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SEIBU GIKEN PRODUCTS

# GREEN-SAVE<sup>®</sup>

## "HI-PANEX-ION"

Heat Exchange/Recovery Wheel



[www.seibu-giken.com](http://www.seibu-giken.com)



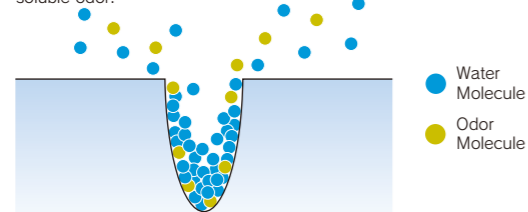
# Ion Power Produces Still Cleaner, More Energy-saving and Comfortable Air-conditioning.

## POINT 1 Excellent Effect in Odor Transfer Prevention

As adsorbent for latent heat (moisture) exchange, ion exchange resin, which adsorbs little odor, has been adopted for the first time in the world. Odor transfer and accumulation is extremely little compared with a former type using silica gel.

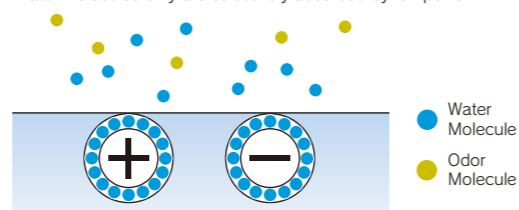
### Adsorption by silica gel

As it is adsorption by capillary power, odor is adsorbed as well as water vapor. It is remarkable especially in the case of water-soluble odor.

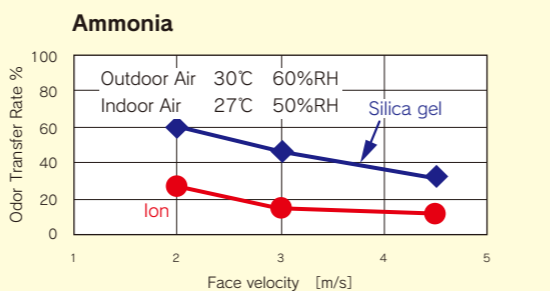
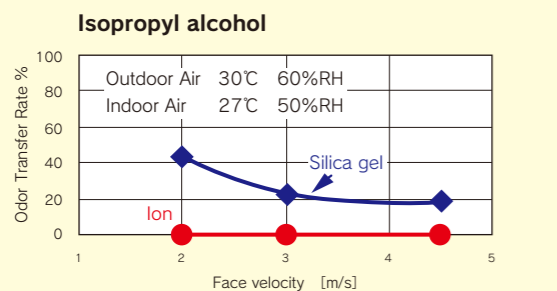


### Adsorption by Ion

Water molecules only are selectively adsorbed by ion power.



### Odor Transfer Comparison Graph



Ask us about any other compounds.

## POINT 2 Excellent Energy Saving Effect

The rotary type with counter-flow method produces high efficiency.

**Exhausted CO<sub>2</sub> Volume Reduction Effect**  
**14ton-C/year/cassette**

"Ton-C/year/cassette" is a unit expressing exhausted CO<sub>2</sub> volume computed in terms of carbon. It is calculated on condition that all the cooling/warming air-conditioning is conducted by electricity. Calculating conditions : Tokyo Electric Power '98 81g-C/kwh PAC-2900T OA 41,000m<sup>3</sup>/h Tokyo Area

## POINT 3 Anti-germ/Mold-proof Effect

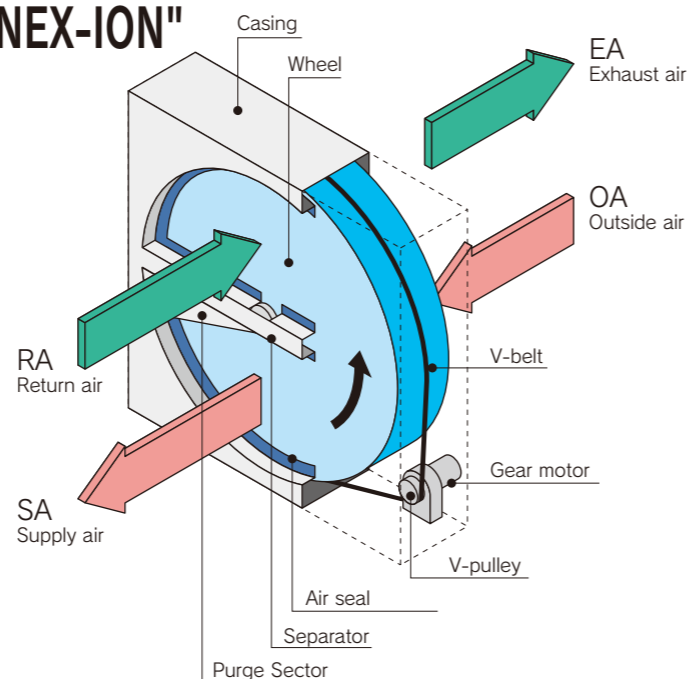
"HI-PANEX-ION" has achieved through improvement of IAQ (Indoor air quality) by using ion power and anti-germ/mold-proof agent together.

## Cross-Contamination is minimized with

1. Ion Exchange Resin : Co-adsorption
2. Purge Sector : Carry-over

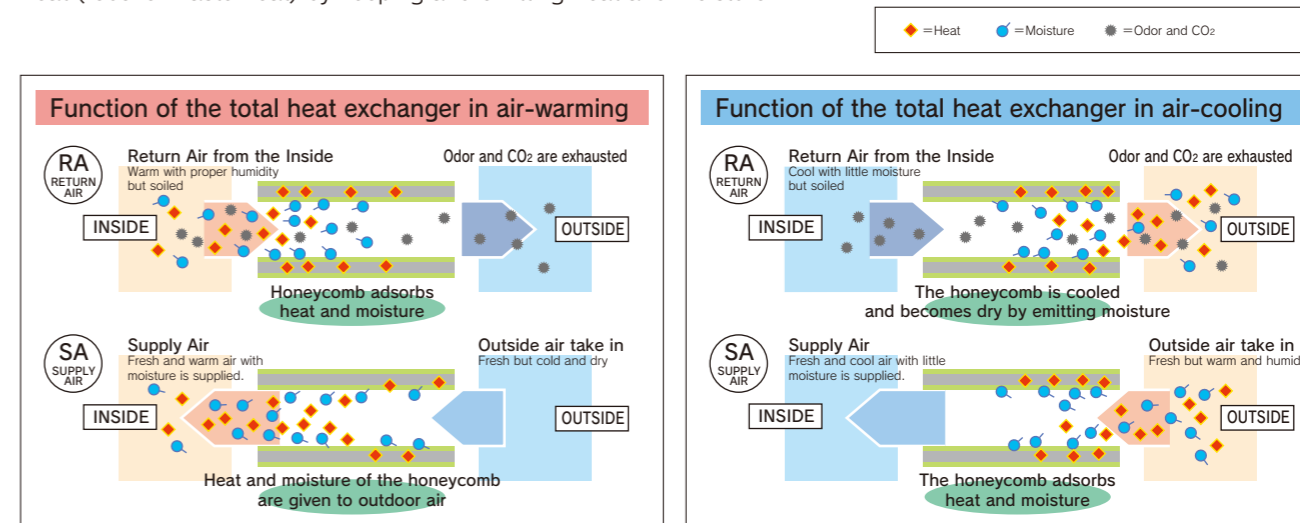
## Function of GREEN-SAVE® "HI-PANEX-ION"

The figure on the right is an illustration of GREEN-SAVE®HI-PANEX-ION, a total heat recovery cassette. A honeycomb wheel is rotated at about 20 r.p.m. in the direction of the arrow. Return air from the inside passes from the upper half of the cassette through the wheel and is exhausted outside. During this, most of the total heat (heat and moisture) of the return air is kept in the wheel and waste air only is exhausted. On the other hand, when outside air, taken in from the lower half of the cassette, passes through the rotor, the outside air receives total heat that the wheel has kept and is pre-heated/humidified in winter and pre-cooled/dehumidified in summer to be thus supplied continuously to the inside. In other words, the total heat recovery wheel is an energy-saving equipment that recycles energy lost in ventilation.



## Principle of total heat (heat and moisture) exchange

As shown in the figure, return air and supply air flow alternately and exchange heat (recover waste heat) by keeping and emitting heat and moisture.



# Materials of Wheel for GREEN-SAVE® HI-PANEX-ION

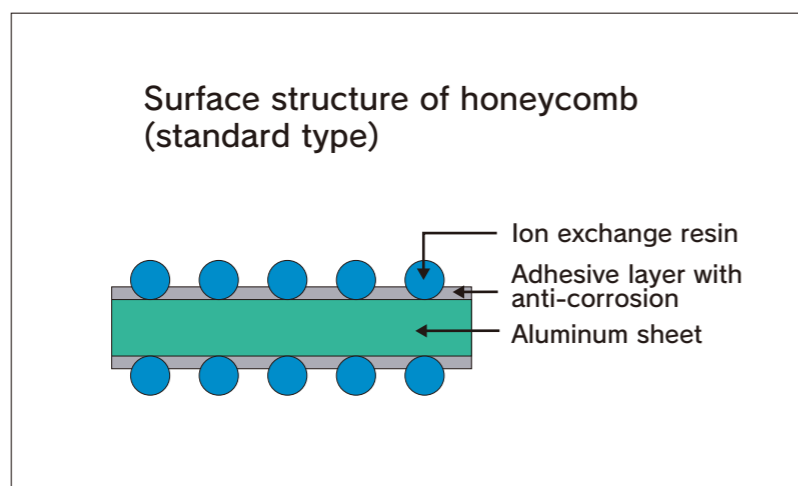
## General application

Type	Material	Heat Exchange	Main Application	Examples	Application Temperature Range
HP/PA	Aluminum sheet	Total	General air conditioning Desiccant air conditioning Against corrosion	Office bldg., Institute, School, Theater, Hospital, Hotel, Vessels, Swimming pool, Factory, Animal laboratory	- 20°C ~ 60°C
		Sensible			

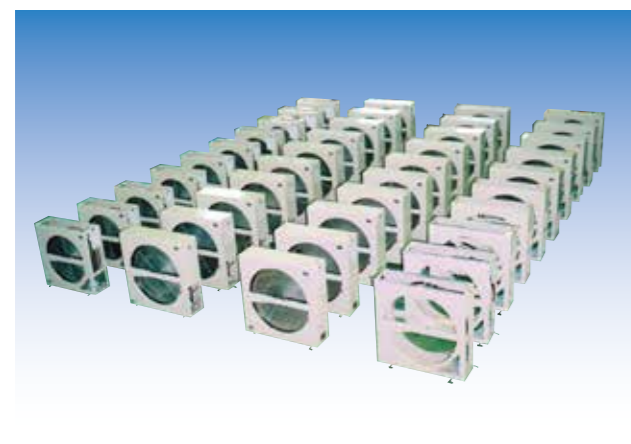
Anti-corrosion type is also available. Ask us for further information.

## Aluminum Total Heat Recovery wheel

Surface structure of the honeycomb is as shown in the figure 1.  
As anti-germ/mold proof agent layer covers the whole surface, anti-germ/mold proof quality is displayed in any part.



(Figure 1)



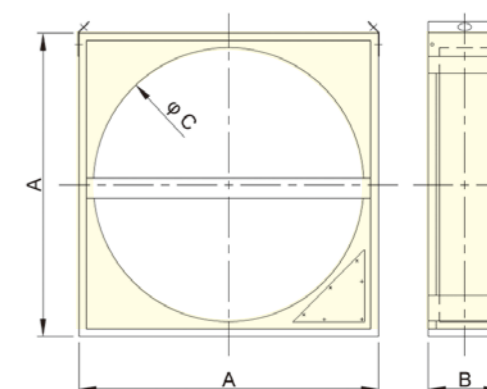
Total heat recovery cassettes

# Specification Table of GREEN-SAVE® HI-PANEX-ION

## HP C-1500 T-G

- ①
- ②
- ③
- ④
- ⑤

- ① Materials of element  
HP: Aluminum sheet (AHRI Certified)  
PA: Aluminum sheet
- ② Category of products  
C: Cassette  
R: Wheel only
- ③ Diameter of wheel
- ④ Function of wheel  
T: Total Heat Recovery  
S: Sensible Heat Recovery
- ⑤ AHU Built-in type



## AHU Built-in type (One body)

	Model	Air volume CMH Face Velocity (1.5~4.5m/s)	Motor 3 φ/380~415V 50Hz/60Hz	Weight (kg)	Dimension (mm)		
					A	B	C
1	HPC- 500T-G	480~ 1,500	0.1kW	55	600	290	500
2	HPC- 600T-G	710~ 2,200		65	700	290	600
3	HPC- 700T-G	990~ 3,000		75	800	290	700
4	HPC- 800T-G	1,300~ 3,900		85	900	290	800
5	HPC- 900T-G	1,660~ 5,000		95	1000	290	900
6	HPC-1000T-G	2,030~ 6,100	0.2kW	110	1100	290	1000
7	HPC-1100T-G	2,470~ 7,400		125	1200	290	1100
8	HPC-1200T-G	2,960~ 8,900		135	1300	290	1200
9	HPC-1300T-G	3,490~ 10,500		155	1400	290	1300
10	HPC-1500T-G	4,620~ 13,900		205	1600	320	1500
11	HPC-1700T-G	5,980~ 18,000		240	1800	320	1700
12	HPC-1900T-G	7,510~ 22,600	0.4kW	285	2000	320	1900

- Note**
- Air flow range is just a reference. Different air flow rate may be applied. Please ask our representative.
  - Higher face velocity more than 4.5m/s is available with the different model.



Total heat recovery wheel



Total heat recovery cassette



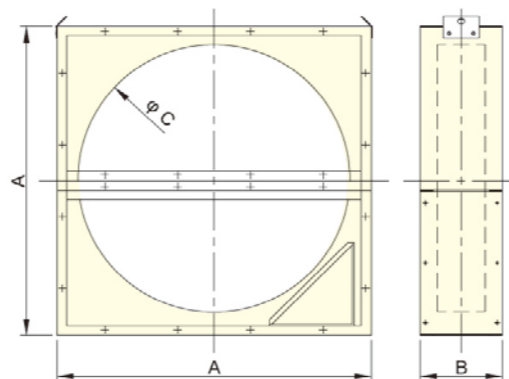
Total heat recovery unit

# Specification Table of GREEN-SAVE® HI-PANEX-ION

## HP C-1500 T-U

- ①
- ②
- ③
- ④
- ⑤

- ① **Materials of element**  
HP: Aluminum sheet (AHRI Certified)  
PA: Aluminum sheet
- ② **Category of products**  
C: Cassette  
R: Wheel only
- ③ **Diameter of wheel**
- ④ **Function of wheel**  
T: Total heat recovery  
S: Sensible heat recovery
- ⑤ **Duct connection type**



### Standard type (Duct Connection)

	Model	Air flow (m³/h) Face velocity (1.5~4.5m/s)	Motor 3 φ/380~415V 50Hz/60Hz	Weight (kg)	Dimension (mm)		
					A	B	C
1	HPC- 500T-U	450~ 1,360	0.1kW	85	800	340	500
2	HPC- 600T-U	680~ 2,040		100	900	340	600
3	HPC- 700T-U	950~ 2,860		110	1000	340	700
4	HPC- 800T-U	1,260~ 3,800		120	1100	340	800
5	HPC - 950T-U	1,810~ 5,450		135	1200	340	950
6	HPC-1050T-U	2,100~ 6,320		140	1200	340	1050
7	HPC-1100T-U	2,460~ 7,380		145	1300	340	1100
8	HPC-1200T-U	2,940~ 8,830	0.2kW	155	1400	340	1200
9	HPC-1300T-U	3,470~ 10,410		175	1500	340	1300
10	HPC-1500T-U	4,550~ 13,670		210	1700	340	1500
11	HPC-1700T-U	5,900~ 17,710	0.4kW	300	1900	340	1700
12	HPC-1900T-U	7,420~ 22,260		340	2100	340	1900
13	HPC-2150T-U	9,550~ 28,670		390	2350	420	2150
14	HPC-2400T-U	11,990 ~ 35,990	0.75kW	700	2700	500	2400
15	HPC-2600T-U	14,110 ~ 42,350		760	2900	500	2600
16	HPC-2900T-U	17,610 ~ 52,840		890	3200	500	2900
17	HPC-3100T-U	20,150 ~ 60,470	1.5kW	1030	3400	550	3100
18	HPC-3500T-U	25,700 ~ 77,100		1280	3800	600	3500
19	HPC-3900T-U	31,970 ~ 95,930		1490	4200	600	3900
20	HPC-4200T-U	37,120 ~ 111,380		1650	4500	600	4200



- Note** Please ask our representatives for any options.
1. Different voltage/frequency
  2. Horizontal installation
  3. High temperature air
  4. Different sizes/larger diameter wheel  
(Above sizes are just for reference)
  5. Higher Velocity

Larger than 2150T is shipped as two bodies.

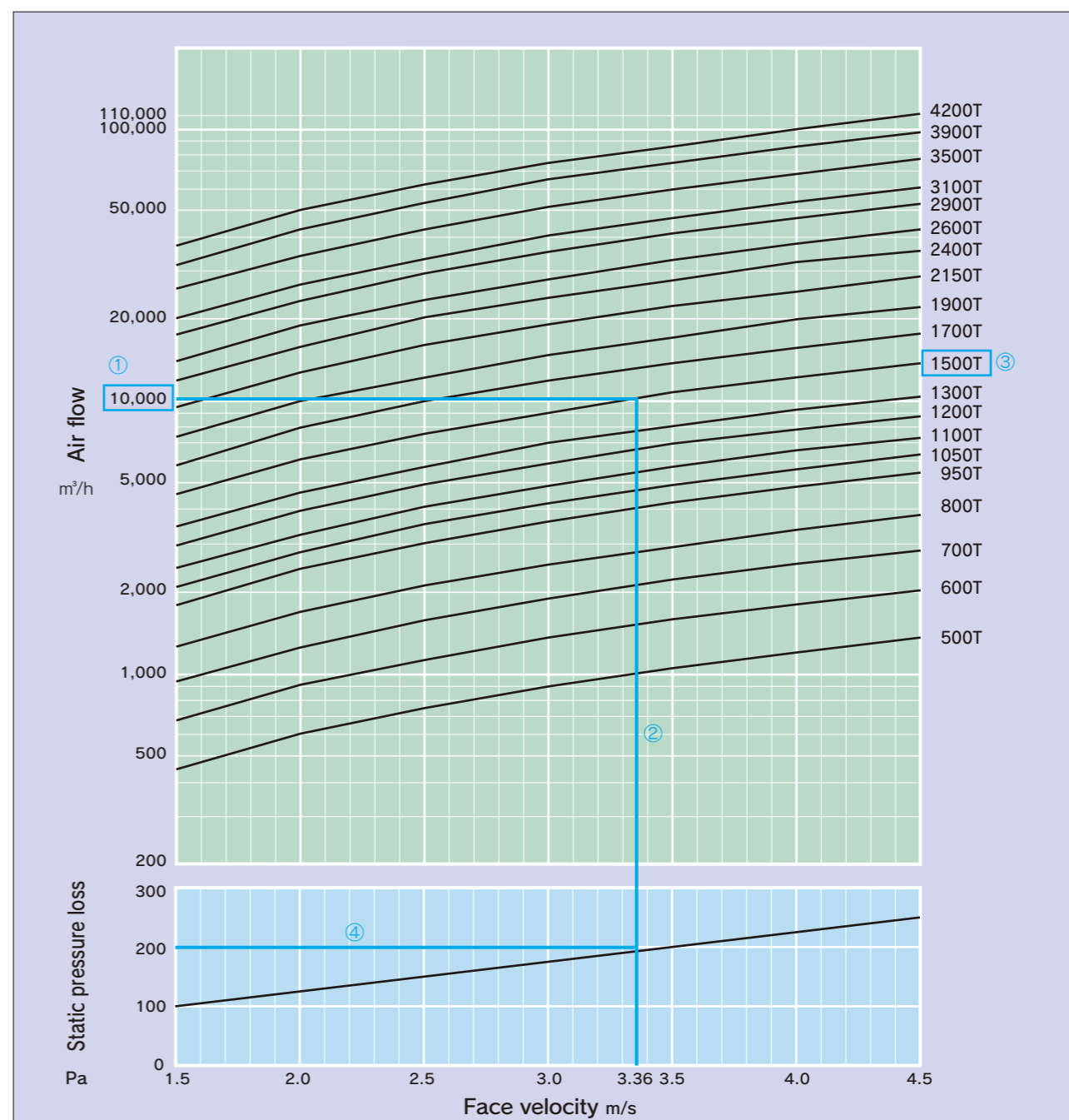
Specification/dimension/design is subject to change without notice.

# How to Read Model Selection Table

## ■ For equal air flows

- ① Enter the required air flow on the left side of the Chart and extend a horizontal line <m³/h-line> to the right.
  - ② Select a face velocity in accordance with the given schedule. Extend a vertical line from the desired face velocity and intersect the m³/h-line.
  - ③ The line <model-line> for Model number which either passes through or to the left of this intersecting point determines your desired selection.
  - ④ Extend the above line downward on Chart, and determine Static pressure loss.
- Ask us about software for each model selection.

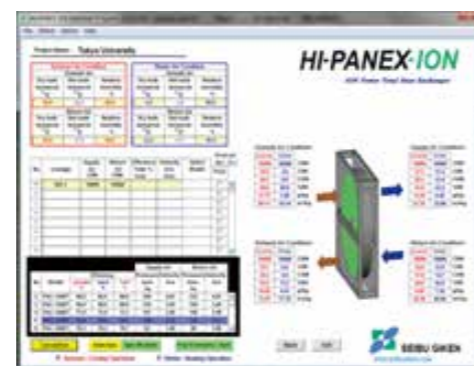
### Model Selection Table



## Selection Software

Our selection software allows very simple operation to size optimum model in accordance with required performance. The cassette type either Built-in or Standard can be also available in selection. The software will be updated periodically based on latest certification and performance. Please contact our representative for more detail.

### ■AHRI Certified product and Selection Software



## GREEN-SAVE® HI-PANEX-ION Installation

### ■One body type

HPC/PAC-1900T or smaller cassette will be shipped as one body. These cassettes are containerized with suitable package for export and are installed simply. Connection to the duct, modular for AHU, installation can be done without any further assembly.



One body type

### ■Two bodies for larger cassette

HPC/PAC-2150T and larger cassette will be shipped as two bodies in order to containerize for export. The wheel itself is also divided to two half-moons. Two bodies shipment allows to save installation time and labor work. All products are pre-tested before shipment.



Two bodies for larger cassette

Please contact our representative for more detail.

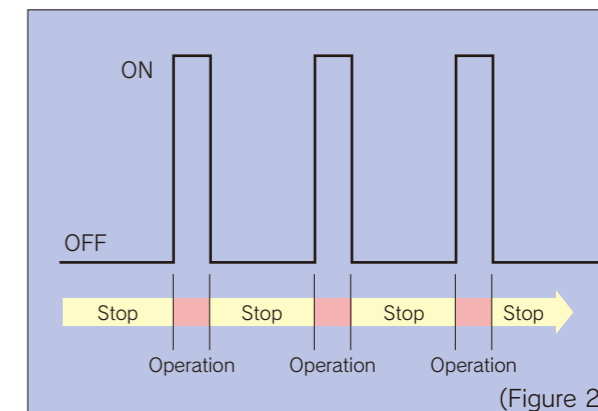
## How to Control in Intermediate Seasons

In intermediate seasons, the rise of room temperature can be adjusted by taking outside cool air into the room and the heat recovery of RA by GREEN-SAVE® HI-PANEX-ION is not required. Therefore it is recommended to lower the heat recovery rate by controlling the efficiency of total heat recovery wheel. Besides alternatively bypassing, the following method as shown in the Figure 2 is generally applied to control the efficiency.

### ■ON-OFF control

This method is to intake the outside air which is lower than the room temperature by intermittently rotating and stopping the wheel. Also the clogging of the honeycomb can be prevented because the wheel is intermittently rotated.

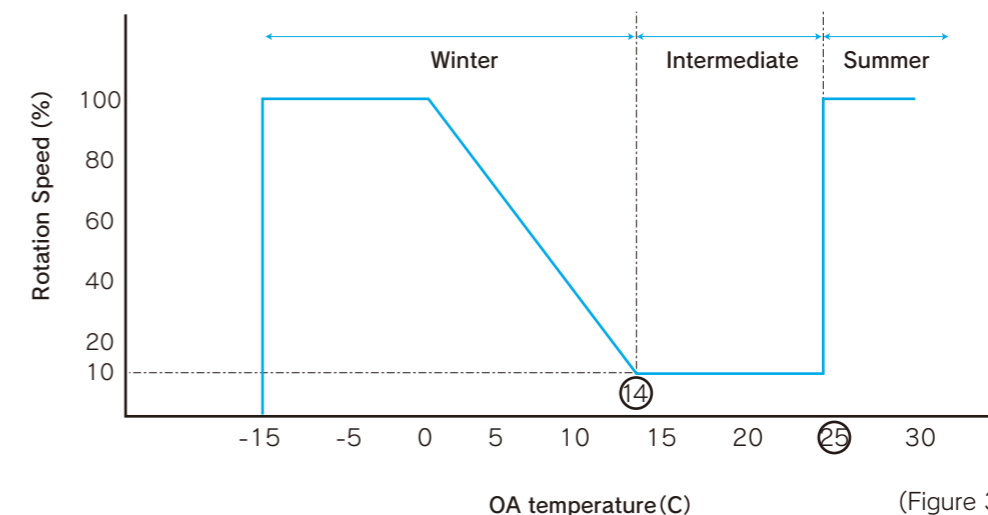
- Standard timer
- Timer for operation 5 min.
- Timer for stop 60 min.



(Figure 2)

### ■VFD Control and frost control

This method is to maximize the fresh air intake. By combination with ON-OFF control in the intermediate season, IAQ is maximized. The frost point will be varied due to RA condition. Each set point is variable. Please contact Representative for more detail.



(Figure 3)

### ■Pneumatic High Pressure Auto Cleaning System

Available as option.

