Quality is more than a word

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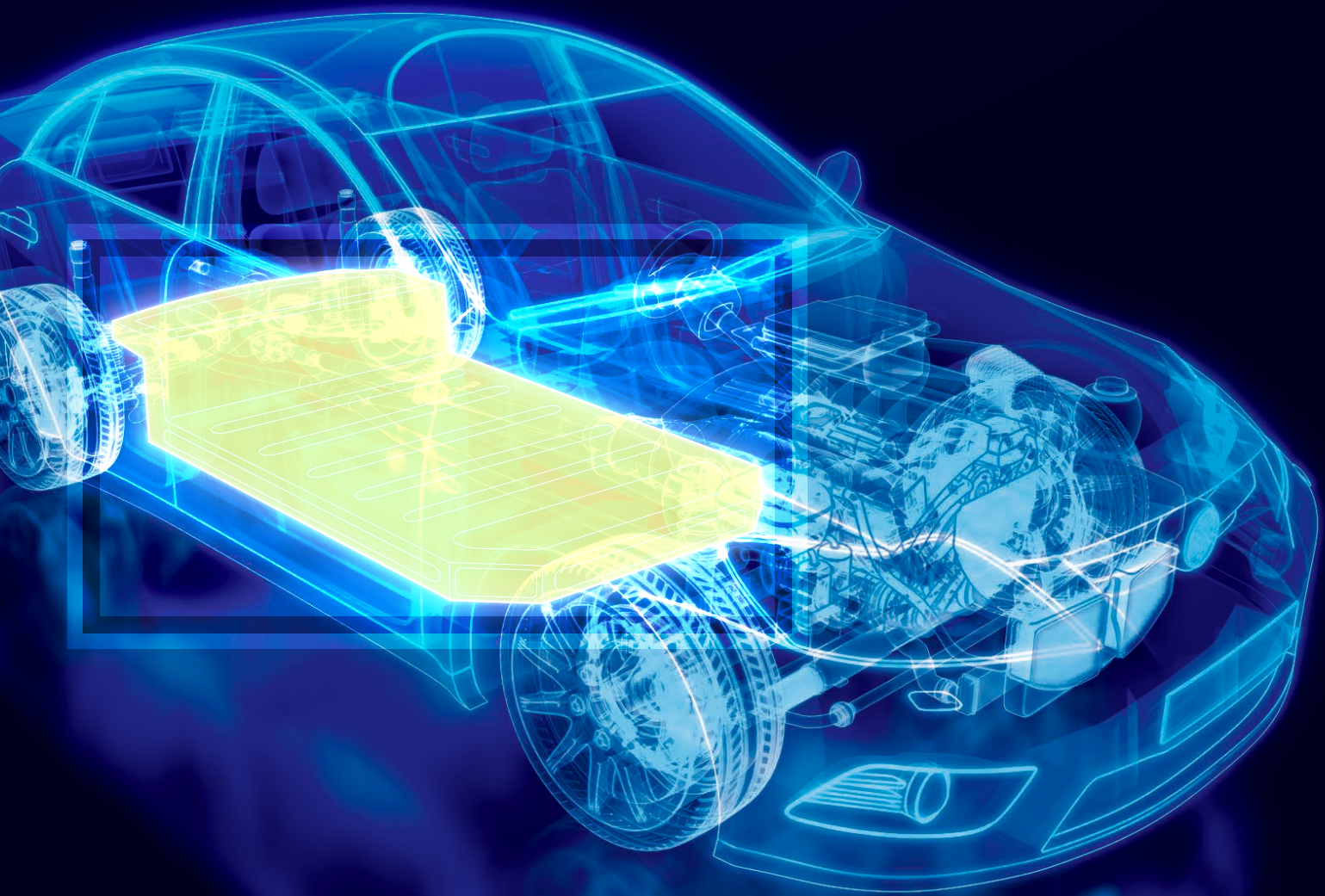
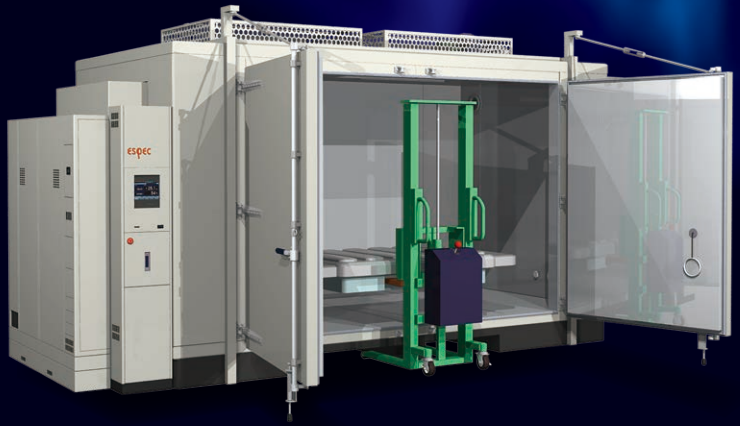




For Battery Pack

Charge/Discharge Testing Temperature & Humidity Chamber

WALK-IN CHAMBER

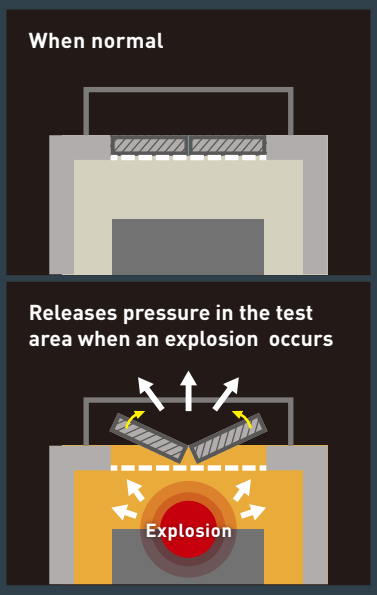
SAFETY FUNCTION

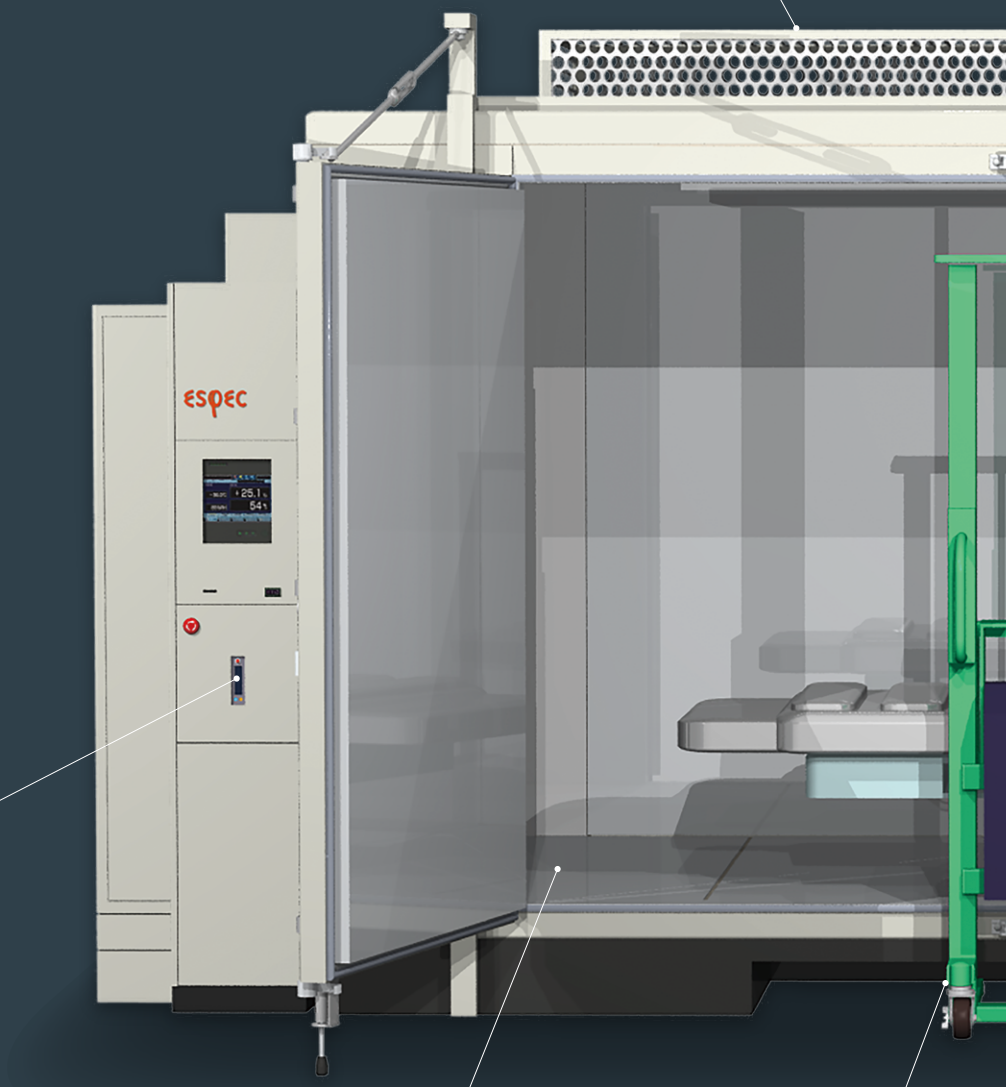
Special temperature & humidity chambers with standard safety performance

CASE : LEVEL 5·6·7

Pressure relief vent

Equipped with a large pressure relief vent that has high pressure-release capability. The pressure relief vent releases test area pressure from the top of the chamber before the door in the event of an explosion for even better safety performance.





CASE : LEVEL 3·4

Gas concentration alarm

O_2, H_2, CO

The gas detector is used to detect harmful gases generated by batteries. The use of a heat exchanger allows detection regardless of the control temperature inside the chamber. When H_2 or other gas is detected, the exhaust fan operates automatically linked with the set concentration.

Operation matrix	Chamber status	Linked with
O_2, CO gas detection	Error stop	—
H_2 gas detection (stage 1 alarm)	Continued operation (alarm display)	Exhaust fan
H_2 gas detection (stage 2 alarm)	Error stop	—

Insulation Optional

Insulation treatment is performed by laying a rubber sheet on the floor to prevent electrolyte leakage from the battery and short circuits.

Cutouts for lift fork

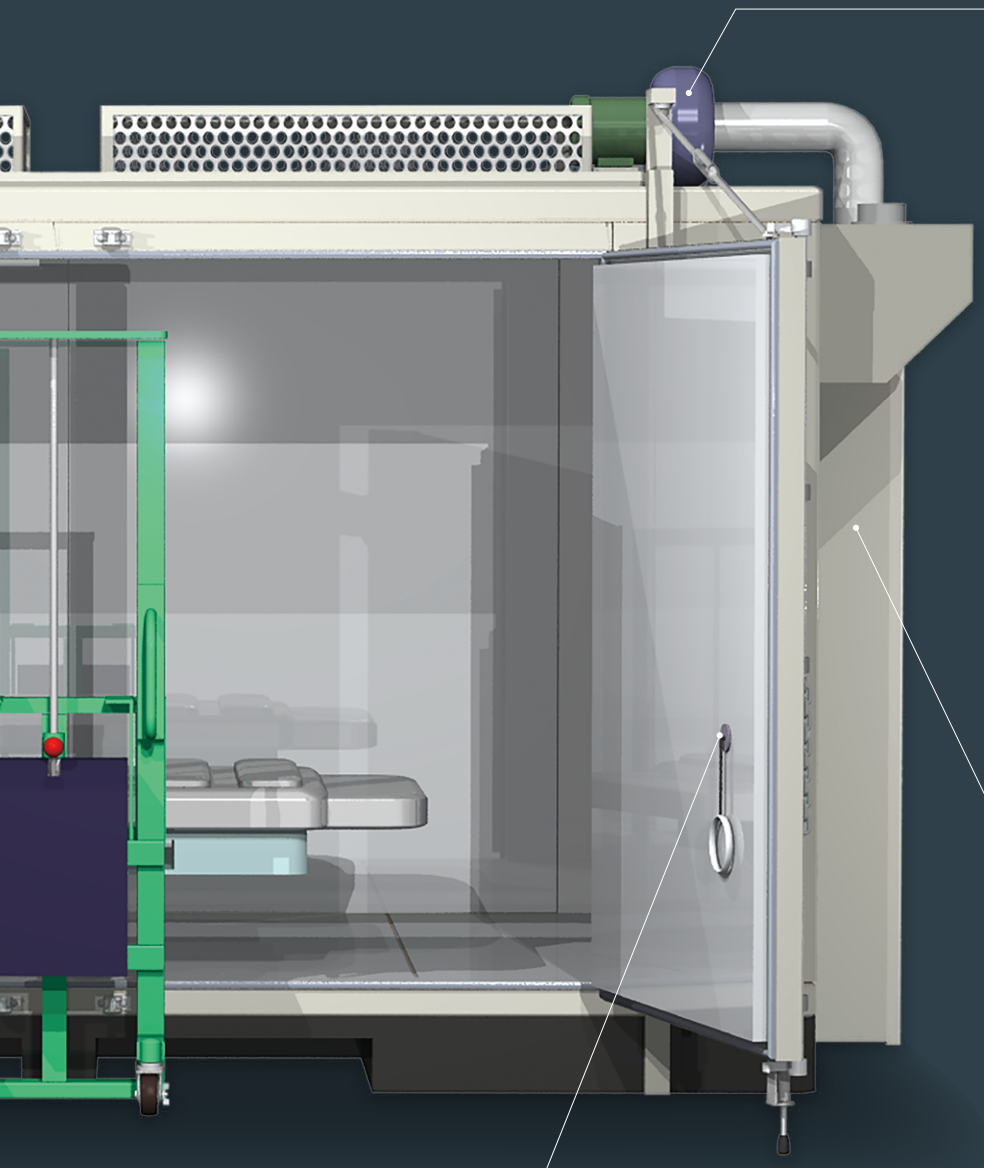
Cutouts for lifts are provided in order to carry in heavy pack batteries.

Hazard levels

Hazard levels refer to the degree of danger a battery poses in the event of widespread misuse or in an emergency. The required temperature chamber safety functions are provided for each hazard level depending on the battery conditions. This is one of the main factors for selecting optional safety functions.

LEVEL	Battery	Required functions
1	Activation of protective functions	Charge/discharge system linking (External input/output terminal)
2	Defect, damage	
3	Fluid leakage (Electrolyte weight loss: Less than 50%)	Gas detection, test area ventilation function
4	Significant fluid leakage (Electrolyte weight loss: 50% or more)	
5	Ignition, combustion	Heat detection, fire extinguisher operation, pressure relief vent, spatter prevention measures
6	Rupture, scattering of components	
7	Explosion	

Reference: EU CAR (European Council for Automotive R&D) Hazard Levels



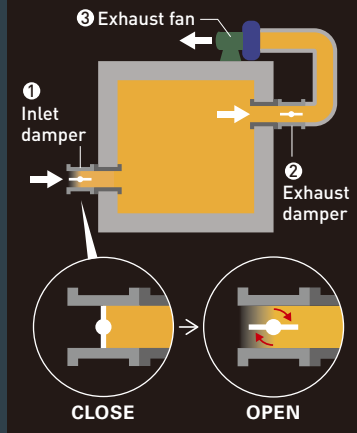
CASE : LEVEL 3·4

Air supply/exhaust system

This system acts as a test area ventilation function. The chamber is equipped with an inlet damper and exhaust damper, and performs automatic ventilation linked with the gas detector. A forced exhaust fan is also available if necessary for the installation environment.

Ventilation method

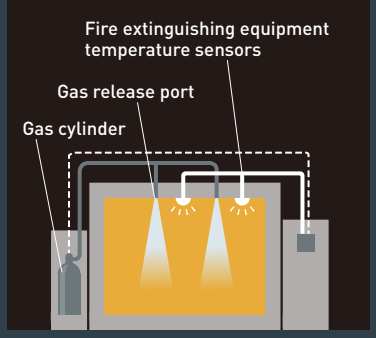
1. Operate ❶, ❷, and ❸ in the figure below with the manual switch to perform forced exhaust.
2. Exhaust is performed automatically when an abnormal gas concentration is detected.



CASE : LEVEL 5·6·7

N_2/CO_2 gas fire extinguishing equipment Optional

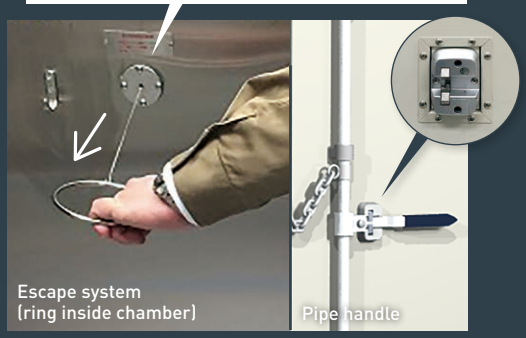
When the temperature sensor inside the chamber detects an abnormality, gas is discharged.



Container handle door lock, door emergency escape system

The standard door lock is a pipe handle-type lock. An escape system is also provided that allows the lock to be released from inside the test area in case a person is trapped in the test area.

Pulling the ring inside the chamber raises the lever and disengages the handle.

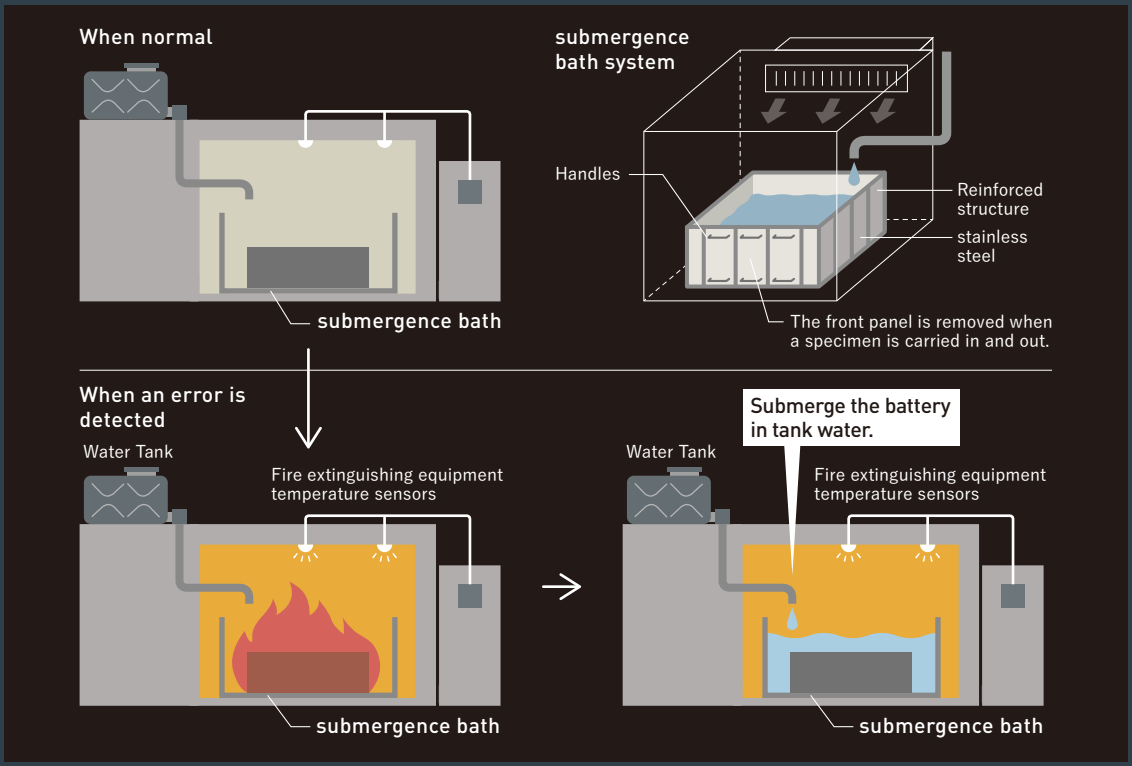


Proposal for Deactivation Process [Special Options]

CASE : LEVEL 5･6･7

Submergence fire extinguishing equipment

When the temperature sensor inside the chamber detects an abnormality, tank water is discharged into the submergence bath and the battery unit is submerged in water.



SPECIFICATION

Models		TBE-2EW0P2T	TBE-3EW0P2T	TBE-4EW0P2T
Temperature range			-40 to +100°C	
Humidity range			10% to 95%rh (at +10 to +80°C)	
Temperature/humidity fluctuation			±0.5°C/±4.0%rh	
Temperature variation in space			2.5°C*	
Temperature change rate	Heat up rate		1.0°C/min	
	Pull down rate		0.3°C/min	
Temperature extremes achievement	Heat up rate		+20 to +100°C in 80 min.	
	Pull down rate		+20 to -40°C in 180 min.	
Floor load capacity			600 kg/m² (1000 kgf/m² is also available.)	
Internal dimensions(mm)		W2000 × H2100 × D2000	W3000 × H2100 × D2000	W4000 × H2100 × D2000
External dimensions(mm)		W3500 × H2700 × D3000	W4500 × H2700 × D3000	W5500 × H2700 × D3000
Large door(mm)		W1400 × H2000	W2000 × H2000	W3000 × H2000
Components		Container handle, emergency escape system, door opening prevention chain, door stopper (foot stop type) equipment Cable port (ø50 mm), ventilation fan, LED light, emergency stop switch, floor reinforcement (t3 mm), humidity sensor, chamber stand cutouts for lift forks, pressure relief vent, inter-panel grounding, vibration-resistant fastening bracket, air supply/exhaust system (inlet/exhaust dampers and exhaust fan), chamber interior/exterior reinforcement		
Selectable options		Low-GWP refrigerant (R-449A), communication function (RS-232C/RS-485), gas concentration alarm (H_2/O_2/CO), additional cable port selection, fire extinguishing equipment (N_2/CO_2), external input/output terminals (external equipment error input, collective alarm output), floor rubber sheet ● For other options, please consult with us.		

*The temperature variation in space is 5.5°C when the temperature setting is higher than +80°C.

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LEAF No. 20240203 AAc3B06L001 (as of February 2024)