CO_2 & MULTIGAS INCUBATOR SERIES

IncuSafe

Models:

MCO-170AIC-PE | MCO-170AICUV-PE | MCO-170AICUVH-PE
MCO-170AICD-PE | MCO-170AICUVD-PE
MCO-230AIC-PE | MCO-230AICUV-PE | MCO-230AICUVH-PE
MCO-170M-PE | MCO-170MUV-PE | MCO-170MUVH-PE

Optimising cell culture outcomes and reproducibility.

Incu*Safe* Incubators offer the most precise and regulated environment. During cell culturing, the inCu-saFe germicidal interior and SafeCell UV lamp, work continuously to prevent contamination.

PHC Europe B.V.
Formerly Known as Panasonic Biomedical Sales Europe

www.incusafe.com

THE **INCU***SAFE* ADVANTAGE

Combining advanced technology, unique design features and high-quality engineering, **Incu***Safe* Incubators offer the most precise and regulated environment for cell culture. Providing outstanding performance and flexibility, this innovative range of incubators enables you to optimise results and reproducibility. The **Incu***Safe* Advantage is delivered through three important benefits:

A PRECISE & REGULATED ENVIRONMENT

Incu*Safe* Incubators offer accurate, uniform and highly responsive control of conditions within the chamber. Temperature is regulated through three independent heating zones under microprocessor P.I.D. control. High quality sensors within the incubators ensure excellent control of CO_2 and O_2.

ACTIVE BACKGROUND DECONTAMINATION

Incu*Safe* Incubators are designed to actively prevent contamination during cell culture. The unique, copper-enriched stainless steel alloy interior eliminates contamination and mitigates the effect of airborne contaminates that can be introduced through normal use. An optional, isolated, UV lamp decontaminates circulating air and water in the humidifying pan, without harming cultured cells.

STERILISATION TO MEET EVERY NEED

When additional sterilisation is required to complement background decontamination within the **Incu***Safe* Incubators, PHCbi offers two sterilisation methods. For a fast turnaround, H_2O_2 decontamination safely cleans the chamber in less than three hours. Dual Heat Sterilisation (available in the MCO-170AICD CO_2 Incubator) provides an 11-hour, 180°C sterilisation process. With extremely low heat dissipation during sterilisation, cell culturing can continue uninterrupted in stacked **Incu***Safe* Incubators as the procedure is carried out.

CO_2 & MULTIGAS INCUBATOR FEATURES

EASE OF USE & MAINTENANCE

A full colour LCD touchscreen allows full control, even with gloved hands. Transfer of data is easy via a USB port. The easy-to clean interior features fully rounded corners and integrated shelf supports.

EFFICIENT WORKFLOWS

Complete laboratory procedures and experiments more efficiently with less incubator downtime.

INTUITIVE USABILITY

Control and visibility of internal conditions within the incubator, such as CO_2, O_2 and temperature, is easy with the **Incu***Safe* Incubators.

MDD
medical device directive

MCO-170AIC | MCO-170AICD | MCO-230AIC | MCO-170M Series are certified as a Class IIa Medical Device (93/42/EEC and 2007/47/EC) for medical purposes of culturing cells, tissues, organs and embryos.

SCIENTIFIC APPLICATIONS

MCO-170AIC | MCO-170AICD | MCO-230AIC Series

- Tissue Research
- Antibody Production
- Genomic & Proteomic Expression
- Plant & Amphibian Cell Culture
- Transfection & Transduction Procedures
- Low Volume Media Microplate Work

PHYSIOLOGICAL O_2 APPLICATIONS

MCO-170M Series

- Stem Cell Research
- *In vitro* Fertilization
- Regenerative Medicine
- Primary Cell Culturing
- Cancer Research
- Embryo Studies
- Sensitive Cell Culturing

CO_2 & MULTIGAS INCUBATORS

Incu*Safe* CO_2 Incubators

165 litres Incubators
230 litres Incubators

MCO-170AIC-PE | MCO-170AICUV-PE | MCO-170AICUVH-PE
MCO-170AICD-PE | MCO-170AICUVD-PE
MCO-230AIC-PE | MCO-230AICUV-PE | MCO-230AICUVH-PE

Incu*Safe* Multigas Incubators

161 litres Incubators

MCO-170M-PE | MCO-170MUV-PE | MCO-170MUVH-PE

Optimising cell culture outcomes and reproducibility.

Incu*Safe* CO_2 Incubators provide precise control of CO_2 concentration and accurate, uniform, and highly responsive temperature control within the chamber. During cell culturing, the inCu-saFe germicidal interior and SafeCell UV lamp, work continuously to prevent contamination. PHCbi offers two alternative sterilisation methods for the CO_2 Incubators to meet every need.

So comfortable, your cells will feel *in vivo*.

Incu*Safe* Class IIa Medical Device certified, Multigas Incubators optimise mammalian cell cultures through variable CO_2 & O_2 control to simulate *in vivo* conditions. The MCO-170M helps to achieve more accurate results and higher reproducibility when culturing cells at physiological oxygen levels. During culture, the inCu-saFe Germicidal Interior and SafeCell UV Lamp continuously prevent contamination.

PRECISE & REGULATED ENVIRONMENT: TEMPERATURE CONTROL

Models: MCO-170AIC | MCO-170AICD | MCO-230AIC | MCO-170M Series

DIRECT HEAT SYSTEM

The Direct Heat System in the **Incu***Safe* Incubators achieves an accurate, uniform, and highly responsive temperature control within the chamber. This system regulates temperature through three independent heating zones under microprocessor P.I.D* control. The system anticipates the amount of energy needed to recover chamber temperature for fast recovery times.

*Proportional Integral Derivative

Heat zones

Side, top and rear walls form the dominant radiant heat source.

The bottom heater elevates the humidity reservoir water temperature to achieve 95% RH at 37°C.

The outer door heater warms the inner glass door to prevent condensation on the glass and to assure interior temperature uniformity.

Internal conditions

- To avoid cell culture desiccation, **Incu***Safe* CO_2 and Multigas Incubators maintain 95% RH at 37°C.
- Humidification is achieved by reliable natural evaporation and gentle air circulation.

PRECISE & REGULATED ENVIRONMENT: INSULATION

AIR JACKET SYSTEM

Precise and uniform temperature control is ensured by the Air Jacket system. The jacket itself is surrounded by high-density foam insulation to protect against ambient temperature fluctuations, eliminating 'cold-spots' and preventing condensation. Uniform temperatures are further ensured by gentle fan circulation within the chamber.*

* In MCO-170AIC,MCO-230AIC & MCO-170M series

MELAMINE FOAM

The MCO-170AICD has melamine foam insulation, which provides high thermal insulation and excellent heat endurance. Melamine foam insulation limits heat dissipation during dry heat sterilisation. This means that cell culture can continue uninterrupted in incubators stacked with those actively running sterilisation.

PRECISE & REGULATED ENVIRONMENT: CO_2 AND O_2 CONTROL & RECOVERY

Models: MCO-170AIC | MCO-170AICD | MCO-230AIC | MCO-170M Series

DUAL IR CO_2 SENSOR

IR dual sensor

The single beam, dual detector IR CO_2 Sensor offers continuous calibration for excellent control, accuracy and stability. The sensor simultaneously measures sample and reference wavelengths for continuous auto-zero calibration.
The ceramic-based sensor is unaffected by moderate changes in temperature and relative humidity and is linked to the P.I.D. controller for fast recovery times.

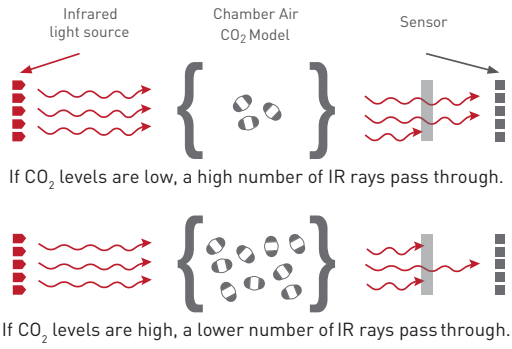
ZIRCONIA O_2 SENSOR

zirconia O_2 control

The unique, solid state Zirconia O_2 sensor delivers precise oxygen control. The sensor maintains long-term high accuracy, while offering a long life-span, and no need for periodic calibration.

HOW DOES THE IR SENSOR WORK?

The IR sensor measures the absorbance of light from an infrared lamp of a specific wavelength over a fixed distance. As only CO_2 absorbs light at the selected wavelength, the sensor functions independently of both temperature and humidity.



If CO_2 levels are low, a high number of IR rays pass through.

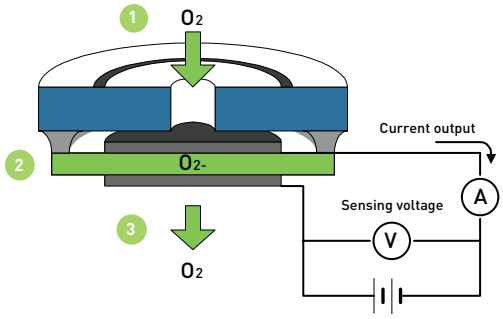
If CO_2 levels are high, a lower number of IR rays pass through.

The single-beam IR sensing system incorporates two (dual) sensors to simultaneously measure CO_2, at a wavelength of 4.3 µm and background absorption at a wavelength of 4.0 µm. This enables the controller to make constant auto-zero adjustments to ensure accurate CO_2 measurements at all times. This also eliminates the need for an auto-zero pump providing enhanced reliability and reduced vibration.

HOW DOES THE ZIRCONIA SENSOR WORK?

The more O_2 passes through the Zirconia sensor, the more electrical current is induced. This creates a signal to inject more N_2 molecules to displace O_2 molecules.

Conversion of O_2 concentration to electrical current



1. Diffusion of O_2 molecules across Zirconia sensor
2. Cathode produces electrical current as O_2 passes
3. O_2 reacts with Zirconia to produce ions

CONDENSATION MANAGEMENT

With a unique antibacterial coating the 'dew stick'*- controlled by Peltier technology - condenses water vapour on its surface, which then drips into the humidifying pan, preventing unwanted condensation in the chamber and possible contamination.

* In MCO-170AIC,MCO-230AIC & MCO-170M Series.

ACTIVE BACKGROUND DECONTAMINATION - INCU-SAFE GERMICIDAL INTERIOR

Models: MCO-170AIC | MCO-170AICD | MCO-230AIC | MCO-170M Series

INCU-SAFE

inCu-saFe germicidal interior prevents contamination. The exclusive inCu-saFe copper-enriched stainless steel alloy interor offers the germicidal properties of copper and the durability of stainless steel. Selected to provide passive germicidal protection without rust or corrosion, inCu-saFe expresses a natural germicidal effect, inhibiting the growth of molds, fungi, mycoplasma and bacteria on its surface continuously.

All interior components, including the air management plenum, humidity pan and fan assembly are easily removable without tools if required. When components are removed, all interior surfaces are exposed for conventional wipe down.

Due to their size and resilience, Mycoplasma are often resistant to traditional methods of contamination control such as HEPA filters.

The chart below demonstrates the germicidal properties of inCu-saFe copper enriched stainless steel alloy against four strains of mycoplasma.

MYCOPLASMA STRAIN	NEGATIVE CONTROL	CONVENTIONAL TYPE 304 STAINLESS STEEL	InCu-SaFe INTERIOR	CONVENTIONAL COPPER C1100
MYCOPLASMA FERMENTANS PG18	no growth	growth	no growth	no growth
MYCOPLASMA ORALE CH19299	no growth	growth	no growth	no growth
MYCOPLASMA ARGININI G230	no growth	growth	no growth	no growth
MYCOPLASMA HOMINIS PG21	no growth	growth	no growth	no growth

Experimental conditions
1. Mycoplasma suspension(105-106/ml) is dropped on the test piece.
2. Incubate at 37°C, 5%CO_2 for 24 hours.
3.Re-suspend in fresh medium.
4.Incubate at 37°C, for 7 days.
5.If the Mycoplasma survives, the medium will change to a specific colour.

INCU-SAFE INTERIOR COMBINES THE BENEFITS OF COPPER AND STAINLESS STEEL

- Fights off surface contamination.
- Does not corrode like solid copper surfaces.
- Appearance and durability of stainless steel.
- Standard feature in all **Incu***Safe* CO_2 & Multigas Incubators.

COMPETING INCUBATOR WITH COPPER INTERIORS

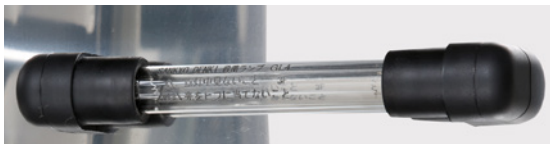
- May corrode over time.
- Humid environment may cause interior coating to turn into green cupric oxide, which may prove to be lethal to cell cultures.
- Contamination is difficult to detect due to discoloration of interior surfaces.
- Difficult to maintain and clean.

ACTIVE BACKGROUND DECONTAMINATION - SAFECELL UV LAMP

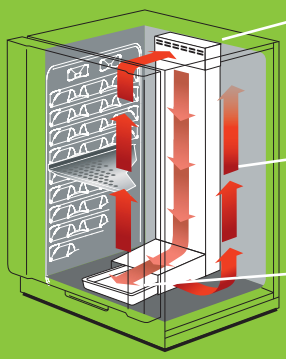
Models: MCO-170AIC | MCO-170AICD | MCO-230AIC | MCO-170M Series

SAFECELL UV LAMP

The programmable ultraviolet lamp, isolated from cell cultures, eliminates contaminants in the air-flow and water-pan without affecting cell cultures. SafeCell UV inhibits the growth of mycoplasma, bacteria, molds, spores, yeasts and fungi without costly HEPA filters that accumulate contaminants in the chamber air. Interior air motion is suspended when the door is opened, minimising movement of room air contaminants into the chamber.



Airflow & waterpan decontamination using a UV System



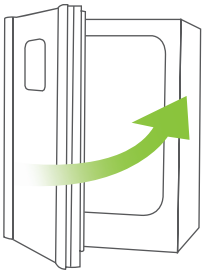
Airflow Decontamination
Humidified, decontaminated air is released from the lower plenum for vertical convection through and around the perforated shelves.

UV Light
Ultraviolet light is contained behind an enclosed structure to direct rays at water pan and airflow, away from cultured cells.

Humidifying pan
Contaminants trapped in the water pan are destroyed by high intensity, ozone-free ultraviolet light.

VERSATILE PROGRAM CYCLES OF SAFECELL UV LAMP FOR OPTIMUM USABILITY

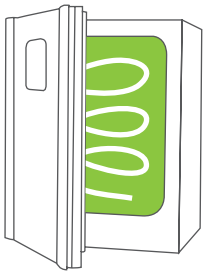
24 Hour UV Decontamination



This feature can be used in the following instances:

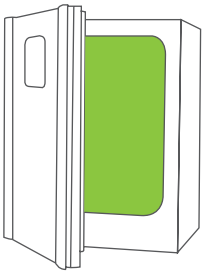
- Prior to first use
- Overnight
- Between cell culture protocols
- Following maintenance or service
- Secondary decontamination method

After H_2O_2 Vaporisation



The UV lamp automatically cycles ON for 90 minutes following a seven-minute H_2O_2 vapour cycle and decomposes the vapour to water and oxygen.

After Door Openings



Door closure causes UV lamp to turn ON for ten-minutes, decontaminating the external air that entered the chamber.

ON/OFF

If UV protection is not desired, SafeCell UV lamp can be switched OFF.

STERILISATION METHODS - H_2O_2 DECONTAMINATION TECHNOLOGY

Models: MCO-170AICUVH | MCO-230AICUVH | MCO-170MUVH

H_2O_2 DECONTAMINATION TECHNOLOGY

The unique H_2O_2 decontamination system delivers fast and validatable decontamination.
The high-speed decontamination system uses vaporised hydrogen peroxide and UV light.
It cleans the chamber of the incubator safely in less than three hours, achieving a minimal 6 log reduction of major contaminants.

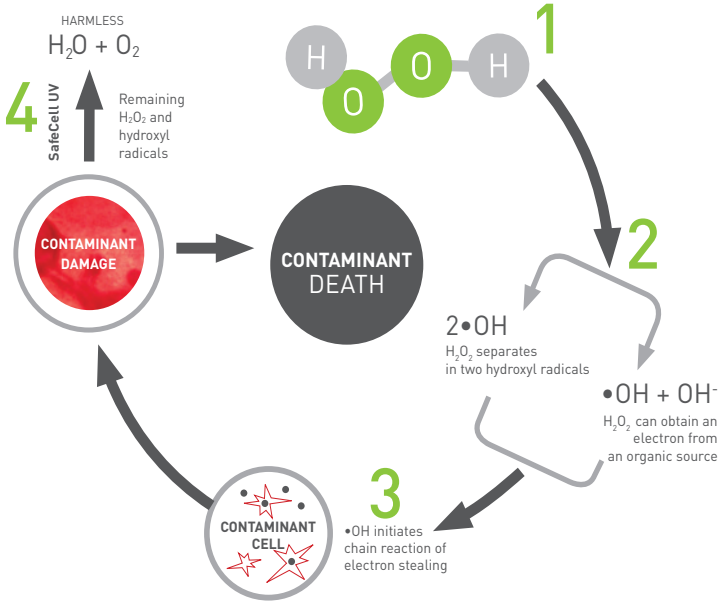
HOW DOES IT WORK?

1. Hydrogen peroxide (aqueous) is converted to vapour using high frequency ultrasonics. During this process, the fan motor remains active, ensuring H_2O_2 vapour accesses every point of the chamber and the tubing to and from, and the inside of the CO_2 sensor.

2. The H_2O_2 vapour breaks down into hydroxyl radicals naturally.

3. The hydroxl radicals initiate a chain reaction of electron stealing.

4. This unstable internal environment leads to death of contaminants. Remaining hydroxyl radicals and H_2O_2 are decomposed to H_2O (aqueous) & O_2 (gas).



DNA is very susceptible to oxidative damage. Since most bacteria have a single chromosome controlling all their life functions, this kind of effect can be detrimental to their normal function. Prokaryotic organisms often lack repair mechanisms to limit such damage, making them more prone to change.

H_2O_2 DECONTAMINATION CYCLE

STEP 1

Preparation Time: 10 - 15 minutes

1. Remove all interior components
2. Wipe down the inside of the incubator
3. Reposition interior components to specified locations for in situ decontamination
4. Set up the H_2O_2 generator (MCO-HP)*

*Optional Accessory. H_2O_2 reagent is required for this process.

STEP 2

Decontamination time: Approx. 135 minutes

1. Close the inner and outer door and press H_2O_2 button. The outer door is now electronically locked and the chamber will warm up to 45°C for optimum results.
3. H_2O_2 vapour generation starts
4. Interior fan circulates vapour
5. UV lamp decomposes H_2O_2 to water and oxygen

STEP 3

Finish time: Approx. 10 minutes

1. Outer door is unlocked upon completion.
2. Open chamber door
3. Wipe off remaining liquid with sterile cloth
4. Reposition interior components to normal positions

DUAL HEAT STERILISATION CYCLE

STEP 1

Preparation time: 10 - 15 minutes

1. Press the Sterilisation button to see instructions on the display
2. Remove all interior components
3. Wipe down the inside of the incubator and the interior components with alcohol
4. Reposition interior components to specified locations for in situ sterilisation

STEP 2

Sterilisation time: approx. 11 hours

1. Close the inner and outer door and press OK. The outer door is now electronically locked and the chamber will warm up.
2. Sterilisation process will start after the entire inside of the chamber exceeds 180°C and runs for 60 minutes.
3. The cooling process starts to cool down the chamber to 40°C

STEP 3

Finish Time: Approx. 10 minutes

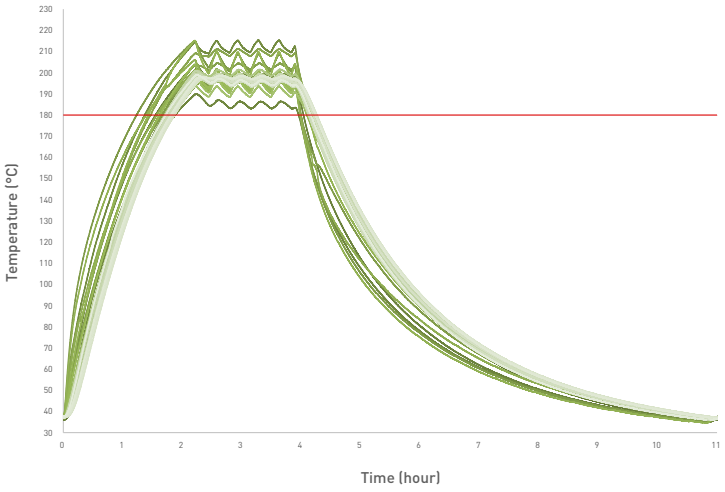
1. Outer door is unlocked upon completion.
2. Open chamber door
3. Reposition interior components to normal positions

DUAL HEAT STERILISATION

Dual heat sterilisation utilises the incubator's two heaters during the 180°C sterilisation process, which takes 11 hours. There is no effect on temperature inside stacked incubators due to low heat dissipation, so cell culturing can continue uninterrupted. There is no need to remove inner parts such as the CO_2 sensor and UV light, or recalibrate after sterilisation, therefore, laboratory processes are more efficient with less incubator downtime.

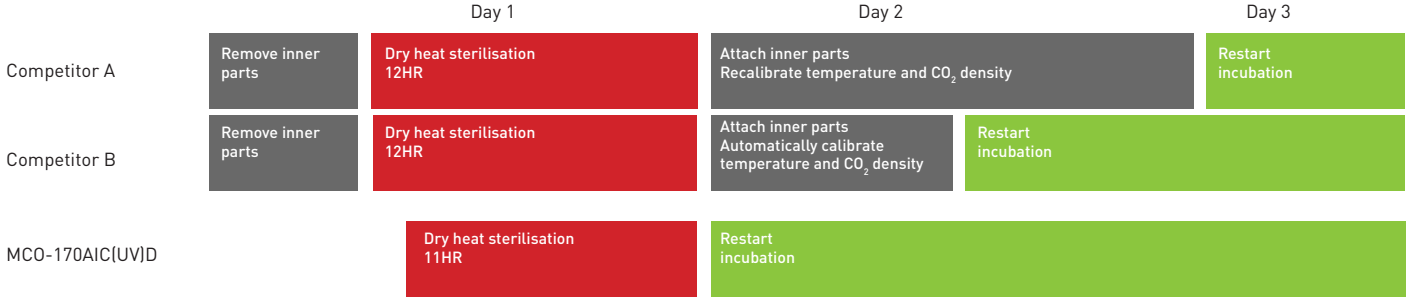
The dry heat sterilisation cycle is controlled through the incubator microprocessor control system. The total process time required is 11 hours. The outer door is locked automatically upon initiation of the sterilisation cycle and unlocked upon completion.

MCO-170AICD STERILISATION CYCLE



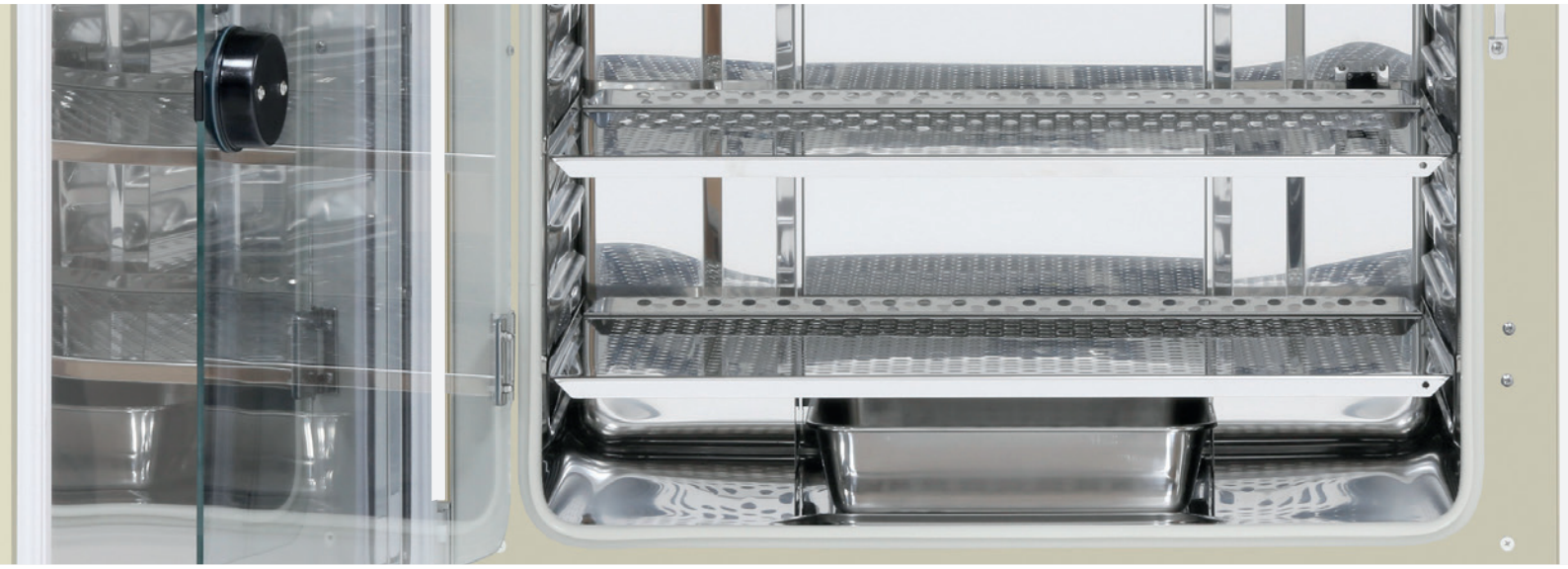
A 35-point temperature mapping shows that the MCO-170AICD achieves far beyond 180°C in all areas of the chamber.

DUAL HEAT STERILISATION COMPETITOR COMPARISON



OPTIMUM CELL GROWTH & MORE SPACE FOR MORE CULTURES

Models: MCO-170AIC | MCO-170AICD | MCO-230AIC | MCO-170M Series

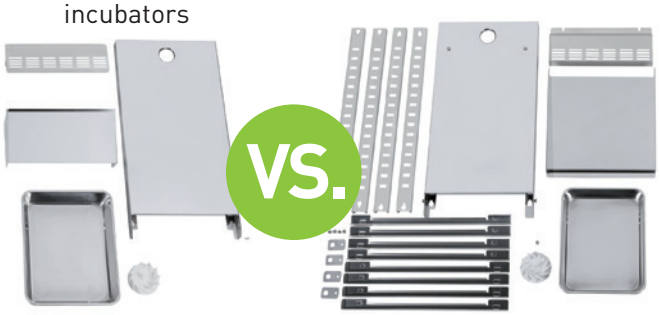


INTEGRATED SHELF SUPPORTS

Save valuable time and reduce the risk of contamination with an easy to clean incubator interior featuring fully rounded corners and integrated shelf supports.

Latest **Incu***Safe* incubators

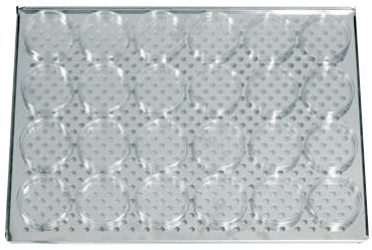
Traditional incubator



INCREASED CAPACITY

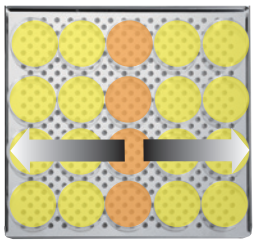
With integrated shelf supports, the **Incu***Safe* MCO-170AIC(D), MCO-170M and the MCO-230AIC incubators provide space for up to 20-25%* more culture vessels.

MCO-230AIC Series
24 petri plates
(90 mm dishes)



Internal dimensions
(W x D) 620 mm x 450 mm

MCO-170AIC/M Series,
20 petri plates
(90 mm dishes)



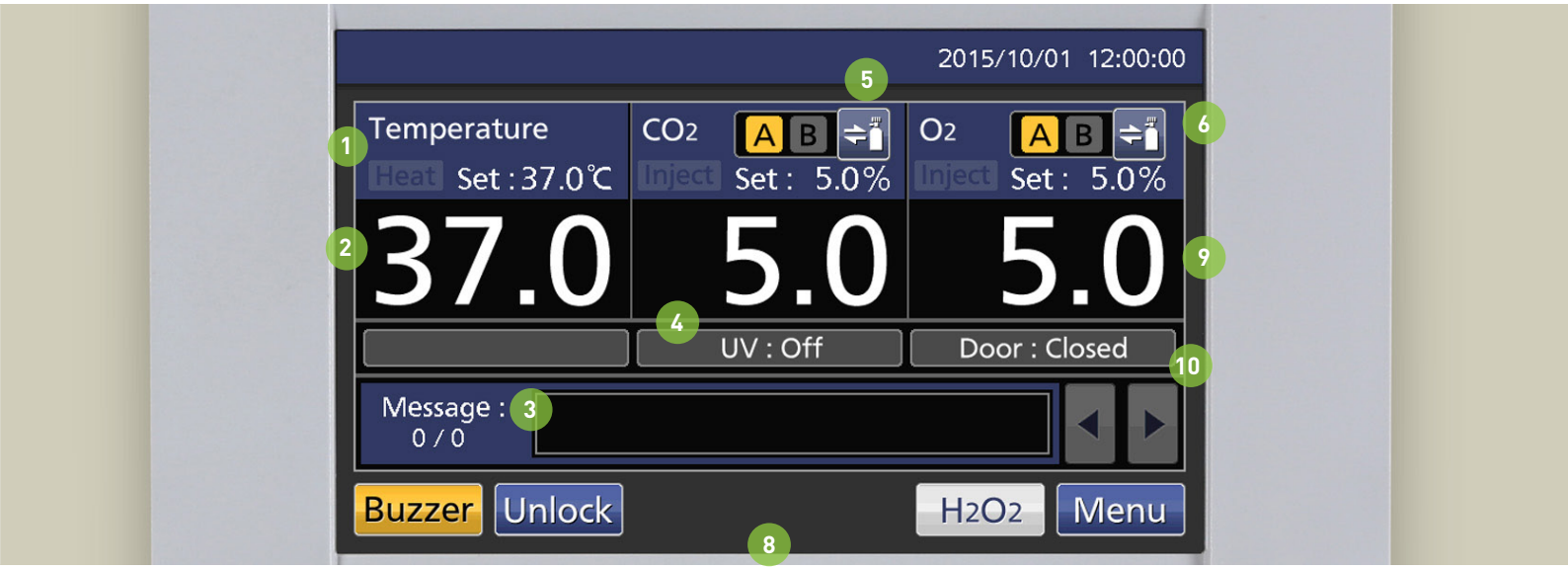
Internal dimensions
(W x D) 475 mm x 450 mm

* compared to previous models

Integrated shelf supports and reversible & separate inner doors

LCD TOUCH PANEL

Models: MCO-170AIC | MCO-170AICD | MCO-230AIC | MCO-170M Series



MCO-170M display

ADVANCED TOUCH PANEL

A colour LCD touch panel delivers full control over the incubator. Control can be performed with gloved hands.

USB Port

USB Data storage and transfer

The standard USB port allows for convenient transfer of log data from a USB memory stick to a computer. Data is logged for approximately 1.5 months, using a 2-minute interval. (Settable range: 2~30 min.)

Electric door lock

Automatic door lock with password protection is available as a standard feature for the MCO-170AICUVH/MCO-170MUVH/ MCO-230AICUVH, MCO-170AICD and MCO-170AICUVD and can be easily set up. Other models are compatible with the optional electric door lock (MCO-170EL).

Touch panel legend

1. **Heating indicator:** Lamp lights when the heater is energised.
2. **Temperature Display:** Both set and actual temperatures are displayed.
3. **Message display field:** Alarms, errors or messages are displayed when a fault occurs.
4. **UV Lamp condition display.**
5. **CO_2 gas injection indicator gas injection and gas supply line indicator A and B and select key. Gas cylinder switch optional:** The lamp lights when CO_2 gas is injected.
6. **N_2/O_2 gas injection and gas supply line indicator A and B:** Gas cylinder switch optional.*
7. **USB Log Port .**
8. **H_2O_2 Decontamination/Sterilisation* Key**
9. **The current chamber CO_2 /O_2 level is displayed.**
10. **Outer door (opening/closing/locking display)**

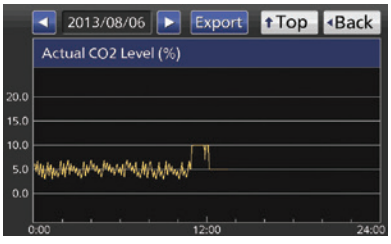
*MCO-170M Incubators only
*MCO-170AICD will display a sterilisation button at this place

Multi-user lock access

Now available with user ID function that allows registration of up to 99 user-IDs and passwords through a master user account for better control and traceability. Detailed activity logs can be exported easily as individual CSV files.

Menu screen

The menu screen allows for alarm settings, data logs and all other incubator settings.



Graphical display

The system allows for viewing the logs of the actual temperature, CO_2 levels and door openings of the chamber.

SPECIFICATIONS

		CO_2 Incubators		
Model Number		**MCO-170AIC-PE**	**MCO-170AICUV-PE**	**MCO-170AICUVH-PE**
External Dimensions (W x D x H) [1]	mm	620 x 730 x 905		
Internal Dimensions (W x D x H)	mm	490 x 523 x 665		
Volume	litres	165		
Net Weight (approx)	kg	80		
Performance				
Temperature Control Range & Fluctuation	°C	AT +5 ~ +50, ±0.1		
Temperature Uniformity [2]	°C	±0.25		
CO_2 Control Range & Fluctuation [3]	%	0 ~ 20, ±0.15		
O_2 control range & Fluctuation [4]	%	-		
Humidity Level & Fluctuation	%RH	95, ±5		
Sterilisation Method		H_2O_2 Decontamination		
Control				
Temperature Sensor		Thermistor		
CO_2 Sensor		Dual IR		
O_2 Sensor		-		
Display		LCD Touch Screen		
Construction				
Exterior Material		Painted Steel (rear cover not painted)		
Interior Material		Stainless Steel Copper-Enriched Alloy		
Insulation Material		Extruded polystyrene		
Heating Method		Direct Heat & Air Jacket System		
Outer Door	qty	1		
Outer Door Lock		Optional	Optional	Standard
Field Reversible Door		Standard		
Inner Doors	qty	1 gastight - made of tempered glass		
Shelves	qty	4 x Stainless Steel Copper-enriched Alloy		
Shelf Dimensions (W x D x H)	qty	470 x 450 x 12		
Max. Load per Shelf	kg	7		
Max. Shelf Capacity	qty	10		
Access Port	qty	1		
Access Port Position		Rear Upper Left		
Access Port Diameter	Ø mm	30		
Alarms		**(R = Remote Alarm, V = Visual Alarm, B = Buzzer Alarm)**		
Power Failure		R		
Out of Temperature Setting		V-B-R		
High Temperature		V-B-R		
Out of CO_2 Setting		V-B-R		
Out of O_2 setting		-		
Door open		V-B		
Electrical and Noise Level				
Power Supply	V	230		
Frequency	Hz	50		
Noise Level [3]	dB (A)	29		
Options				
SafeCell UV® System		MCO-170UVS-PE[6]	Standard	Standard
H_2O_2 Decontamination Board		MCO-170HB-PE[6]	MCO-170HB-PE[6]	Standard
Electric Door Lock with Password		MCO-170EL-PW[6]	MCO-170EL-PW[6]	Standard
H_2O_2 Vapour Generator		MCO-HP-PW[6]		
H_2O_2 Reagent, pack of 6 bottles		MCO-H2O2-PE		
Multiple Inner Doors		MCO-170ID-PW		
CO_2 Gas Pressure Regulator		MCO-100L-PW		
N_2 Gas Pressure Regulator		-		
Automatic CO_2 Cylinder Changeover System		MCO-21GC-PW		
Semi-automatic one point Gas Calibration Kit		MCO-SG-PW		
InCu-saFe® Shelf		MCO-170ST-PW		
InCu-saFe® Half Tray System		MCO-25ST-PW		
Double Stacking Bracket*		MCO-170PS-PW		
Stacking Plate*		MCO-170SB-PW		
Roller Base		MCO-170RB-PW		
Optional communication systems				
Analogue interface (4-20mA) [8]		MCO-420MA-PW		

1) Exterior dimensions of main cabinet only, excluding handle and other external projections.
2,3 & 4) Ambient temperature 23°C, setting 37°C, CO_2 5%, O_2 5%, no load.
5) Nominal value.
6) Requires MCO-170HB-PE, MCO-170EL-PW, MCO-HP-PW and SafeCell UV option for H_2O_2 Decontamination.
8) Only for the Data acquisition system MTR-5000 user.
* If stacking two incubators, ensure that the double-stacking dedicated securing hardware and spacer are used. (see options and double stacking table).

	CO_2 Incubators				
	MCO-170AICD-PE	MCO-170AICUVD-PE	MCO-230AIC-PE	MCO-230AICUV-PE	MCO-230AICUVH-PE
	620 x 755 x 905		770 x 730 x 905		
	490 x 523 x 665		643 x 523 x 700		
	165		230		
	79	80	90		
	AT +5 ~ +50, ±0.1		AT +5 ~ +50, ±0.1		
	±0.25		±0.25		
	0 ~ 20, ±0.15		0 ~ 20, ±0.15		
	-		-		
	95, ±5		95, ±5		
	Dry heat sterilisation, 180°C, 11 hours		H_2O_2 Decontamination		
	Thermistor		Thermistor		
	Dual IR		Dual IR		
	-		-		
	LCD Touch Screen		LCD Touch Screen		
	Painted Steel (rear cover not painted)		Painted Steel (rear cover not painted)		
	Stainless Steel Copper-Enriched Alloy		Stainless Steel Copper-Enriched Alloy		
	Melamine resin foam		Extruded polystyrene		
	Heater jacket		Direct Heat & Air Jacket System		
	1		1		
	Standard		Optional	Optional	Standard
	Included		Standard		
	1		1 gastight - made of tempered glass		
	4 x Stainless Steel Copper-enriched Alloy		4 x Stainless Steel Copper-enriched Alloy		
	470 x 450 x 12		620 x 450 x 12		
	7		7		
	10		10		
	1		1		
	Rear Upper Left		Rear Upper Left		
	30		30		
	R		R		
	V-B-R		V-B-R		
	V-B-R		V-B-R		
	V-B-R		V-B-R		
	-		-		
	V-B		V-B		
	230		230		
	50		50		
	25		25		
	MCO-170UVSD-PE	Standard	MCO-170UVS-PE[6]	Standard	Standard
	-		MCO-170HB-PE[6]	MCO-170HB-PE[6]	Standard
	Standard		MCO-170EL-PW[6]	MCO-170EL-PW[6]	Standard
	-		MCO-HP-PW[6]		
	-		MCO-H2O2-PE		
	N/A		-		
	MCO-100L-PW		MCO-100L-PW		
	-		-		
	MCO-21GC-PW		MCO-21GC-PW		
	MCO-SG-PW		MCO-SG-PW		
	MCO-170ST-PW		MCO-230ST-PW		
	MCO-25ST-PW		MCO-35ST-PW		
	MCO-170PS-PW		MCO-170PS-PW		
	MCO-170SB-PW		MCO-230SB-PW		
	MCO-170RB-PW		MCO-230RB-PW		
	MCO-420MA-PW		MCO-420MA-PW		

		Multigas Incubators		
Model Number		**MCO-170M-PE**	**MCO-170MUV-PE**	**MCO-170MUVH-PE**
External Dimensions (W x D x H) [1]	mm	620 x 710 x 905		
Internal Dimensions (W x D x H)	mm	490 x 523 x 665		
Volume	litres	161		
Net Weight (approx)	kg	77		79
Performance				
Temperature Control Range & Fluctuation	°C	AT +5 ~ +50, ±0.1		
Temperature Uniformity [2]	°C	±0.25		
CO_2 Control Range & Fluctuation [3]	%	0 ~ 20, ±0.15		
O_2 control range & Fluctuation [4]	%	1 -18 and 22 - 80, ±0.2		
Humidity Level & Fluctuation	%RH	95, ±5		
Sterilisation Method		H_2O_2 Decontamination		
Control				
Temperature Sensor		Thermistor		
CO_2 Sensor		Dual IR		
O_2 Sensor		Stabilized Zirconia Sensor		
Display		LCD Touch Screen		
Construction				
Exterior Material		Painted Steel (rear cover not painted)		
Interior Material		Stainless Steel Copper-Enriched Alloy		
Insulation Material		Extruded polystyrene		
Heating Method		Direct Heat & Air Jacket System		
Outer Door	qty	1		
Outer Door Lock		Optional	Optional	Standard
Field Reversible Door		Standard		
Inner Doors	qty	4 gastight - made of tempered glass		
Shelves	qty	3 x Stainless Steel Copper-enriched Alloy		
Shelf Dimensions (W x D x H)	qty	470 x 450 x 12		
Max. Load per Shelf	kg	7		
Max. Shelf Capacity	qty	10		
Access Port	qty	1		
Access Port Position		Rear Upper Left		
Access Port Diameter	Ø mm	30		
Alarms				
Power Failure		R		
Out of Temperature Setting		V-B-R		
High Temperature		V-B-R		
Out of CO_2 Setting		V-B-R		
Out of O_2 setting		V-B-R		
Door open		V-B		
Electrical and Noise Level				
Power Supply	V	230		
Frequency	Hz	50		
Noise Level [3]	dB [A]	25		
Options				
SafeCell UV® System		MCO-170UVS-PE[6]	Standard	Standard
H_2O_2 Decontamination Board		MCO-170HB-PE[6]	MCO-170HB-PE[6]	Standard
Electric Door Lock with Password		MCO-170EL-PW[6]	MCO-170EL-PW[6]	Standard
H_2O_2 Vapour Generator		MCO-HP-PW[6]		
H_2O_2 Reagent, pack of 6 bottles		MCO-H2O2-PE		
Multiple Inner Doors		Standard		
CO_2 Gas Pressure Regulator		MCO-100L-PW		
N_2 Gas Pressure Regulator		MCO-100L-PW		
Automatic CO_2 Cylinder Changeover System		MCO-21GC-PW		
Semi-automatic one point Gas Calibration Kit		MCO-SG-PW		
InCu-saFe® Shelf		MCO-170ST-PW		
InCu-saFe® Half Tray System		MCO-25ST-PW		
Double Stacking Bracket*		MCO-170PS-PW		
Stacking Plate*		MCO-170SB-PW		
Roller Base		MCO-170RB-PW		
Optional communication systems				
Analogue interface (4-20mA)		MCO-420MA-PW		

1) Exterior dimensions of main cabinet only, excluding handle and other external projections.
2,3 & 4) Ambient temperature 23°C, setting 37°C, CO_2 5%, O_2 5%, no load.
5) Nominal value.
6) Requires MCO-170HB-PE, MCO-170EL-PW, MCO-HP-PW and SafeCell UV option for H_2O_2 Decontamination.
8) Only for the Data acquisition system MTR-5000 user.
* If stacking two incubators, ensure that the double-stacking dedicated securing hardware and spacer are used. (see options and double stacking table)

- All **Incu***Safe* incubators are designed for stacking, allowing one unit to be positioned on top of another, doubling interior volume without additional floor space.
- An optional roller base is available for single and stacked installations for easier mobility.

See table below for details.

DOUBLE-STACKING MATCHING TABLE

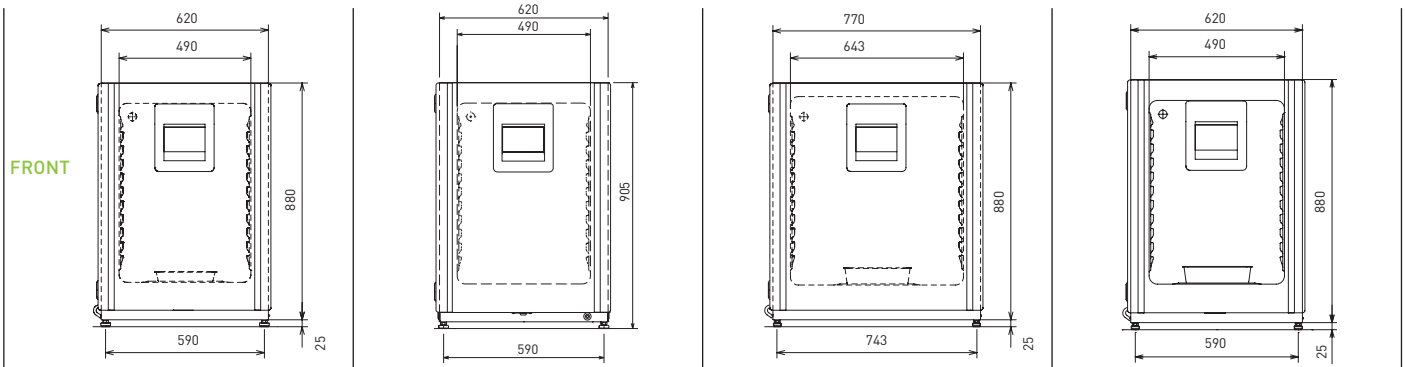
SPACER FOR DOUBLE-STACKING		UPPER UNIT		
		MCO-170AIC-PE	MCO-230AIC-PE	MCO-170M-PE
LOWER UNIT	MCO-170AIC-PE	MCO-170PS-PW	N/A	MCO-170PS-PW
	MCO-170AICD-PE	MCO-170PS-PW	N/A	MCO-170PS-PW
	MCO-230AIC-PE	MCO-230SB-PW	MCO-170PS-PW	MCO-230SB-PW
	MCO-170M-PE	MCO-170PS-PW	N/A	MCO-170PS-PW
	MCO-19AIC-PE	MCO-170SB-PW	N/A	MCO-170SB-PW
	MCO-18AC-PE	MCO-170SB-PW	N/A	MCO-170SB-PW
	MCO-20AIC-PE	MCO-170SB-PW	MCO-230SB-PW	MCO-170SB-PW
	MCO-5AC-PE	N/A	N/A	N/A
	MCO-5M-PE	N/A	N/A	N/A

NOTES:
For positioning units on a roller base, please refer to 'Optional Accessories'. If configuring a double-stack, ensure that the double-stacking dedicated securing hardware and spacer are used (see 'Optional Accessories'.)

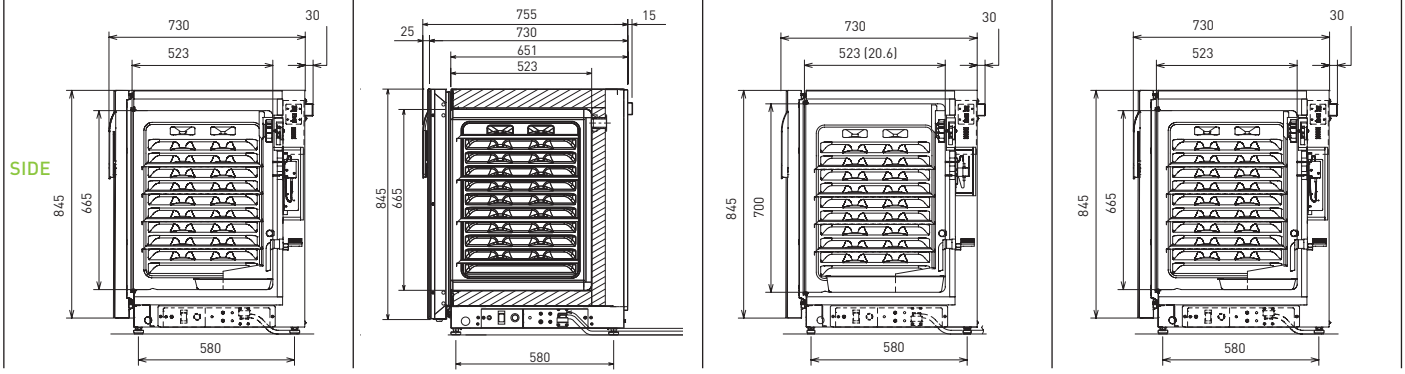
DIMENSIONS

MCO-170AIC-PE | MCO-170AICD-PE | MCO-230AIC-PE | MCO-170M-PE

FRONT



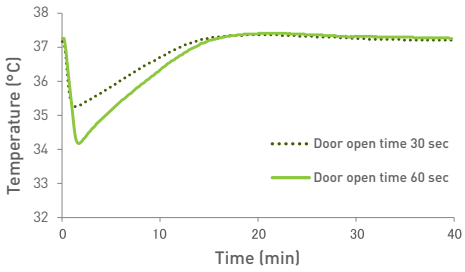
SIDE



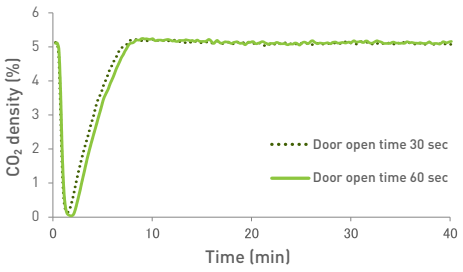
PERFORMANCE

MCO-170AIC-PE

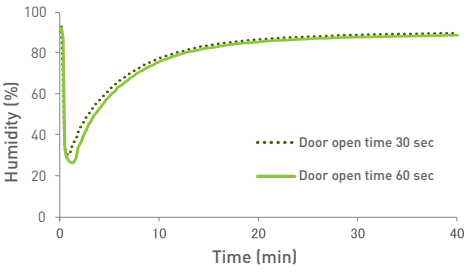
Temperature recovery



CO_2 density recovery

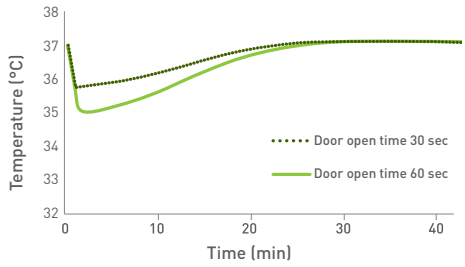


Humidity recovery

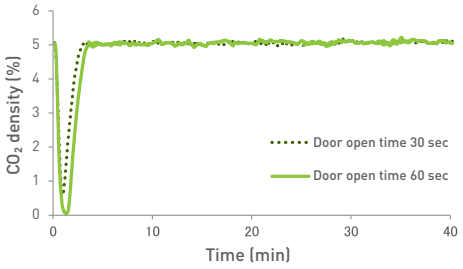


MCO-170AICD-PE

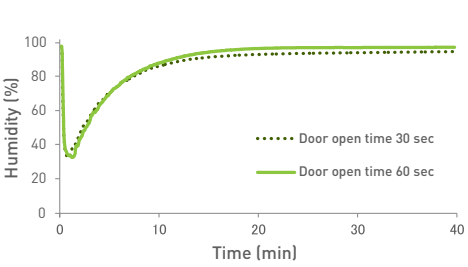
Temperature recovery



CO_2 density recovery

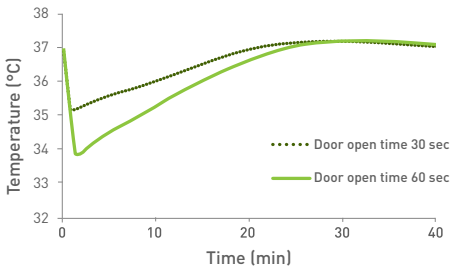


Humidity recovery

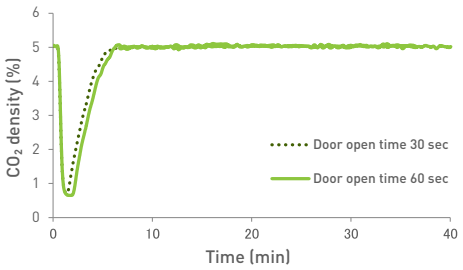


MCO-230AIC-PE

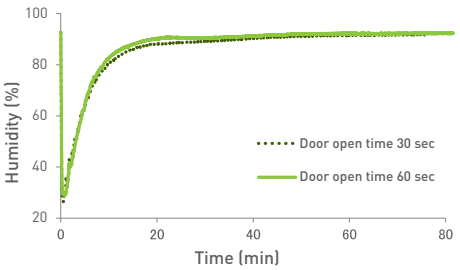
Temperature recovery



CO_2 density recovery

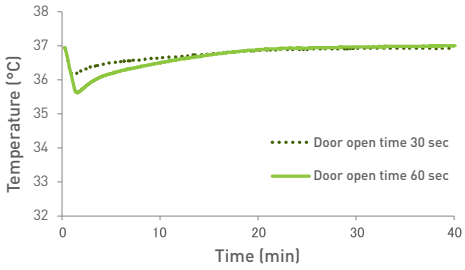


Humidity recovery

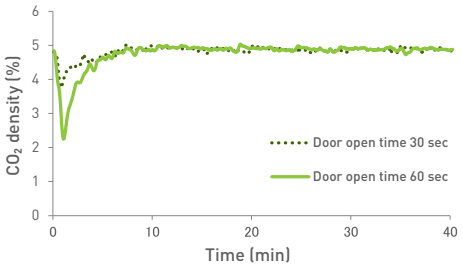


MCO-170M-PE

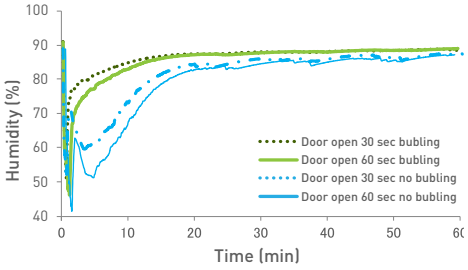
Temperature recovery



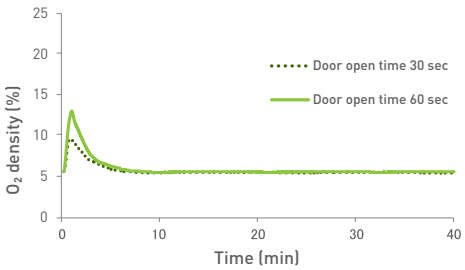
CO_2 density recovery



Humidity/CO_2 recovery



O_2 density recovery



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