

HSCD SSD-SA 001 – The Revolution of Industrial FOOD DRYING

The patents, of which PIM is the exclusive owner, filed at UIBM and WIPO, relate to the creation of innovative systems for production processes suitable for drying any type of organic and food products and compounds of both vegetal and animal origin, intended both as intact product and as processing waste of the resulting product (waste) deriving from the relevant industrial food processing.

HSCD is a revolutionary technological patent that makes traditional drying methods obsolete. With HSCD (High Speed Cold Dryer) aims **to respond to the urgent needs of a highly energy-intensive sector such as the agri-food sector** , still conditioned by the use of fossil fuels and forced to require long drying times, if not to the detriment of the quality of the processed product.

HSCD makes it possible to **dry products in a significantly shorter time than traditional systems (for some products even a tenth of the time)** , with a clear impact on **production capacity** , as well as with a **reduction in overall dimensions**, with **recovery of the extracted water** , with management and control systems in line with **Industry 5.0 requirements**. As well as compliant with the provisions of the European **NZIA Regulation (NET-ZERO INDUSTRY ACT)**

In fact, in HSCD, thanks to the use of non-ionising electromagnetic waves in vacuum, the evaporation processes are activated instantly, acting specifically only on the product, without wasting energy for preheating the surrounding structures, process fluids and air, as happens instead with traditional systems.

Energy yield always higher than 90% is obtained, compared to the standards of current systems which have a yield that almost always stands at 35/40%, with **an energy saving of over 3 times compared to traditional systems**.

In addition to this, thanks to the vacuum, drying can take place at **temperatures lower than 35° (100% RAW food quality)** thus maintaining the organoleptic, nutritional and chemical-physical qualities of the treated product unchanged.

By reducing energy requirements and thermal dispersion, **HSCD is able to definitively exclude the use of fossil fuels, with the possibility of powering the system entirely with renewable sources** , with a **significant reduction in CO2 emissions**, in line with the objectives of the **2030 agenda, with Industry 5.0 requirements** and with the European Regulation **NET-ZERO INDUSTRY ACT (NZIA)**

The HSCD SSD-SA 001 Technology has already been applied on over 50 types of vegetables and products of animal origin and comparisons between traditional and HSCD systems demonstrate that with the same production capacity, the HSCD system records

significantly lower consumption and temperatures and **without need for pre -treatments that block oxidation and maceration** to guarantee healthiness.

It has been used for example, not exhaustively, on:

Fruit, Vegetables, greens and vegetables in general, Pasta, Meat, Fish, Mushrooms, Herbs and spices, Granular Broths, insects, hemp, etc.

However, some other applications have been tested, including: Sterilization, Pasteurization, Disinfection, Concentration, Freeze-drying

The results were excellent both in terms of the organoleptic qualities of the product which in all cases maintained the colour, flavour, aroma, and in terms of energy saving and in terms of significant reduction in the time per drying cycle.

Some examples:

Oval cherry tomatoes cut into 2 parts	
Format:	Single layer on perforated tray
Initial Humidity:	93%
Final Humidity:	14%
Drying time for complete cycle:	3 hours
Kw used for complete drying per kg of fresh product:	0.70Kw

Mushrooms cut into slices	
Format:	Fresh in bulk on a perforated tray
Initial Humidity:	93%
Final Humidity:	7%
Drying time for complete cycle:	4 hours
Kw used for complete drying per kg of fresh product:	0.53Kw

Bananas cut into slices	
Format:	Two overlapping layers
Initial Humidity:	74%
Final Humidity:	6%
Drying time for complete cycle:	3.25 hours
Kw used for complete drying per kg of fresh product:	0.42Kw

Mixed sweet dwarf peppers	
Format:	Cut and whole - Fresh in bulk on a perforated tray
Initial Humidity:	89%
Final Humidity:	13%
Drying time for complete cycle:	5.5 hours
Kw used for complete drying per kg of fresh product:	0.59Kw

Onions cut into slices	
Format:	Slices 5mm thick
Initial Humidity:	78%
Final Humidity:	11%
Drying time for complete cycle:	2.7 hours
Kw used for complete drying per kg of fresh product:	0.39Kw

Courgettes cut into longitudinal slices	
Format:	Slices 3mm thick
Initial Humidity:	77%
Final Humidity:	10%
Drying time for complete cycle:	3 hours
Kw used for complete drying per kg of fresh product:	0.41Kw

Peaches	
Format:	Slices 3mm thick
Initial Humidity:	ninety two%
Final Humidity:	7%
Drying time for complete cycle:	3.7 hours
Kw used for complete drying per kg of fresh product:	0.45Kw

Whole grapes	
Format:	Whole
Initial Humidity:	ninety two%
Final Humidity:	33%
Drying time for complete cycle:	2.5 hours
Kw used for complete drying per kg of fresh product:	0.35Kw

Pomace of Olive Oil	
Format:	Spread in tray with 5 mm thickness
Initial Humidity:	61%
Final Humidity:	12%
Drying time for complete cycle:	1 hour
Kw used for complete drying per kg of fresh product:	1.24Kw

Moths and Crickets (Insects)	
Format:	In bulk placed on polypropylene containers
Initial Humidity:	57%
Final Humidity:	9.25%
Drying time for complete cycle:	3 hours
Kw used for complete drying per kg of fresh product:	0.25Kw

Hemp for food use	
Format:	Fresh in bulk in a polypropylene tray
Initial Humidity:	69%
Final Humidity:	15%
Drying time for complete cycle:	2.5 hours
Kw used for complete drying per kg of fresh product:	1Kw

The revolutionary HSCD SSD-SA 001 industrial drying system is capable of drying any product or compound of vegetal or animal origin allowing you to:

1. Allow **energy savings to be always greater than 3 times** compared to traditional methods;
2. Allow a **production capacity always higher than 3 times** compared to traditional methods;
3. Allow a **time saving of up to 9 times**, for different products, compared to traditional methods, modulable according to the customer's production needs;
4. Allow 100% recovery of the extracted water;
5. Maintain **the quality of the product 100% unchanged** with colors, flavors, aromas and values as "raw";
6. It is 100% Green, NO fossil fuels, can also be powered only by renewable sources;
7. It is Industry 5.0 ready and compliant with the European NZIA Regulation.

The future of Industrial Drying began with **PIM's HSCD SSD-SA 001!!!** Come and visit us at **ANUGA 2024 Hall 10.1 Stand G041!**