SMC

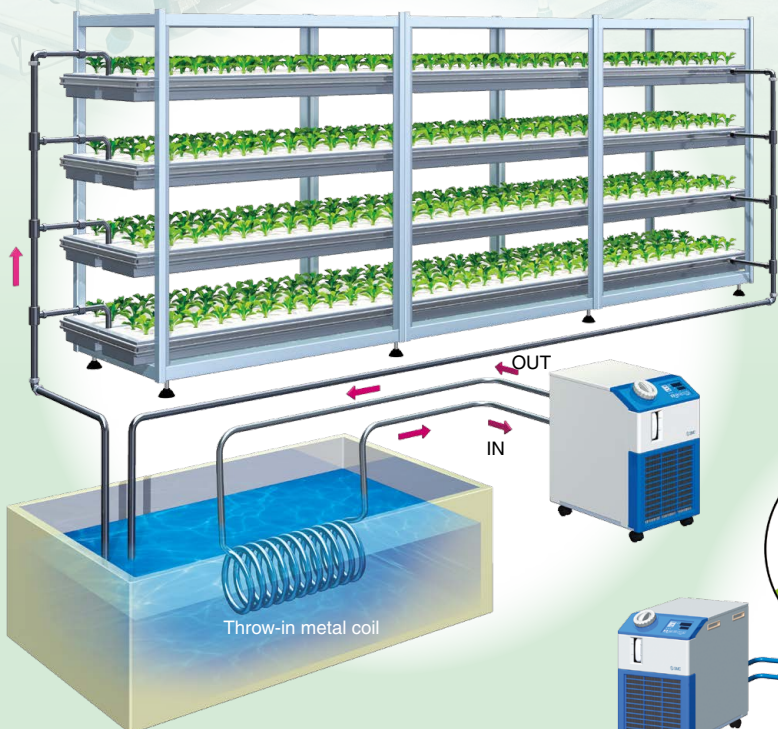# SMC-made chillers can be used in a wide range of applications!

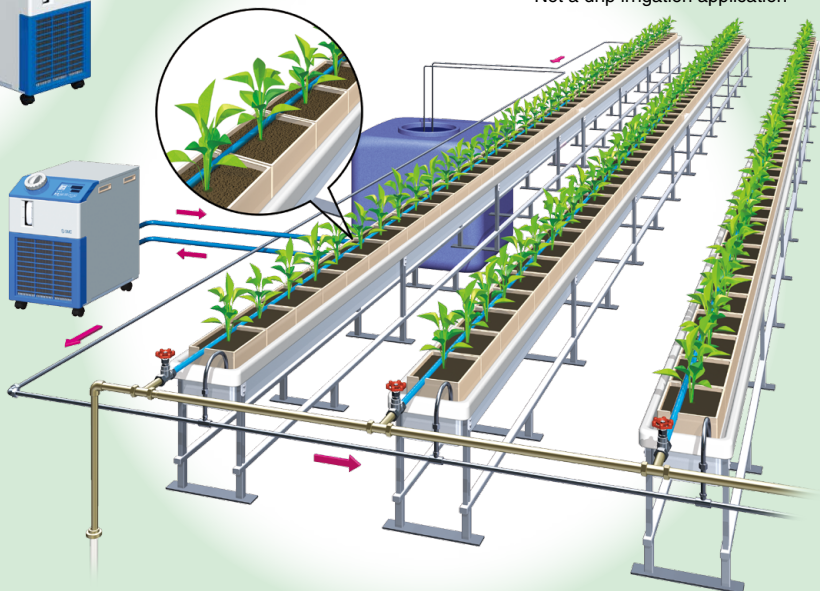## Plant Factory

For the temperature control of nutrient solution in tanks

OUT

IN

Throw-in metal coil

Facility Cultivation

For the partial temperature control of cultivation areas

* Not a drip irrigation application

❶ Select by set temperature range ❷ Select by cooling capacity and temperature stability

Click here for details.

Series	Temperature range setting °C	Temperature stability	Cooling capacity kW 0.1	0.2	0.3	0.4	0.5	0.6	0.8	1.0	1.2	1.8	2.4	3	4	5	6	9	10	15	20	25	28	30
Thermo-chiller Standard type **HRS** Series	5 to 40°C (0–60)	±0.1°C									●	●	●	●	●	●	●							
Thermo-chiller Environmentally resistant type Standard type **HRS-R** Series	5 to 40°C (0–60)	±0.1°C										●		●		●								
Thermo-chiller Standard type **HRS090** Series	5 to 35°C (0–60)	±0.5°C																●						
Thermo-chiller Standard type **HRS100/150** Series	5 to 35°C (0–60)	±1.0°C																		●	●			
Thermo-chiller Inverter type **HRSH090** Series	5 to 40°C (0–60)	±0.1°C																●						
Thermo-chiller Inverter type **HRSH** Series	5 to 35°C (0–60)	±0.1°C																		●	●	●	●	●
Thermo-chiller Basic type **HRSE** Series	10 to 30°C (0–60)	±2.0°C									● 1.2 kW	● 1.6 kW	● 2.2 kW											
Thermo-chiller Dual channel refrigerated **HRL** Series [CH1] 15 to 25°C [CH2] 20 to 40°C (0–60)	CH1 ±0.1°C																	●			● 19 kW		● 26 kW	
		CH2 ±0.5°C	●																					

Not sure which size to choose? Try this calculation method.

Required cooling capacity formula $Q\,[kW] = V \times p \times c \times \Delta T/t$

Ex. Problem: The nutrient solution temperature in a 31-tonne system (including an 8-tonne tank) rises by 2°C after 16 hours of LED-lighting.

$Q = 31000\,[dm^3] \times 1\,[kg/L] \times 2\,[K] \times 4.2\,[kJ/kg \cdot K]/57600\,[s] \times 1.2\,[\text{Safety factor 20\%}] = 5.42\,[kW]$

➡ **Selection of the HRS090-A-20 (Cooling capacity: 8.0 kW)**

∗ Ambient temperature: 25°C, Circulating fluid: Tap water, Circulating fluid temperature: 20°C, Circulating fluid flow rate: Rated flow, Power supply: 200 VAC
∗ Calculation based on a situation in which the pure water temperature has been changed.

Ex. Goal: To bring a 1200 L tank from 26°C to 20°C in 1 hour.

$Q = 12000\,[dm^3] \times 1\,[kg/L] \times 6\,[K] \times 4.2\,[kJ/kg \cdot K]/3600\,[s] \times 1.2\,[\text{Safety factor 20\%}] = 10.1\,[kW]$

➡ **Selection of the HRSH100-A-20 (Cooling capacity: 10.5 kW)**

∗ Ambient temperature: 32°C, Circulating fluid: Tap water, Circulating fluid temperature: 20°C, Circulating fluid flow rate: Rated flow, Power supply: 200 VAC
∗ Calculation based on a situation in which the pure water temperature has been changed.

Click here for details.

To select a model, you can also use the thermo-chiller selection software in the model selection program on the SMC website.

⚠ **Safety Instructions**   Be sure to read the "Handling Precautions for SMC Products" (M-E03-3) and "Operation Manual" before use.

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