

# SmartNotes

## What is airflow compensation in Class II biological safety cabinet (BSC)?

QA

Class II biological safety cabinets use filters and controlled airflows to capture contamination. Airflow compensation is the process of how BSCs automatically adjust for filter loading to maintain the proper balance of inflow and downflow that contains hazards and protects samples.

Class II BSCs use the balance of inflow to contain hazards and downflow to exclude room contaminants. If the inflow is too high or downflow is too low, there is a risk of contaminating the BSC work area. On the flip side, if inflow is too low or downflow is too high, hazards can escape. The Thermo Scientific™ Herasafe™ 2030i BSC avoids potential airflow imbalances by using separate fans for inflow and downflow, equipped with independent and real time control to maintain critical balance between both airflows.



## Total compensation is no compensation

Traditional Class II BSC operate with single fan systems that, at best are able to maintain total airflow, but not the vital balance of inflow and downflow. If the downflow and exhaust filters load at different rates, the inflow could steadily increase, while the downflow steadily decreases. Therefore, the compensating single fan unit does not uphold the balance of inflow and downflow necessary for both personal and product protection.

## Independent compensation requires independent monitoring

Designs with separate downflow and exhaust fans may not maintain the balance if only one flow is monitored and controls real time adjustment. In addition, systems where the fans are designed to maintain either downflow or inflow, but not both, also may not maintain the balance of inflow and downflow.

## Summary

The Class II BSC fundamental task is the simultaneous provision of personal and product protection through precise balance of inflow and downflow. The Herasafe 2030i BSC contains independent and real time control inflow and downflow to provide continuous protection to the user and their work.



Figure 1: Herasafe 2030i Biological Safety Cabinet

Find out more at [thermofisher.com/bsc](https://thermofisher.com/bsc)

**ThermoFisher**  
SCIENTIFIC