Highlighting innovative design features
and useful application information for
**Thermo Scientific™ Heratherm™
Microbiological Incubators**

smart notes

design and innovation ▶ microbiological incubators

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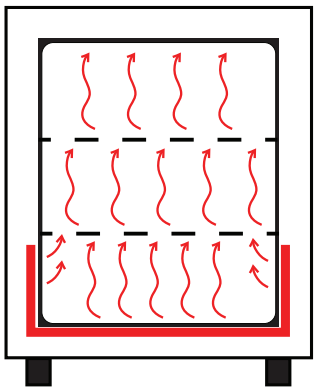
Q&A

How does dual convection airflow technology help maximize application flexibility in a microbiological incubator?

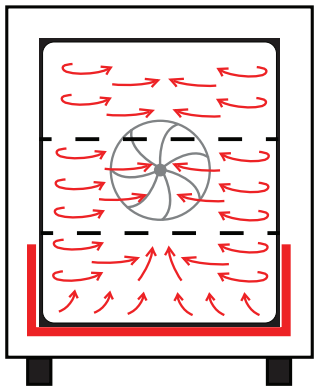
Microbiological incubators with dual convection airflow technology provide versatility by offering the benefits of both gravity and mechanical convection in one unit. This allows for flexibility to control conditions inside the incubator, which helps ensure better test results.

Airflow technology strongly impacts the performance of a microbiological incubator, namely temperature uniformity and evaporation rates. Temperature uniformity helps ensure a stable temperature environment for specific cells or microorganisms. The smaller the uniformity values, the better the test results. Since microbiological incubators do not provide humidity, evaporation rates impact samples and nutrient solutions: the higher the evaporation rate the higher the risk of drying out, especially in longer experiments. The resulting concentration of remaining nutrients can also be detrimental for growth.

How does dual convection technology provide application flexibility in a microbiological incubator?



Gravity Convection



Mechanical Convection
(with fan)

How Gravity Convection Works

In a gravity convection incubator, the temperature distribution is based on warm air moving upwards (see above). There is no fan that actively distributes the air inside the chamber. The benefit of this gentle airflow is less drying out of samples when working with vented plates or during long incubation cycles in the non-humidified environment of a microbiological incubator, as in diagnosing *Legionella* spp. growth within ten days of incubation (from ISO 11731-2).

How Mechanical Convection Works

In a mechanical convection (or forced air) incubator an integrated fan actively moves the air inside the chamber – resulting in an even temperature distribution throughout the chamber (see above). The benefit is optimal temperature uniformity for reproducible results, for example enrichment of Salmonella spp. within 24h at 37°C (from ISO 6579) and Listeria spp. within 24h at 30°C (from ISO 11290-1) in 250ml samples. Also, fast heating up of samples stimulates growth quickly, following direct transfer from a refrigerator.

The Dual Convection Advantage

Dual convection technology combines the benefit of both gravity and mechanical convection in one unit. The user decides which convection mode is best for their experiment, optimizing conditions for the growth of microorganisms.

When the fan is switched off then the evaporation rate is at its lowest. When the fan is at full speed then the temperature uniformity is fully optimized and at its lowest. The advantage of Thermo Scientific dual convection technology is the ability to adjust the fan speed between being entirely off to being at full speed to fit the required parameters of the experiment.

Learn more about the unique advantages of Thermo Scientific Heratherm microbiological incubators.
View video at thermoscientific.com/heratherm

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