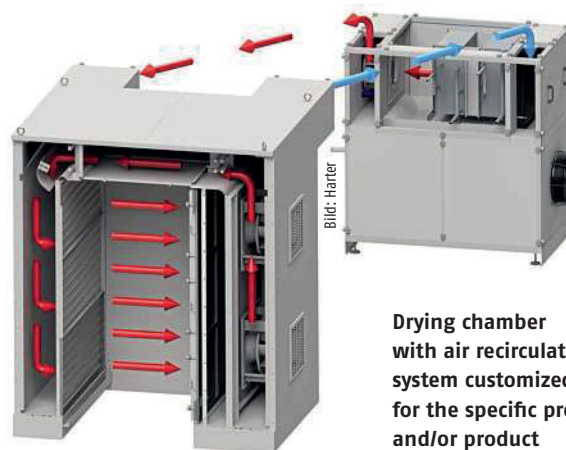
met Schibano's notion of uniform drying. The system ensures high quality and the retention of the extremely valuable ingredients.

Proper air routing is essential for ensuring uniform drying of the hemp buds in loose bulk form. Uniform drying could never be achieved with air passing through horizontally, which is the standard air routing. So Harter developed a special routing variant – air entering the chamber horizontally is diverted and forced to flow vertically through the pans. The dry air can thus absorb the moisture of the buds over the full width of the pans. The air leaves the chamber horizontally again.

The H01 Trolley Dryer meets hygienic design requirements, thus providing ease of cleaning and maintenance. All processes can be controlled, monitored – via remote maintenance if required – and validated. The dryer has an in-built smart control. It can be used to control the various programme steps such as drying, temperature equalization or humidification. Also, recipes can be stored and managed. User levels can be managed by allocating passwords.

Improved Quality

The Swiss cannabis expert Schibano views the Harter technology as an absolute first in the trade.



Drying chamber with air recirculation system customized for the specific process and/or product

Plus, the technology offers further benefits as demonstrated by this and other projects. Not only does it provide fast and gentle drying, it also improves the quality of the products significantly in terms of bioactivity, aroma and ingredients, which is due to drying in a closed circuit. The condensate may also be collected. Highest reliability of the drying process is ensured because the process parameters may be controlled and are constant. As a welcome side effect, the heat pump technology employed contributes to saving energy. Processors are also on the safe side when it comes to raise the throughput of the system because it may be enlarged in every direction. The trolley dryer may also become a building block of a process in conformance with GMP requirements.

DST

PharmaTEC-Tip

Learn about the possibilities for process development and tests at Harter – on the net at www.harter-gmbh.de

At one glance

FROM BUD TO DRY PREPARATION

- Drying period – 24 to 48 hours
- Residual humidity – may be selected as required for further processing
- Drying temperature – 15 °C to 40 °C
- Recirculation airflow rate – 2,000 to 11,000 m³/h

All process parameters are time, temperature or relative humidity controllable and may be stored as recipes.

The sensitive hemp buds require gently drying.

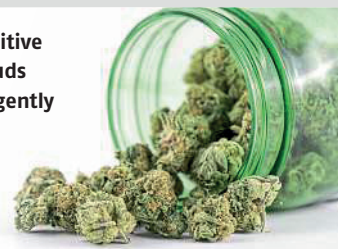


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