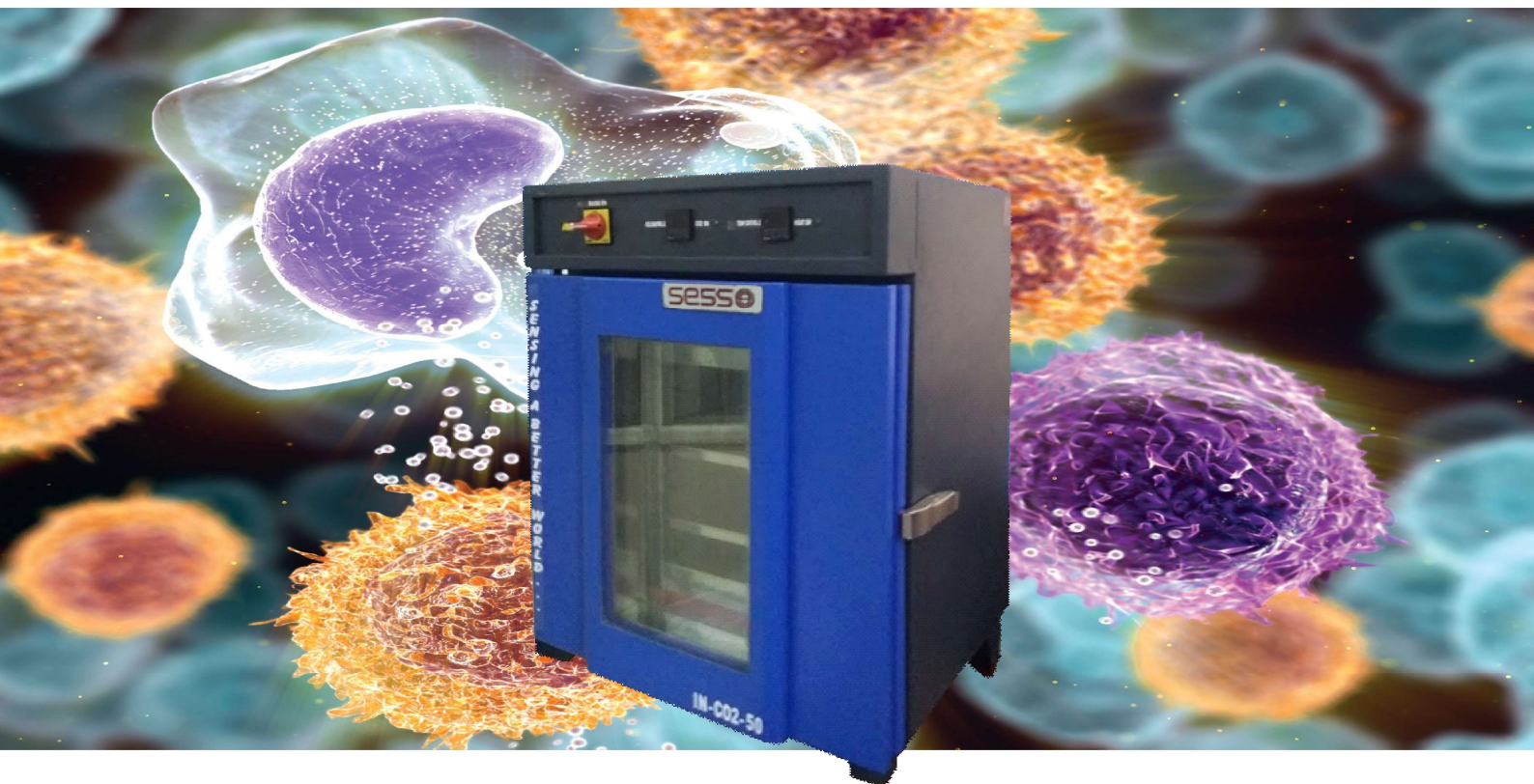


## SESS - CO<sub>2</sub> Incubator

A CO<sub>2</sub> incubator, also known as a gassed incubator, is a climatic-controlled sealed chamber used for growing or cultivating biological cell cultures or tissue cell cultures. The three major factors temperature, humidity and CO<sub>2</sub> level are important for cell cultivation. These incubators maintain ideal levels of humidity for optimum growth of the tissue culture cells and a constant temperature under a CO<sub>2</sub> atmosphere. The general temperature settings vary from Ambient +3 to 55 degrees Celsius and CO<sub>2</sub> concentration levels run from 1 to 19.9%. The temperature in CO<sub>2</sub> incubator is either controlled via a water or by electric heater coils. These incubators have extensive applications in the pharmaceutical and medical research industry where the sterile condition for cell cultivation in a germ-free environment is a requisite condition. Some other common applications include in vitro fertilization, neuroscience, tissue engineering, etc. At Sri Easwari Scientific Solution Pvt. Ltd., we are manufacturing and supplying different styles of CO<sub>2</sub> incubators to our clients.



As a leading ISO certified manufacturer Co<sub>2</sub> incubators in Chennai India, our incubators feature the highest-grade material and backed with a manufacturer's warranty. We have been manufacturing different kinds of CO<sub>2</sub> incubators, each equipped with standard and optional features. Some of the standard features of CO<sub>2</sub> incubators are temperature alarms, CO<sub>2</sub> alarms, CO<sub>2</sub> injection system, door opening alarms, TC/IR sensors, programmable controls with password protection to name a few.

Note: Co<sub>2</sub> incubator variation capacity and based on customer request litter capacity available .....

Note: The product undergoes continues R&D and up gradation and Design specifications are subject to change without notice.



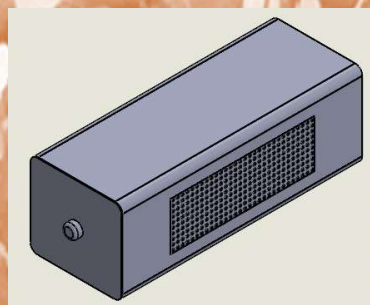
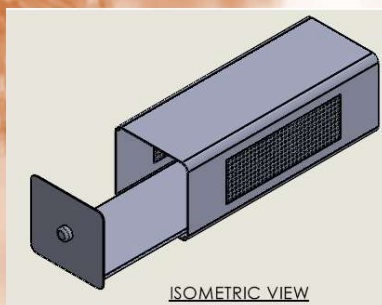
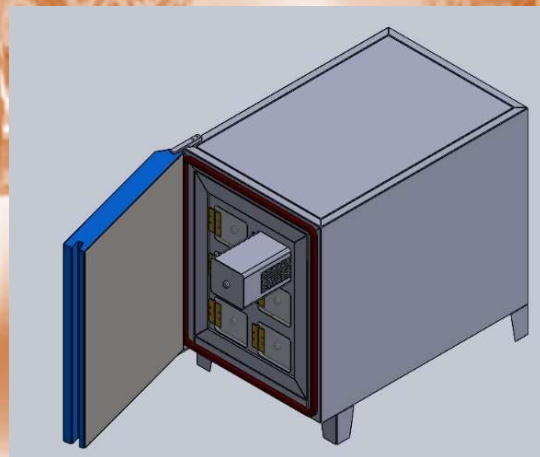
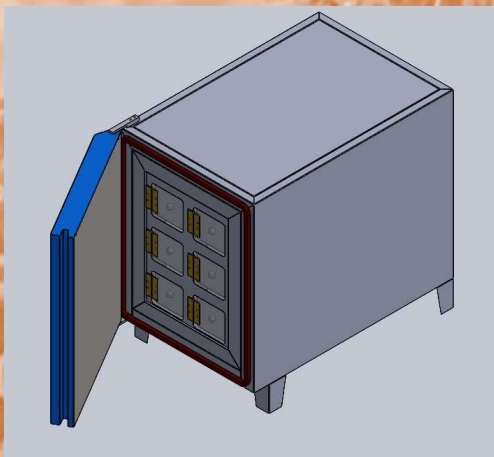
## Interior tank Stainless Steel Construction

The exterior is constructed of 16 gauges type MS Powder coated with the interior being 16 Gauge type 304 polished stainless steel using coved corner construction, which provides an easily Cleanable (for decontamination) inert surface that does not promote biological growth. All exposed edges are debarred to insure no sharp edges. In addition all shelves, shelf supports and guide rails are easily removable and can be autoclaved to remove contamination.

### Standard Features

- Inner Stainless steel 304 / outer MS with Powder coated chamber construction
- Air - jacket or water Jacket
- PID Temperature Control System
- Chamber Temperature Range: 5°C above ambient to 55°C
- Chamber temperature uniformity:  $\pm 1^{\circ}\text{C}$  at 37°C
- Temperature sensitivity:  $\pm 0.3^{\circ}\text{C}$
- CO2 Control System
- CO2 Range: 1-19.9 %

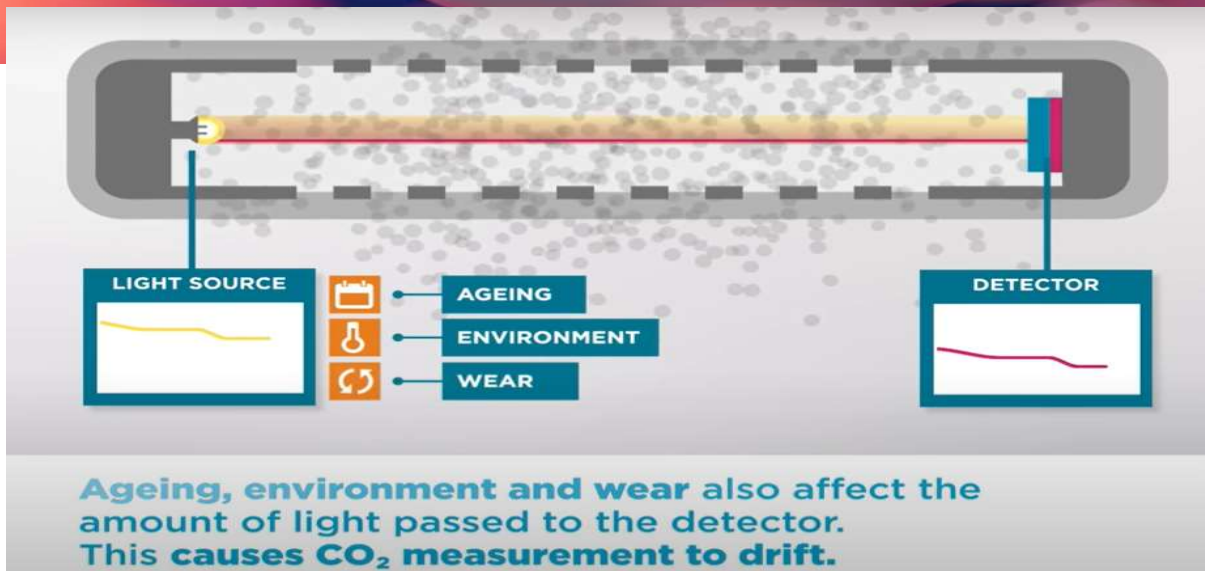
**Optional** for Stability preserves the environment in Cell Lockers when a neighboring chamber is opened, minimizing sample variability Protection Provides security from cross contamination due to culture isolation in separate chambers.



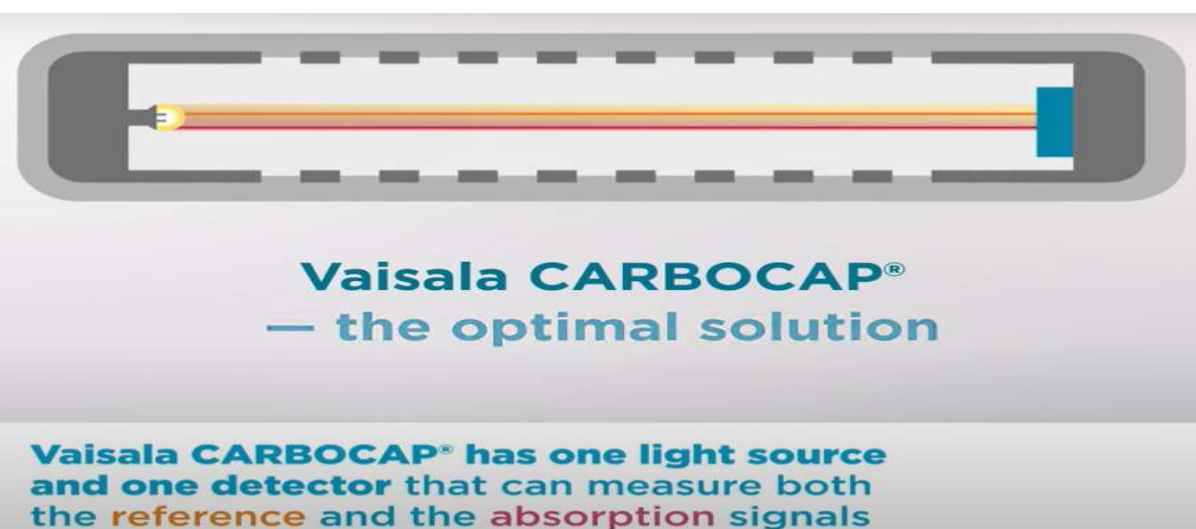
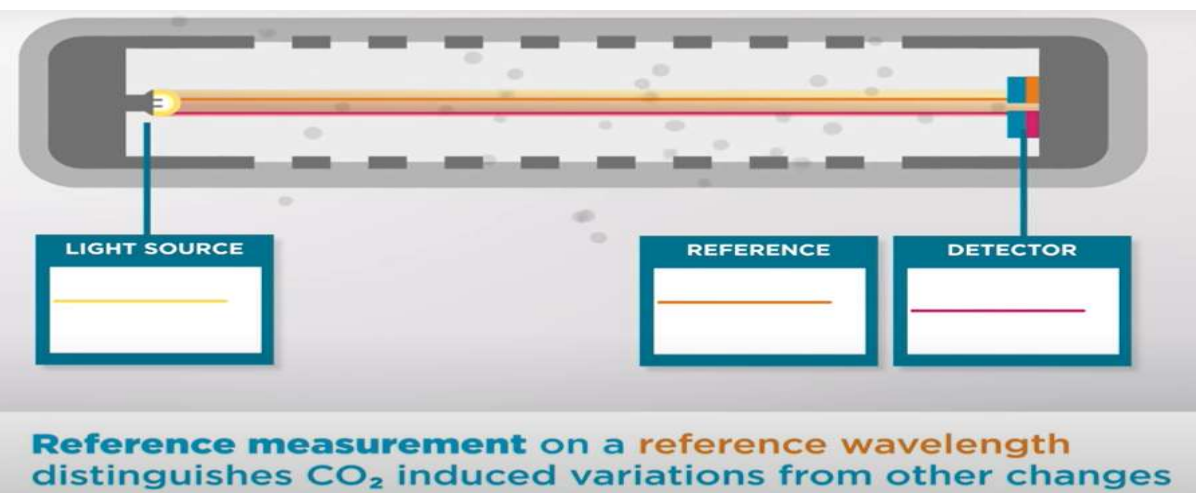
**Cell Locker with Stainless Steel Tray, Stainless Steel, Dual 0.2 $\mu\text{m}$  membrane filters**

Each Cell Locker has dual 0.2  $\mu\text{m}$  membrane filters that permit air circulation but exclude microbial contaminants. Independent tests demonstrate that microorganisms cannot pass between closed chambers.

## Our Co2 Incubator we are using with Vaisala CO2 Sensor

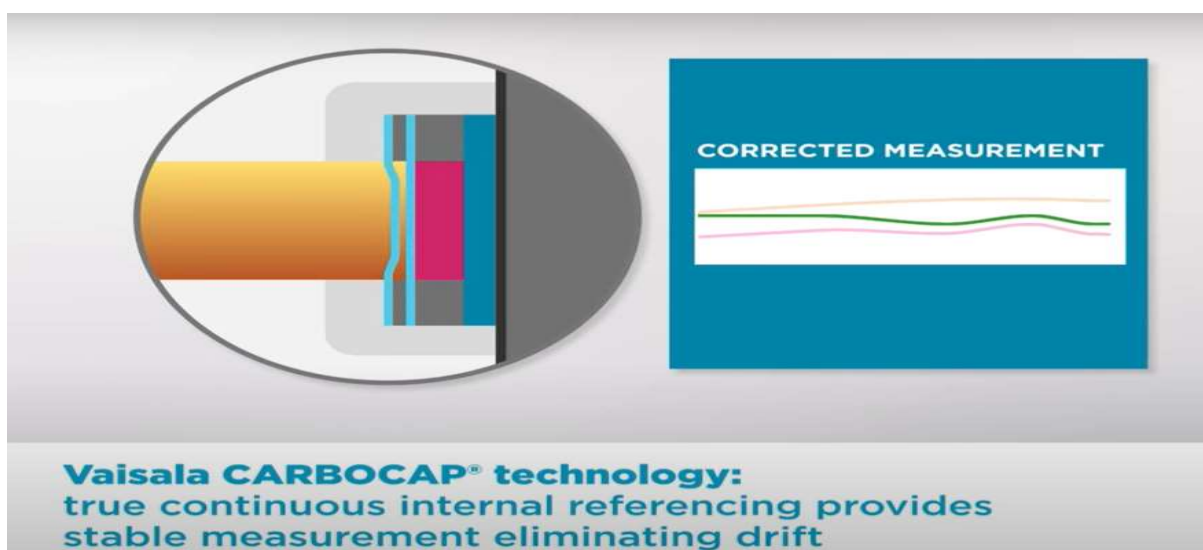
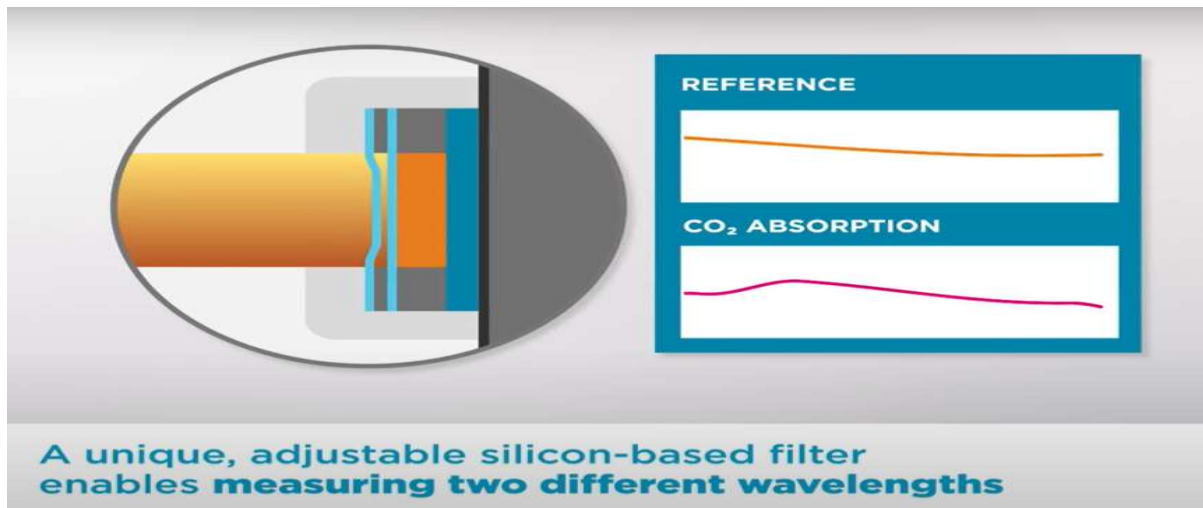


**This error should be taken into account** when evaluating different CO<sub>2</sub> measurement technologies.





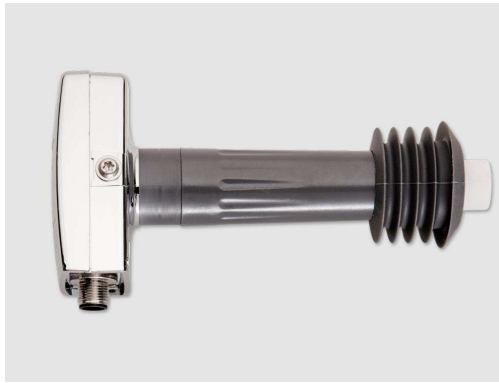
## But Vaisala CO2 Sensor



### Advantages of Vaisala CARBOCAP® Technology

	TRUE INTERNAL REFERENCING
	SUPERIOR ACCURACY
	ALSO FOR DEMANDING ENVIRONMENTS
	WIDE MEASUREMENT RANGE (PPM AND PERCENTAGE LEVEL)

**Vaisala CARBOCAP®:**  
advanced CO<sub>2</sub> measurement



## Stable and accurate

The materials used in the GMP231 and also the internal pressure and temperature measurements all contribute to the excellent stability and accuracy of the sensor.

The Vaisala CARBOCAP® Carbon Dioxide Probe GMP231 is designed to provide incubator manufacturers with accurate and reliable carbon dioxide measurements and sterilization durability at high temperatures, up to 180 °C. The GMP231 probe is based on Vaisala's patented CARBOCAP® technology and a new type of infrared (IR) light source.

The GMP231 probe's sensor performance is optimized at 5 % CO<sub>2</sub> but the sensor measures CO<sub>2</sub> up to 20 % with high accuracy. The GMP231 is t's installed through the incubator wall; only the IR sensor and optical components are exposed to the incubation environment.

In addition, the GMP231 can measure pressure and temperature for CO<sub>2</sub> measurement compensation purposes, ensuring the product remains stable and accurate in all CO<sub>2</sub> incubation conditions.

Model IN - Co2	
Temperature range	Temperature Range: Ambient +3°C to 55°C (Sterilization up to 180°C)
Precision (± °C)	1 °C
Inner tank Capacity	165L interior chamber with the new 6 segmented, gas tight inner door configuration and 3 shelves designed to accommodate 6 individual Cell Locker chambers. Inner Size : 500 mm W X 500 mm D x 680 mm H
Max. noise level with air condenser	70dB (A)
Controller	PID controller (Optional) PLC with 4" HMI
CO2 sensor Measuring range	1 to 20% Carbon Dioxide Module Sensor
CO <sub>2</sub> Concentration	1 to 20%
Air circulation motor	1 no
Optional Glass window	1 no (Optional)
Microprocessor Control	Flexible, intuitive controls ensuring ease of use
	Set temperature,CO2
	Audible alarm and alarm silence
	Optional- remote alarm contacts (NO, NC, COM)
	Optional built-in gas guard system
	Polished stainless-steel interior with coved corners is easy to clean
	Inner door gasket is removable and cleanable; adjusts continually to ensure a tight seal
Supply	230V +6/-10% / 50Hz / 1+G

- Choice of volume capacities ranging from 40 L to 821 L (1.4 cu. ft. to 20 cu. ft.)

Smart simplicity to good reliability The intelligent Climatic view touch screen interface is designed to provide complete data visibility to monitor all incubator interactions, featuring in front nearby door mounted position for easy access, on-screen menu prompts, error and usage logs, data logging, performance trend graphing.



Temperature PID parameters will take care of our control system Siemens S7-1200 CPU 1415C based PLC. Each of these PID's shall be set by using the auto tune feature or manually entered values. Based on a Price Selection Few models of chamber we have providing without HMI, only with all in one Desktop PC (HP/DELL) + SESS climatic Viewer PC software



#### ✓ Power Resumption

Various power resumption modes shall be provided in case of a power failure. The break mode shall stop the program on resumption of power. The hot mode shall resume the program from the point of break and complete the program. The cold mode shall restart the program from the point of break and ensure the program has run without any break

#### ✓ Process Mimic

A graphical representation of the working of the chamber Refrigeration Components shall be provided in the form of a process mimic screen. The live status of all major components are displayed. The components include heaters, valves, motors etc.