



King Son Vanilla Curing Chamber



* The Vanilla pods must be curing processing in order for the vanillin, which gives vanilla its distinctive flavor, will be produced. King Son Vanilla Curing Chamber have been applied to cure processing Taiwan's local planted Vanilla pods, that the characteristic flavor of Vanilla pods are rich and multi-layered than foreign imported Vanilla pods, and the appearance color is brightness, attractive.

www.ksonplant.com.tw

Create Local Terroir Aroma and Professional Craftsman Vanilla Flavor

When the cultivated Vanilla orchids are mature, the vanillin is accumulated in green Vanilla pods as glucovanillin, which is being hydrolyzed to liberates vanillin by endogenous glucosidases in curing processing and that give Vanilla pods the characteristic flavor.

The curing processing requires long time to convert the glucovanillin in Vanilla pods to vanillin, in which temperature and humidity are the most critical requirements in processing conditions.

To free of the disadvantages by traditional natural curing process, King Son Vanilla Curing Chamber is designed to simulate, generate and provides the most stable outdoor climate conditions and environment with built-in (Killing, Sweating, Curing, Drying, Conditioning) 5 stages curing processing programs for Vanilla pods, to complete the processing and yield cured pods that retain high concentrations of vanillin and other flavor compounds with high sensory quality, optimizing the tedious traditional curing process and reduce manpower loading. The programmatic automatic curing processing allows the craftsman to perform 100% craftsmanship and produce Vanilla flavor.

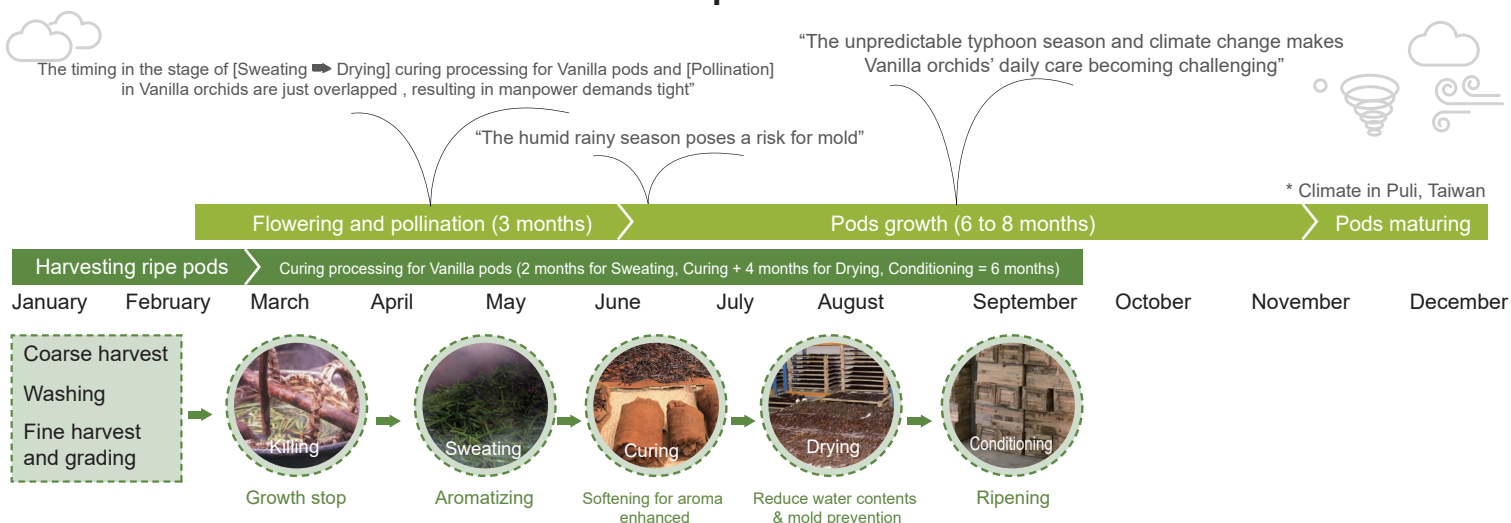


“Optimized The Curing Processing Conditions and Environment”

The traditional curing processing time for Vanilla pods requires 8 to 9 months. The lower rainfall rate in the equatorial is where vanilla mostly cultivated regions are relatively free of natural disasters. Although Vanilla can be planted in other regions, however, it's climatic conditions (too low or too high temperature, short sunlight hours, frequent rainy season, even snowing) are inconducive to the open-air environment curing processing for vanilla pods [Killing → Sweating → Curing → Drying → Conditioning].

By using King Son Vanilla Curing Chamber to simulate and generate the climatic conditions and provide temperature and humidity changes required for Vanilla pod's 5 stages curing processing demands, free of intensive laboring by manual handling in killing, sweating, wrapping, sun-drying, ventilation, shade, that reduce a lot of processing corruption and mold loss, effectively improve the aroma breadth of Vanilla pods, and also avoid the manpower overlapping, shortage problem that curing processing and pollination are carried out at the same time.

The Sky's Mood - The Climate Conditions Affect Every Details of Curing Processing in Traditional Open-air Environment



	Weather	Temperature	Humidity	Pollution	Manual labor	Time	Process Time	Loss
Killing		Water temperature management is crucial			Manual labor-intensive handling in a short period of time	Time-consuming for continuous operation (5 minutes required for each batch)	Completion required within 24 hours after all pods harvested	Not easily to be consistent (Over-ripening, lack of humidity)
Sweating	Rainy	Low temperature Insufficient sunlight		Heat insulating wool cover				Inconsistent level of sweating Get moldy
Curing	Rainy season	Low temperature Insufficient sunlight	High humidity	Heat insulating wool cover	Daily bursts of intensive physical labor handling (moving in and out)	The burst handling time is very concentrated every day (high temperature exposure under the sun shining)	Long processing cycle 7 to 45 days	Moldy, over-dry Not enough aroma
Drying	Typhoon	Easily exceeded average temperature	High humidity	Outdoor dust / PM2.5	Moving in and out daily	The burst handling time is very concentrated every day (high temperature exposure under the sun shining)	A long period of time Up to 2 months	Moldy or too dry
Conditioning		Inclined to be low/high temperature	High humidity				A long period of time Up to 2- 4 months	Poor flavor
Pollination	The time for curing processing in open-air environment “[Sweating ➡ Drying] and [Pollination] just overlaps, resulting in tight manpower demands (by Taiwan climate and Vanilla pods curing process schedule)							

“Use The Equipment, King Son Vanilla Curing Chamber for Vanilla Pods Curing Processing, Free of Climate Impacts”

Perform the curing processing in King Son Vanilla Curing Chamber, free the worries and impacts from rainy days, rainy season and monsoon, which avoids climate-related issues caused cured quality down, such as excessive humidity, mold, and low temperatures, etc.. The five stages of curing processing for Vanilla pods - [Killing, Sweating, Curing, Drying, Conditioning] can be done completely by one person.



*The actual sales cases reference and performance, include in Japan (Kumamoto, Nagoya, Chiba, Okinawa) and in Taiwan (Taipei, Miaoli, Changhua, Puli, Guoxing Township, Yunlin, Tainan, Taitung)



*The manpower should be allocated to concentrate on the pollination of Vanilla orchids In the daytime; the curing processing by the chamber and Vanilla pod's quality inspection (sorting and grading) can be carried out in the afternoon or evening.

" 'Vanilla' is known as the Queen of Spices World, more than just an agricultural product, is able to concoct the local terroir aroma and create a smart route for the craftsman and Vanilla flavor production by novel FOODTECH - by using King Son Vanilla Curing Chamber and curing processing methodology realize professional distinctive craftsman Vanilla flavor for global growing market demands on natural Vanilla."

To have Vanilla pods with characteristic flavor, the most important thing is to master the temperature and humidity changes in the curing processing. King Son has designed a King Son Vanilla Curing Chamber with professional temperature and humidity control capabilities, that can simulates and generates the natural curing conditions for Vanilla pods in the chamber, [the convection heated air for Killing, precise constant temperature for Sweating & Fermentation, variable temperature to remove humidity (dehumidify) for Curing processing, day and night variable temperature for slow Drying, constant temperature for Conditioning and Ripening] that is not affected by the climate, making it easier for the craftsman to produce worldwide class high-quality Vanilla pods and its flavor.



King Son Vanilla Curing Chamber Enchanting Terroir, Exquisite Flavor

"Terroir" represents the unique presentation of various agricultural and livestock products under a specific climate, terrain, soil, and cultural elements.

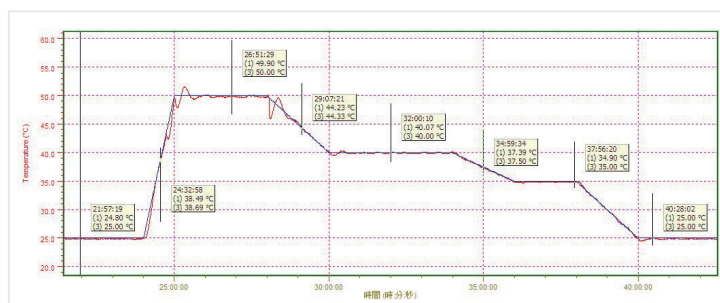
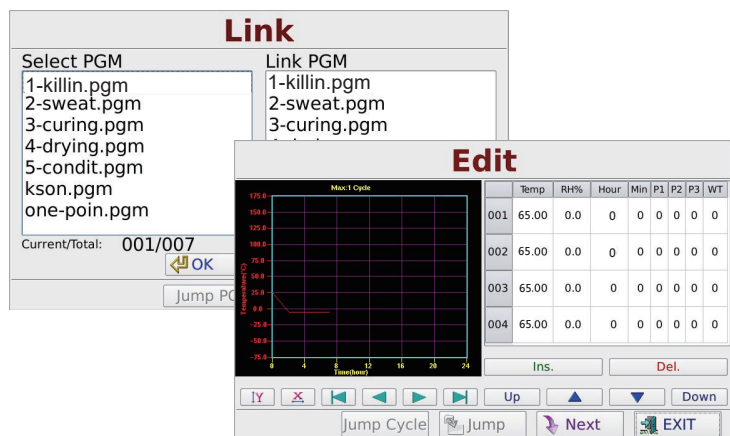
“The Novel Design, A Very Unique, Distinctive Equipment for Vanilla Pods Curing Processing”

Nine Secret Recipes to Concocting the Terroir

1 Built-in 5-stage programs for curing processing vanilla pods

The operation functions of King Son Vanilla Pods Curing Chamber can be setup for continuous (by the Program Link) or individual stage running , that perform Vanilla pods curing processing in each stage (Killing, Sweating, Curing, Drying, Conditioning) and visually display the processing temperature and humidity curves in each stage.

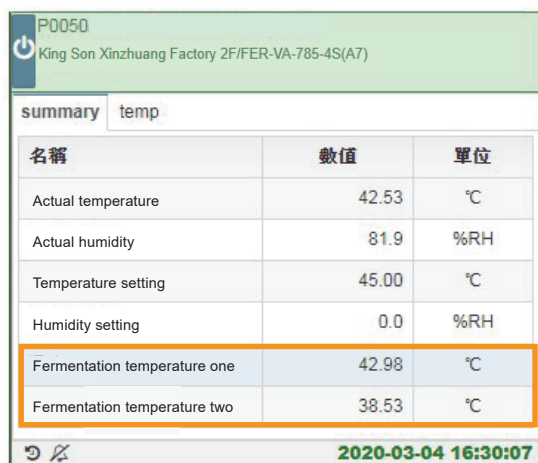
By using Program Link function, easily to perform the automatic and continuous curing processing operations in the stages of Killing and Sweating.



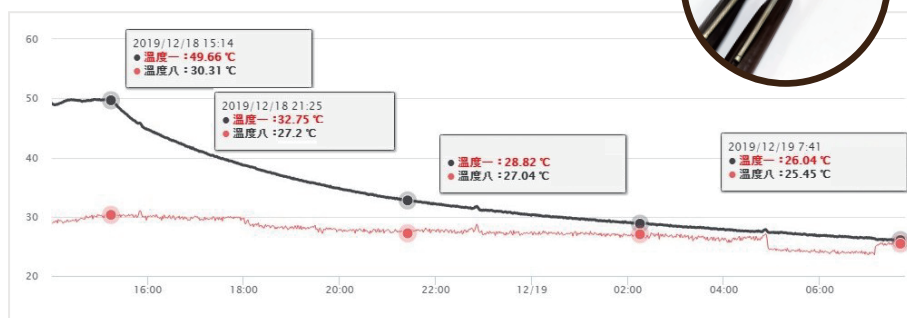
▲ The convection heated air for Killing, precise constant temperature for Sweating & Fermentation, variable temperature to remove humidity (dehumidify) for Curing processing, day and night variable temperature for slow Drying, constant temperature for Conditioning and Ripening.

2 A record of monitoring the temperature inside the Vanilla pods throughout the curing process

During Curing processing, measure and record the internal curing temperature curve of Vanilla pods.

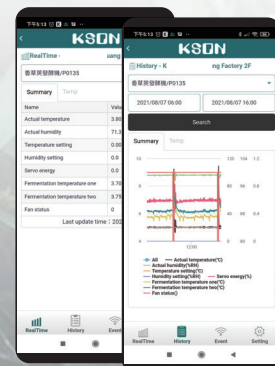
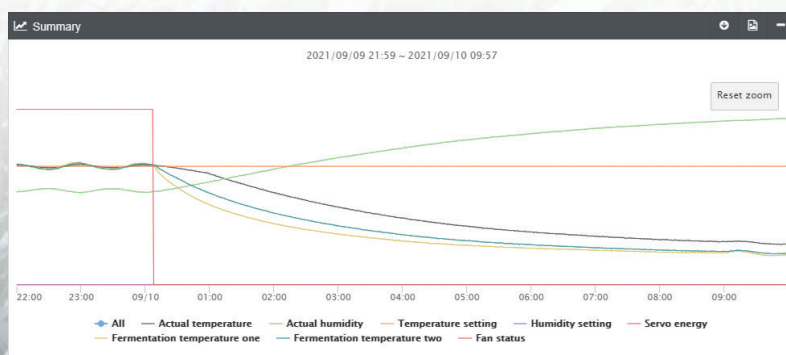


▼ Built-in two sets of temperature sensing probes that are inserted into the Vanilla pod to measure and record the internal temperature variation curves of cured Vanilla pods during curing processing.



3 Built in an app for easily access and monitor the Curing processing status of Vanilla pods in real time

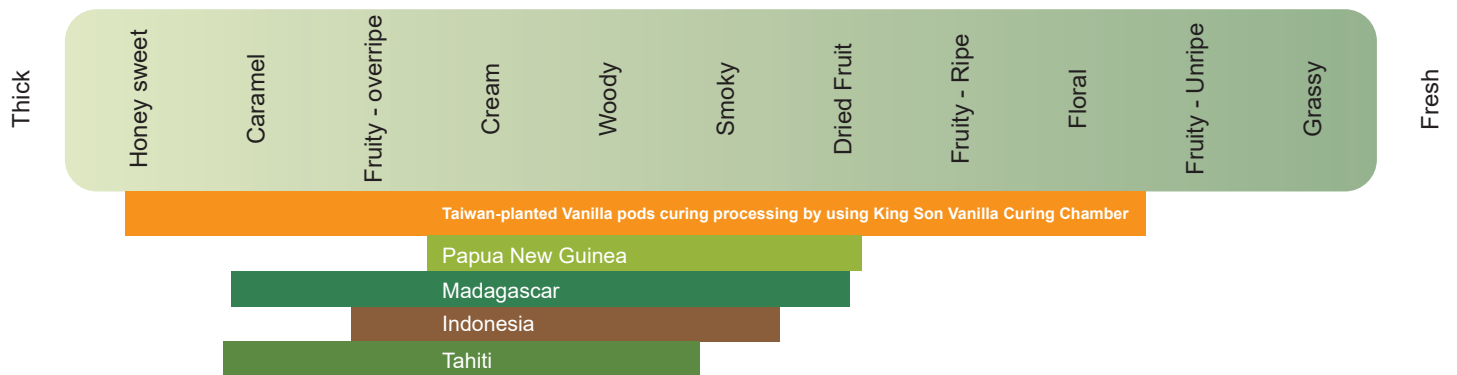
The Curing App can continuously keep monitoring the Curing processing development of Vanilla pods and running status of the chamber through the mobile phone, when you are busy farming in the fields.





"Different varieties, different planting methods, and different curing processing conditions and methods will make the flavor of Vanilla pods different"

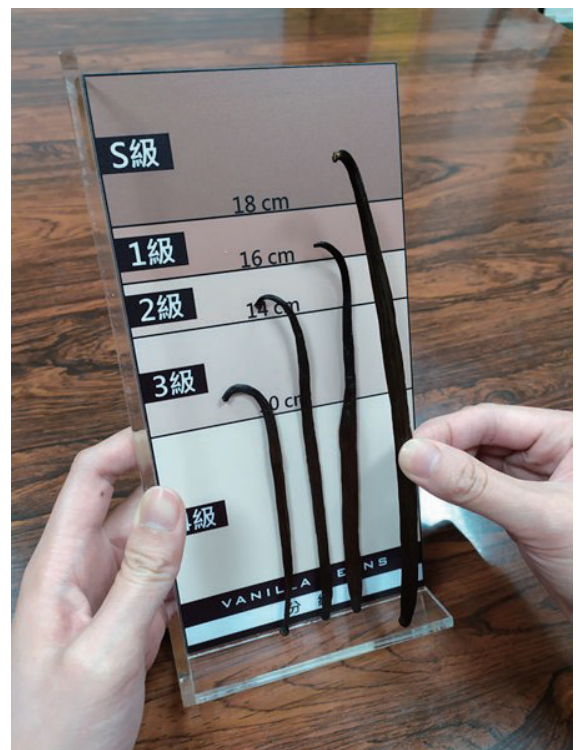
4 Vanilla pods flavor chart comparison by the origin



5 King Son designed Vanilla Pods Flavor Wheel



6 King Son self-designed Vanilla Pods Grading Tool



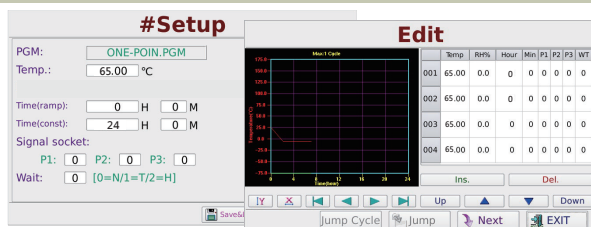
“The Novel Design, A Very Unique, Distinctive Equipment for Vanilla Pods Curing Processing”

Nine Secret Recipes to Concocting the Terroir

7 To Cured Vanilla Pods by the Optimum Customization-Design Know How and Experiences, with King Son Advanced Curing Processing Technology

King Son Vanilla Curing Chamber is incorporated with 100 set of curing processing programs (included 7 sets default built-in and 93 sets can be setup and configured by the operator) for Professional Craftsman to curing processing Vanilla pods.

King Son Vanilla Curing Chamber can run and operation by the setting either single setpoint condition or Customization-Designed as a programmable multi-stage (segment) climate simulation that allows the craftsman to perform 100% craftsmanship and produce cured Vanilla flavor.



▲ single setpoint condition

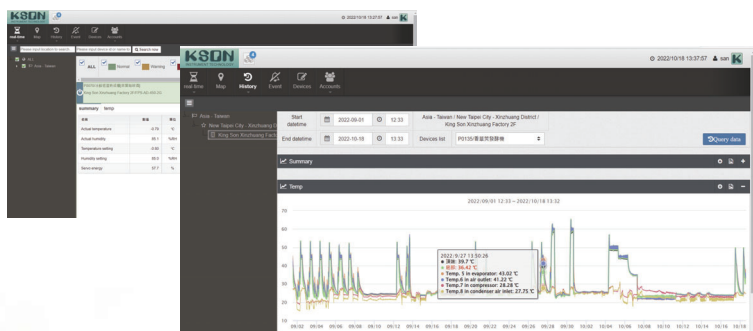


▲ Multi-stage (segment) climate simulation capability

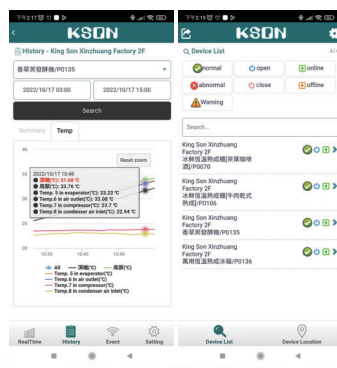
8 Computer, Workstation Web-Based Application and Mobile App Oriented Cloud RD Collaboration Platform and Solution

King Son Vanilla Curing Chamber not only is a curing processing equipment, also is a Cloud Based RD Collaboration Platform that provide King Son's food tech partners both Computer, Workstation Web-Based Application and Mobile App Oriented Solutions to develop advanced curing processing technologies and treatments for new flavors.

King Son can and would like to collaborate and co-operate with flavor food tech partners to RD customization-design curing processing technologies for new flavor profile.



▲ Computer, Workstation Web-Based Application



▲ Mobile App Oriented

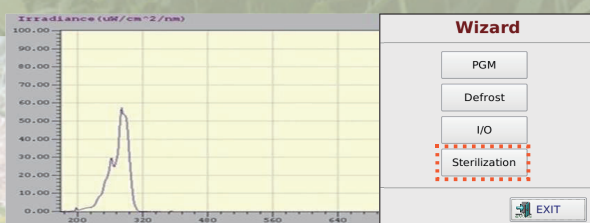
9 The UV-C Sterilization Wizard

UV-C Kill Penicillium and Aspergillus Mould Species Effectively Improve Food safety for Cured Vanilla Pods

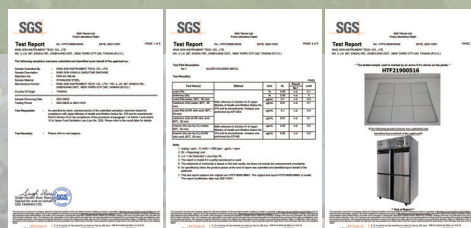
For and to meet food safety rule for cured Vanilla pods, for example, to comply with current EU rules state that ethylene oxide may not be used for sterilizing purposes in food additives, therefore, King Son Vanilla Curing Chamber is also designed and incorporated with King Son UVC Air Ventilation Bacteriostatic System.

The UV-C Sterilization Wizard and five stages Curing Processing programs – such configuration setup perform the essential balance management between food safety and quality.

The EU new regulation stipulated, which applies beginning in September, that no residue above 0.1 mg/kg of ethylene oxide — sum of ethylene oxide and 2-chloro-ethanol expressed as ethylene oxide — shall be present in food additives listed in EU legislation, including mixtures of food additives.

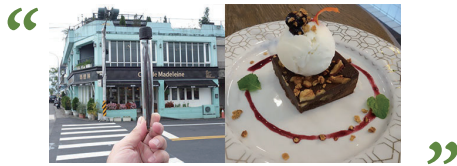


▲ Unique UV-C Sterilization Wizard Mode



▲ The stainless steel used to construct King Son Vanilla Curing Chamber that certified by SGS, without the dissolution of harmful substances

“Taiwan-planted Vanilla pods by using King Son Vanilla Curing Chamber for curing processing is widely acclaimed by professional craftsman in the industry”



The French-bakery Boutique Acclamation: Acclaimed by a famous French-bakery boutique reported by the Yilan media - that has been supplied pastries to top class hotels in Jiaoxi - was very stunning on the delicate flavor of Vanilla pods, which cured by King Son Vanilla Curing Chamber.

If it is described in terms of coffee beans, the Vanilla pods cured by using King Son Vanilla Curing Chamber are like geisha coffee beans in coffee. The caramel fragrance has a floral fragrance in it, and the flavor is very delicate. It is a flavor that none of the Vanilla pods they have used before has such a flavor. Such Vanilla pods are what they want to buy.

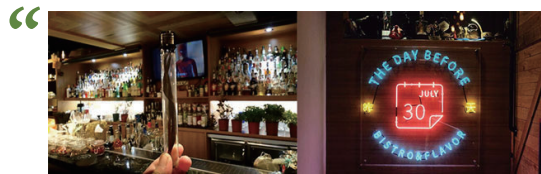


The Coffee Cupper Acclamation: The way of traditional open-air sun-dried Vanilla pods is just like the sun-dried coffee beans, the flavor of sun-dried Vanilla pods are rich, sweeter and more wine-like aroma.

The way of the Vanilla pods cured by King Son Vanilla Curing Chamber is very similar to the way of washed coffee beans, the results of cured Vanilla pods is no impurity flavor, the aroma is ample and multi-layered, and the appearance is brighter.



The Coffee Shop Acclamation: This famous coffee shop is located near Sun Yat-sen Memorial Hall Station. The proprietress has used a lot of Vanilla pods. When she smelled the flavor of Taiwan planted Vanilla pods for the first time, she immediately made a wow stunning sound. She was pleasantly surprised by the fruity sweetness of cured Vanilla pods by using King Son Curing Chamber.



The Bar Acclamation: The IBS World Bartender Runner-up acclaimed that the exuded flavor of the cured Vanilla pods by using King Son Vanilla Curing Chamber makes people very comfortable and want to smell it again and again.

In addition to the familiar Vanilla pods flavor, you can also smell the flavor of coffee and cocoa. With a touch finish of plum fruit, foreign planted Vanilla pods are like whisky with no age, and the flavor is relatively single and strong, while the flavor of cured Vanilla pods by King Son Vanilla Curing Chamber is like whisky aged for 12 years in oak barrels, the flavor is soft but the whole flavor of the spectrum is very broad.

“The Process and its Power Consumption”

* Climate in Puli, Taiwan



King Son Vanilla Curing Chamber storage temperature = 28°C

The total electricity bill for Vanilla pods curing processing is calculated based on the electricity charges from February to May in 2020, 4 months by commercial electricity rate, about USD 19 (Taiwan NT Dollars 463).

SAVE energy

Other food fermentation application temperature chart

65°C	Hot spring egg at 65°C
60°C	Miso & shio koji at 60°C
42°C	Yogurt fermentation at 42°C [40 ~ 45°C]
35°C	Koji rice fermentation at 35°C, Korean kimchi at 35°C
30°C	Kombucha fermentation Max. at 30°C
28°C	Dough fermentation at 28°C Koji sauce fermentation at 28°C
26°C	Ideal kombucha fermentation temperature at 26°C
24°C	Cigar storage temperature at 24°C
20°C	Coffee bean anaerobic fermentation temperature for [maximum sweetness] at 20°C
16°C	Coffee bean anaerobic fermentation temperature for [balanced flavor] at 16°C
15°C	Koji curing at 15°C Coffee bean aging at 15°C Optimal cold brew temperature for tea & coffee at 15°C Red wine storage maximum at 15°C
12°C	Red wine regular storage temperature [fluctuation < 1°C] at 12°C
8°C	Coffee bean anaerobic fermentation temperature for [maximum acidity] at 8°C



King Son Vanilla Curing Chamber FER-VA-785-4S Specification

External dimensions	121 (W) * 205 (H) * 84 (D) cm
Internal dimensions	103 (W) * 127 (H) * 60 (D) cm
Storage volume	785 liters
The number of stainless mesh trays used for curing processing	2 columns * 10 layer of mesh trays per column, 20 set of mesh trays in total (rails included in each mesh tray)
Stainless steel mesh tray dimension	49 (W) * 54 (D) * 4 (H) cm, weight 1.3 kg per mesh tray
Loading weight	5 kgs loading weight per mesh tray, 20 mesh trays totally can hold 100 kgs fresh Vanilla pods curing processing loading weight
The Operation Controller	King Son A7 Intelligent Food-Tech Controller 7" LCD full-color touch screen programmable control system
Vanilla pods curing processing programs	Built-in 5-stage programs (included Killing, Sweating, Curing, Drying, and Conditioning) for curing processing Vanilla pods
Vanilla pods curing processing monitoring	Built-in two sets of temperature sensing probes that are inserted into the Vanilla pod to measure and record the internal temperature variation curves of cured Vanilla pods during curing processing
Operating temperature setting range	7 ~ 65°C
The minimum unit of temperature can be set	0.1°C
Temperature accuracy	± 0.5°C (General drying oven ± 7°C)
Humidity display range	50~95% R.H. (Detect the humidity in curing processing environment and convert to water activity during Vanilla pods curing)
The 5 stages of curing processing and operating mode	The operation functions of King Son Vanilla Pods Curing Chamber can be setup for continuous (by the Program Link) or individual stage running, that perform Vanilla pods curing processing in each stage (Killing, Sweating, Curing, Drying, Conditioning) and visually display the processing temperature and humidity curves in each stage
The number of curing processing programs available for operator's self-setup and configuration	Total 100 set of curing processing programs (included 7 sets default built-in and 93 sets can be setup and configured by the operator)
Program backup and download	Backup and download the curing processing program via USB interface
Wi-Fi remote connection	Built-in Wi-Fi communication module for internet remote connection
Mobile app remote connection and monitoring	The mobile app can continuously keep monitoring the Curing processing development of Vanilla pods and running status of the chamber through the mobile phone, when the operator is not available nearby the chamber, or busy farming in the fields
Other foods fermentation processing applications	The chamber is available for other foods (cocoa, coffee, kombucha, dough) fermentation processing application
Power	220 V / 7A / 50 ~ 60 Hz



King Son Technologies and Patents

1. Fully adopt UL safety certification components, parts, materials, and manufacturing standards to produce King Son Vanilla Curing Chamber
2. King Son Vanilla Curing Chamber comply with the certification requirements of PSE Japan Electrical Appliances Safety Law
3. The stainless steel used to construct King Son Vanilla Curing Chamber that certified by SGS, without the dissolution of harmful substances
4. King Son Vanilla Curing Chamber is 100% R&D, design, and manufacture in Taiwan (MIT).
5. The patent of Energy-saving operation in temperature and humidity control cultivation system
6. The patent of two-stage cascade refrigeration system with energy-saving effect of low temperature operation
7. The patent of mesh tray for Vanilla Pods curing processing



King Son outdoor climate simulation technology and experiences for curing, fermentation processing

1. Plant factory climate simulation for the cultivation of summer strawberry, ice plant, Chinese herbs (Chinese liquorice, Chinese Angelica)
2. Variable emperature climate simulation for cocoa fermentation
3. Cheese aging low-temperature, mid-humidity climate simulation
4. Coffee bean aging climate simulation



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