BAKER

Environments For Science™

ReCO$_2$ver™

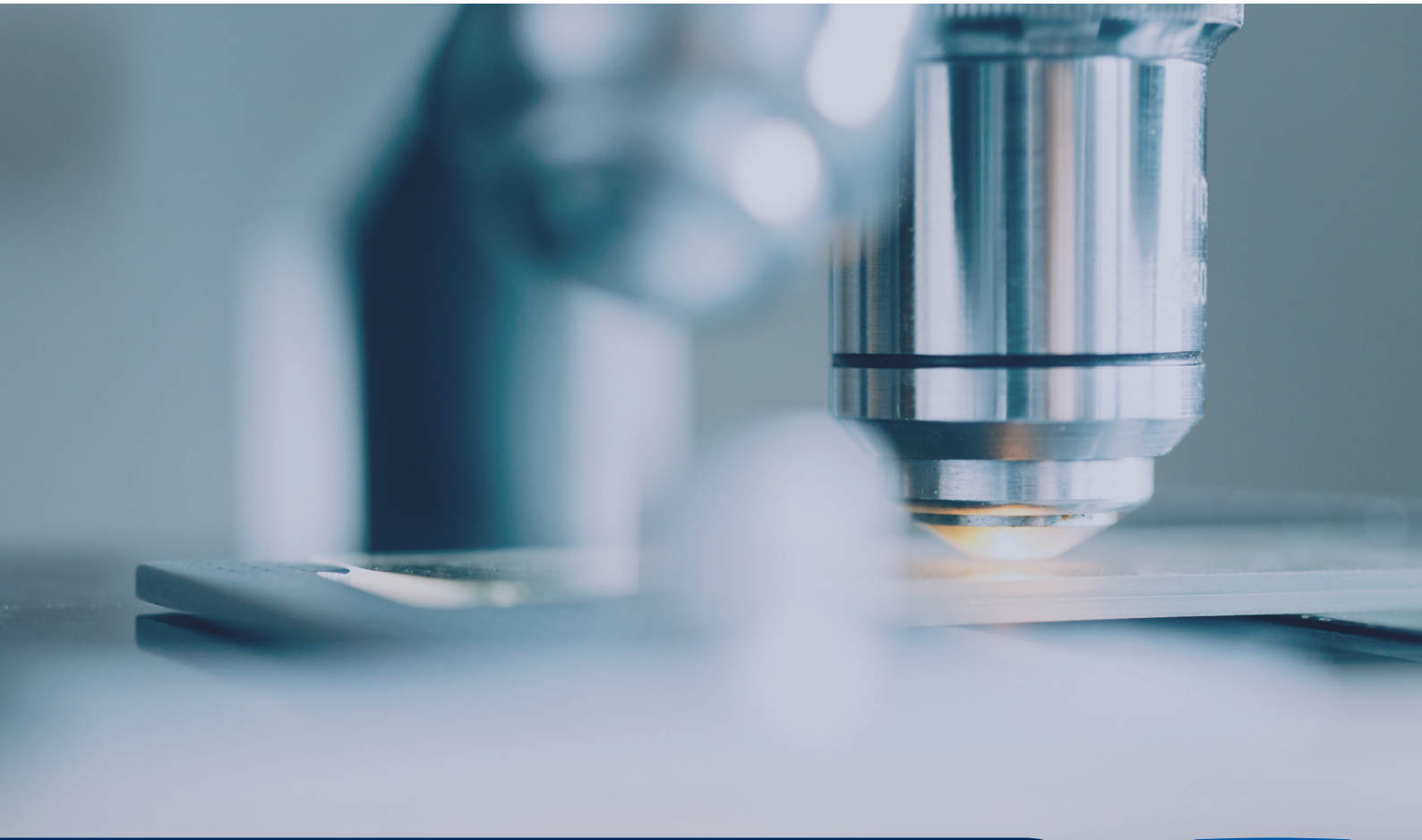
Rapid Recovery Incubator

ABSOLUTE PRECISION.
MAXIMUM PROTECTION.

Frequently Asked Questions

Contamination Control	
Question	**Answer**
What is your primary method of contamination prevention?	ReCO$_2$ver™ makes use of a full-face HEPA filter, located at the top of the chamber, to deliver clean vertical flowing air to the cultures, and all of our units also come with UV lights as a standard feature and vaporized hydrogen peroxide (H_2O_2) biodecontamination comes as optional on the ReCO$_2$ver™ and biodecontamination is standard on the ReCO$_2$ver™ Plus.
What level of air cleanliness does your incubator provide?	ReCO$_2$ver™ delivers an air cleanliness rating that is better than ISO Class 4 (Class 10), in accordance with ISO 14644-1 standards for cleanroom and controlled environment applications. This condition is reached within 2 minutes of a door opening. For a point of reference, a typical biological safety cabinet provides ISO Class 5 conditions (Class 100).
How does it provide clean air to the incubator chamber?	HEPA filtered air cascades downward in the incubator chamber. Air is drawn into the base across the ultrasonic nebulized water reservoir, then travels up the rear wall plenum to the internal fan. Air is then discharged upstream of a full-face HEPA Filter and returned to the incubator chamber.
What is the life of the HEPA filter inside ReCO$_2$ver™?	The life of a HEPA filter in any system is largely contingent upon its use and the environmental conditions found within the laboratory. We expect the HEPA filter to perform sufficiently for many years; however, the system's ability to maintain optimal performance and, in turn, continue to deliver better than ISO Class 4 (Class 10) conditions for air cleanliness, may become compromised over time. Conservatively, we recommend that the HEPA filter and in-line CO_2 filter be changed on an annual basis. That said, you should consult your biosafety officer, assess the environment found within your laboratory and make your own observation of that particular incubator's ability to stop the spread of contamination associated with your work, in order to determine when it is time to replace your HEPA filter.

With $ReCO_2ver$™ (which features ultrasonic humidification), is the humidification done before or after the HEPA filter?	Since we know the water reservoir to be the most likely source of contamination within most incubators, the HEPA filter has been placed after the nebulizer in the airstream.
Why does $ReCO_2ver$™ have 2 Relative Humidity (RH) settings; 0-90% and up to 95%?	$ReCO_2ver$™ and $ReCO_2ver$™ Plus have two levels of control to allow you to precisely select your level of humidity required from 0-90%. Above 90%, RH sensors cannot control exactly, but will maintain within 90-95%. Therefore, we offer a precision RH setting (0-90%) and a High RH setting (90-95%). Your incubator will come preset to 90% RH, but can be changed by easily toggling from one setting to the other or changing the setpoint on the display screen (see Operations Manual).
How did you determine that a 15% concentration of H_2O_2 should be utilized?	Although the results of decontamination are conventionally expressed as a log reduction (meaning the number of contaminants that pose the risk of re-contamination have been reduced), the biodecontamination protocol for the $ReCO_2ver$™ Plus was designed and tested for its ability to kill of a wide variety of contaminating microorganisms. Our tests determined that concentrations of 6% and 10% H_2O_2 were unable to kill contaminants. A concentration of 15% achieves a total biodecontamination of the unit to kill a wide variety of microorganisms, including spores with a greater than 6-log reduction. For more information, please read our White Paper, *The research and testing behind $ReCO_2ver$ H_2O_2 biodecontamination*.
How quickly can the incubator components be disassembled / re-assembled for cleaning / sterilization?	$ReCO_2ver$™ can be disassembled / re-assembled for cleaning / sterilization in less than 5 minutes.



Environmental Performance	
Question	**Answer**
How is temperature regulated within the chamber?	Integrated temperature sensors and a proprietary control algorithm (InteliCELL™) are used to regulate the chamber's heaters (direct heat).
How is CO_2 regulated within the chamber?	The desired concentration of CO_2 gas is injected into the chamber using a solenoid valve. The solenoid valve is regulated based on the CO_2 sensor and control algorithm (InteliCELL™).
How are you measuring RH? What type of sensor?	$ReCO_2ver$™ utilizes a fully calibrated, digital humidity and temperature sensor.
What is the life of the RH sensor?	The supplier provides a useful life claim of 10 years. Baker provides a two year warranty on parts and labor.
Will the down-flow of air and the rate at which $ReCO_2ver$™ moves air throughout the chamber dry out my cultures?	$ReCO_2ver$™ is designed to quickly increase RH to a very high level. This is critical to prevent culture media from drying out and harming your cell cultures. As shown in our *Edge Effect White Paper*, $ReCO_2ver$™ can maintain small media volumes at a much higher rate than other incubators, for longer!
How much CO_2 should we expect $ReCO_2ver$™ to use?	Testing was performed with $ReCO_2ver$™ set at 5% CO_2. At this setting, the CO_2 consumption if using a LF / VF (3600 liters) sized bottle averaged 45 days.

Incubator Features	
Question	**Answer**
Does UV light in ReCO$_2$ver™ use full spectrum (UV-A, UV-B, UV-C)? The concern is that UV-C combines with oxygen to produce ozone. Levels of ozone above 0.05 ppm are considered unsafe by the EPA. UV-C also breaks down plastics?	ReCO$_2$ver™ uses a short-wave UV radiation with a peak at 253.7 nm (UV-C) for disinfection purposes. The UV bulb uses a protective inside coating, ensuring almost constant UV output over the complete lifetime of the lamp. Special lamp glass filters out the 185 nm ozone-forming radiation.
Does the automatic water feed option come with a water carboy or must it be ordered separately?	A 4-liter container jug comes included. This mounts on the right side of the ReCO$_2$ver™.
Why does ReCO$_2$ver™ have an ultrasonic nebulizer instead of a water pan?	Traditional incubators rely on water evaporating from a pan and into the airstream. This method of humidification is capable of providing a 20-30 min recovery to 70-80% RH. ReCO$_2$ver™ with ultrasonic humidification uses a nebulizer, which pulses ultra sonic vibrations to aerosolize water which is then readily evaporated into the air. This system provides faster humidity recovery (4 minutes) to a much higher 90-95% RH state, keeping cultures more humid, more consistently. The automatic water refill feature also does not require the user to access the chamber in order to refill a water pan, thereby reducing the likelihood for contamination entering from the outside.
What is an air jacketed incubator?	An alternative to the water jacketed incubator is the forced air or air jacketed incubator. An air circulation fan placed in the air jacket (between the interior and external chamber wall) to ensure uniform temperature distribution in the inner chamber. This type of incubator is easier to set up initially, and will get to its set temperature for the first time more quickly because there is a great volume of air movement.
What is a direct heat incubator?	A direct heat incubator is an air jacketed incubator, which provides heating elements around the chamber of the incubator to provide precise temperature control and uniformity throughout the chamber. ReCO$_2$ver™ is a direct heat incubator.
How will the customer know it's time to change the HEPA filter?	As described above, this is entirely dependent on its use, the conditions within the laboratory, and the life of the incubator itself. That said, the incubator will prompt the user after 8760 hours of operation, indicating that it is time to evaluate whether or not a new HEPA filter is needed. At this point, we recommend that the user contact their local sales professional for assistance.
Is replacing the HEPA filter something that customers can do themselves?	Yes, this can be performed simply, without significant tooling and by one individual. We do recommend, however, that the user contact their local sales professional for assistance. HEPA replacement filter instructions can be found in the 9.5 sections of the Operations Manual.

ReCO$_2$ver™ Best Practice	
Question	**Answer**
Does the fan run continuously, even when you open the door, or will the blower cut off when you open the door?	The fan is disabled when the door opens. If the fan were to run when the door is open, moisture and heat would escape and be blown out of the unit, thereby increasing the amount of time it takes to recover the environment. When the door closes and the fan is turned back on, ReCO$_2$ver™ will return to better than ISO Class 4 (Class 10) conditions within 2 minutes.
What type of water and what level resistance do I need to supply to the ReCO$_2$ver™?	ReCO$_2$ver™ can use any sterile distilled or deionized water, excepting for ultra pure water with a resistance greater than 2 megaOhm (e.g. MiliQ water). All internal metal components can be surface disinfected with alcohol or hydrogen peroxide or autoclaved.
How do I know it is safe to open the door and access the chamber following the vaporized H_2O_2 biodecontamination cycle?	At the end of the biodecontamination cycle, a message will display on the touchscreen, indicating that it is safe to open the door. After the cycle is complete, a wipe down of the shelves and side walls is all that is needed.
What are some best practices that you would recommend for taking care of my incubator?	• Understand the operation of the equipment prior to using. Refer to the Operations Manual for the detailed set of instructions. • Ensure you use a proper sterile water source (not tap water). • Check CO_2 tank level to ensure there is a sufficient amount. • When using equipment inside ReCO$_2$ver™ that requires power, use the cable port. • Do not use equipment inside ReCO$_2$ver™ that may destroy samples (orbital, rocker tables) without testing prior to using.

BAKER

Environments For Science™

ReCO$_2$ver™ | Frequently Asked Questions

*Applicable for both ReCO$_2$ver™ and ReCO$_2$ver™ Plus

For North American Inquiries:
bakerco@bakerco.com
+1 (800) 992-2537
www.bakerco.com

UK / EMEA and Global Inquiries:
sales@cleanair.eu.com
+31 (0)85 90 22 500
www.cleanair.eu.com