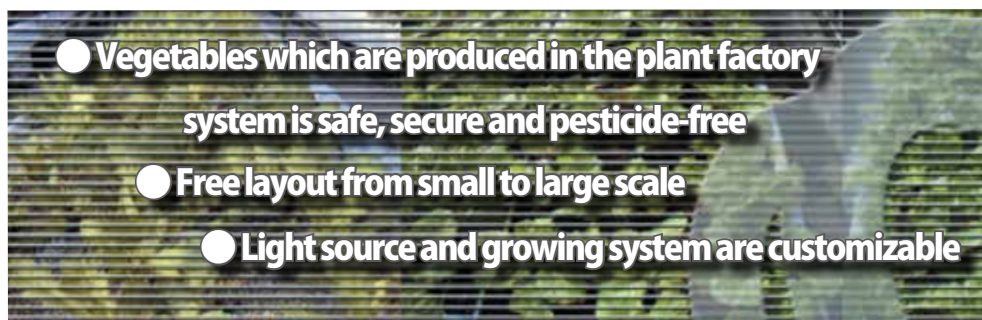


## Plant Factory



# Plant Factory

## Features

- Our fully controlled plant factory is a system to grow the vegetables with artificial light and no use of sunlight.
- The plant factory system can provide safe and secure production of vegetables in a cleanly room without pesticide.
- Suggestion for free layout and design depend the production scale from small to large is offered.
- It is prepared for artificial light source, growing system and etc depend on the cultivar.
- Training for cultivation techniques and methods for selecting vegetables is available in order to introduce plant factory system.



## Light Source

- Artificial light source is arranged according to the customers' demand.
- Fluorescent light, CCFL, LED(R, G, B) and etc is prepared as the artificial light source in the plant factory system.



Fluorescent lamp



CCFL



LED (Red)



LED (Blue)



LED (Green)

## Cultivation System

- Our plant factory system is standardized on hydroponics but soil culture system can also be adapted.
- We develop and offer the best plant factory system such as, culturing facilities for single or multistage and automatic carrier system.

## Cultivable Vegetables

- Leaf vegetables such as lettuce and herb can be grown in our plant factory system. Fruit vegetable and pharmaceutical plant can also be grown.



Frill lettuce



Green leaf



Red leaf



Semi-head lettuce



Ice plant



Basil



Roquette



Italian parsley



Mint



Tomato



Cilantro leaf



Watercress



Potherb mustard



Leaf mustard



Strawberry



Spinach



Honeywort



Radish



Shiso (Perilla)



Garland chrysanthemum

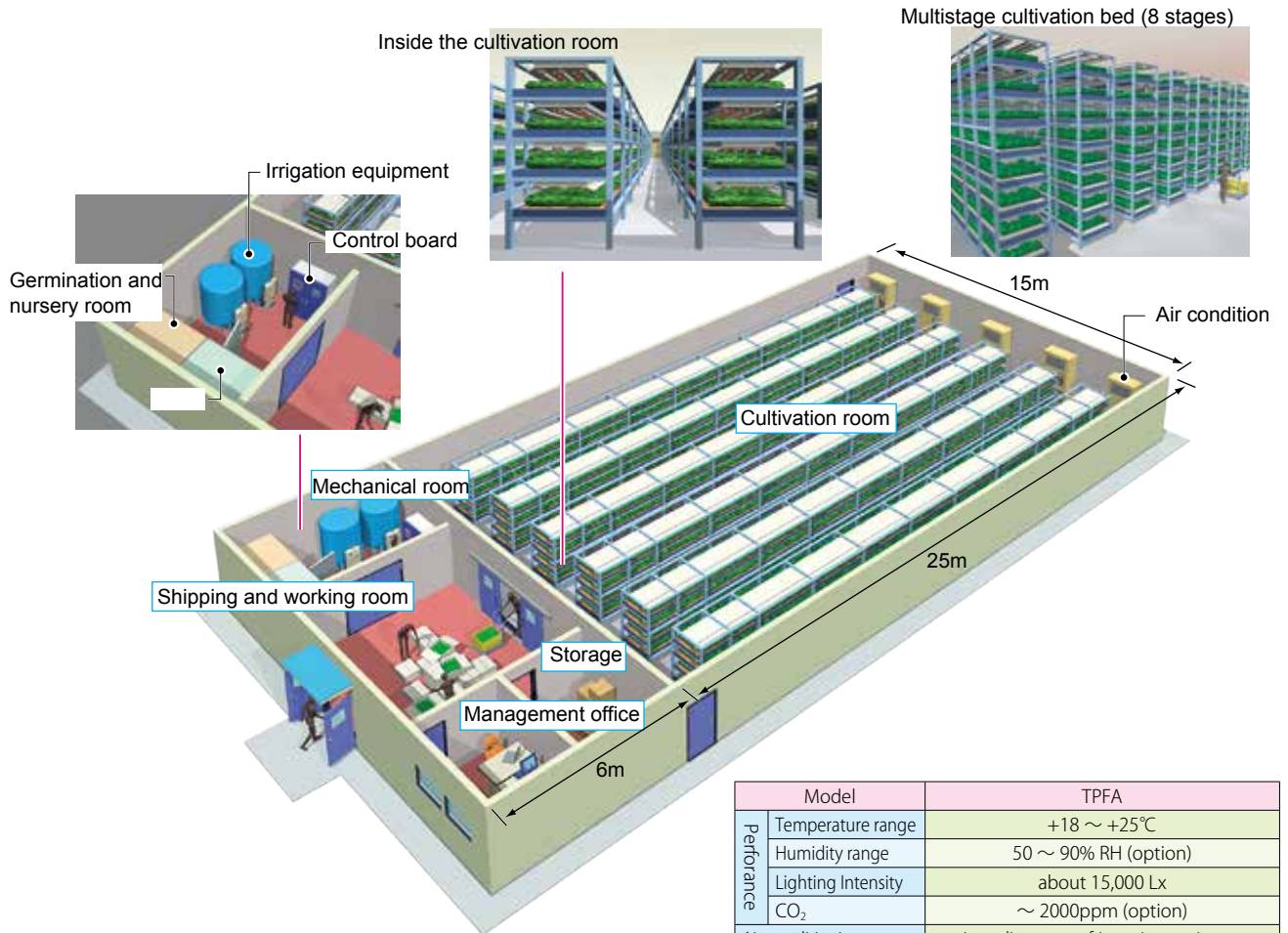


# Plant Factory

## Multistage type

### TPFA(Artificial light-type plant production system – multistage type)

- TPFA is a fully controlled plant factory system in which the utilization of multistage (2~8 stage) bench and space-efficient indoor space.
- Fluorescent lamp is the main light source and the combination with LED is also provided.
- Hydroponics and organic soil culture can be used in this system.



Model		TPFA
Performance	Temperature range	+18 ~ +25°C
	Humidity range	50 ~ 90% RH (option)
	Lighting Intensity	about 15,000 Lx
	CO <sub>2</sub>	~ 2000ppm (option)
Air-conditioning cooling process		air-cooling type refrigerating equipment + all-in-one air-conditioning system
Artificial light source		Fluorescent lamp or LED selectable
Control	Instrumentation	Control system for plant (PC instrumentation)
	Sensor	Temperature, Humidity, CO <sub>2</sub> , EC, PH, etc
Gropwing equipment		Hydroponics system (compatible with various cultivation systems)

※ This is an example of specification of standard facility. For details, please contact us.

○ Multistage bench



○ Multistage bunch (15 stages)



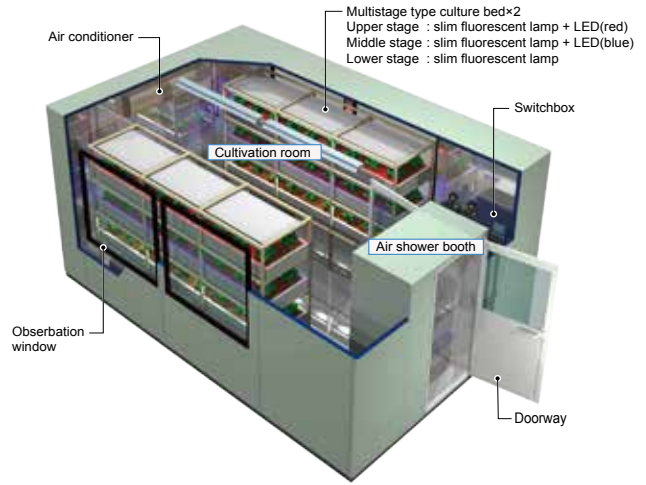
○ Multistage bench + Automated transportation system



# Plant Factory

## TAPH-1 (House Type)

- Small size plant factory which is prefabricated and walk-in type.
- TAPH-1 is equipped with multistage (3~4 stages) growing system for leaf vegetables.
- It is possible to grow fruit vegetables such as tomato using single-stage growing system.
- Air shower booth is recommended to customer who demands for clean environment. (Optional)
- We also provide customized design for display.



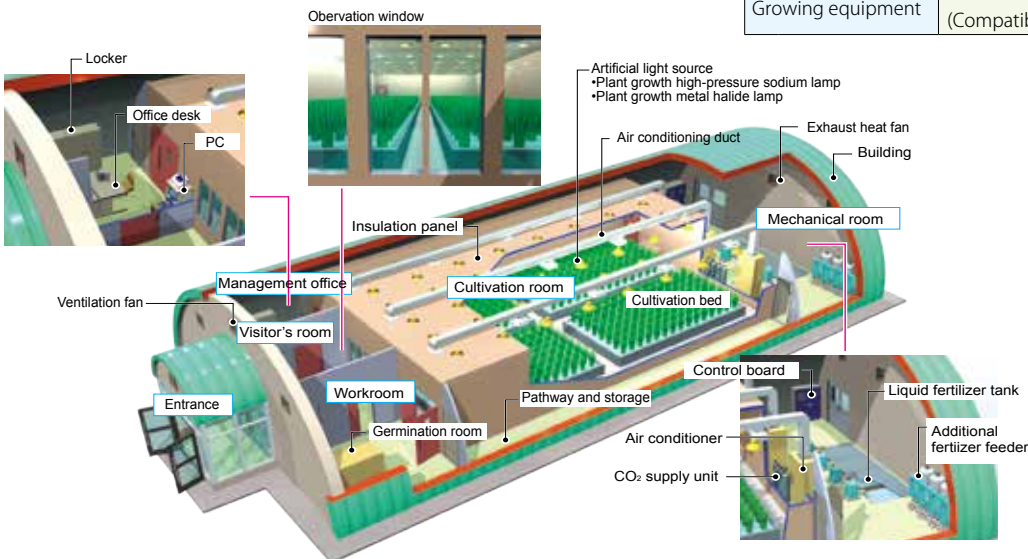
Model	TAPSH-1
External size	W3000 (2500) × D4000 × H2500mm
Number of growing stages	3 stages × 2 rows
Temperature	18 ~ 25 °C
Humidity	50 ~ 90% RH (option)
CO <sub>2</sub>	~ 3000 ppm
Light source (standard)	Fluorescent light or LED (selectable)
Instrumentation	Basic instrumentation or touch panel (selectable)
Electric power supply	AC100V / 200V (selectable)



## TPFA (Flat type)

- TPFA is totally controlled type plant factory using flatted growing space.
- Over 50,000 lx bright light environment can be produced by adopting HID lamp for plant growing as the light source. Therefore, vegetable and grain such as lettuce, tomato and rice can be grown.
- TPFA achieves energy saving effect with own exhaust heat design which is reducing thermal load from light source
- Mobile bench is provided for space-saving (Optional).

Model	TPFA	
Basic perform	Temperature range	+18 ~ +25°C
	Humidity range	50 ~ 90% RH (option)
	Light intensity	15,000 ~ 50,000lx
	CO <sub>2</sub>	~ 2000ppm
	Wind velocity	up to 0.5m/s
Air conditioning (cooling system)	Air-cooled air conditioning device	
Artificial light source	HID lamp for plant growing	
Control	Instrumentation	Control system for plant (PC instrumentation)
	Control sensor	Temperature, Humidity, CO <sub>2</sub> , EC, pH, etc.
Growing equipment	Hdroponics system (Compatible with various cultivation system)	



### Rotary Bench Type



### Moving Bench Type



### Spacing Type



※ This is an example of standard equipment. For more information, please contact us.



# Plant Factory

## Nursery Plant Factory (Nbox)

**TAN (artificial light type nursing seedling, care of grafted nursery plant, acclimatization and reserve unit for nursery plant)**

- TAN is a prefab nursery chamber and offers a broad range of using such as germination and nursing seedling, care of grafted nursery plant, acclimatization and reserve of nursery plant.
- Multistage nursery shelves are equipped and light source is selectable in fluorescent lamp, LED and CCFL.
- It is possible to fan uniform breeze to shelves due to blowing system from whole area of both flanks.
- We have various sizes (type 3 to 12) of TAN and also can provide larger size.

Model		TAN
Performance	Temperature range	+5 ~ +35°C※ 1
	Humidity range	60 ~ 95% RH (humidifying control)※1
	CO <sub>2</sub>	~ 2000ppm
	Lighting intensity	2,000 ~ 20,000lx (0.2m under the lamp) ※1
	Wind velocity	up to 0.2 m/s (each area of stages)
Structure	Exterior	Colored steel plate
	Interior	Stainless pored plate
	Insulator material	Rigid urethane foam
Air conditioning	Freezing process	Single stage freezing system (air cooling)
	Thermal process	Heater
	Humidifying process	Supersonic humidifier
Light source		Selectable from three band fluorescent lamp, LED and etc.
Electric power supply		AC200V 3 φ 50/60Hz
Equipments		Nursery shelf, cable holes and socket

### Standard size

Model	Outside (W × D × Hmm)	Inside (W × D × Hmm)	Floor space
Type 3	1800 × 1800 × 2360	1700 × 1700 × 2000	2.9m <sup>2</sup>
Type 5	2700 × 1800 × 2360	2600 × 1700 × 2000	4.5m <sup>2</sup>
Type 6	3600 × 1800 × 2360	3500 × 1700 × 2000	6.0m <sup>2</sup>
Type 9	3600 × 2700 × 2360	3500 × 2600 × 2000	9.1m <sup>2</sup>
Type 12	3600 × 3600 × 2360	3500 × 3500 × 2000	12.3m <sup>2</sup>

※ 1 Range of temperature and humidity, and lighting intensity can vary according to intended use.

### Case of Cultivation

○ Lettuce



○ Tomato



○ Eggplant



○ Butter lettuce



### Case example of installation

○ Grafted nursery plant curing equipment (Type 6)



○ Artificial lighting type nursery equipment (Type 3)



# Plant Factory

## TAF (Container Type Plant Factory)

- Unitized equipments for growing plant such as artificial light source and air-conditioning system are equipped in a transportation container.
- Since TAF is a container type plant factory system, It is easy to transport by land and decrease initial cost due to minimum site work
- If electricity and water are available, TAF can be installed anywhere and can operate the day it was installed.
- It is also easy to transfer after TAF was installed. And you can grow vegetables and nursery plant in car parks, ships and polar region
- We have two types (20 and 40 feet) of TAF as standard model. We recommend addition of TAF as scale expansion of your request.



	Model	TAF-12A	TAF-24A
Performance	Temperature range	+18 ~ +25°C (Nomal use)	
	Humidity range	50 ~ 90% RH (option)	
	CO2	~ 2000ppm	
	Lighting intensity	over 5,000 Lx	
	Wind velocity	up to .5m/s	
Light source	Seclectable from fluoresent lamp, LED and etc.		
Air-conditioning cooling process	Air-cooling type refrigerating equipment		
Growing equipment	Seclectable from various hydroponics systems		
Exterior (W × D × Hm)	2.4 × 6.1 × 2.6	2.4 × 12.2 × 2.6	
Interior floor space (㎡)	11.6	25.2	
Electric power supply	AC200V 3 φ 50/60Hz		



### Case example of installation

- 40 feet type



- at transportation



- 20 feet type



- 20 feet type (connected)



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●Please note that specifications and designs may change without prior notice for improvement of products.

●The specification and designs of the products in this catalog are true as of December 2013.