

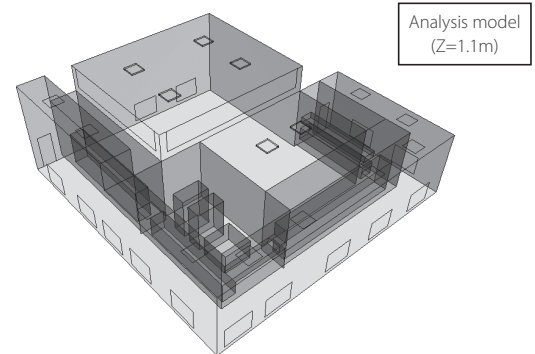
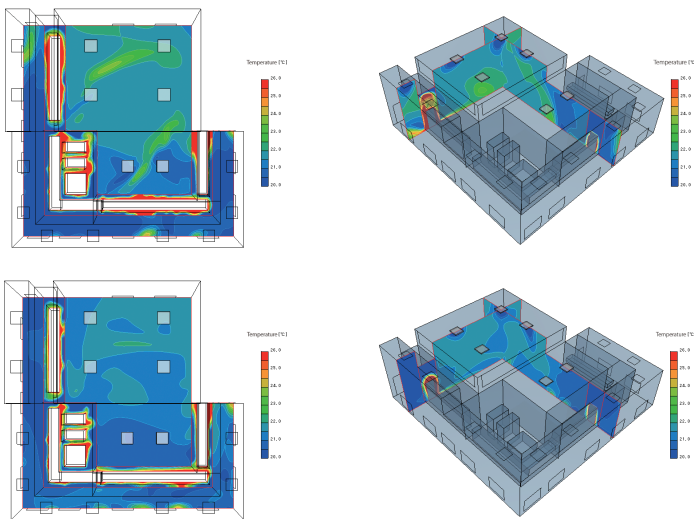
# Airflow Control in a Cleanroom

Improving ventilation effectiveness and temperature control in a room containing heat generating equipment

## Temperature Control in Operational Area

The airflow is improved by adjusting the opening ratio of the ventilation orifice on the lower part of the wall.

### Indoor temperature distribution



Setting Conditions	
Air Exchange Rate:	40 times per hour
Measure of Efficiency:	SVE3*
Indoor Heat Generation:	92 [kW]
Calculation Conditions	
No. of Mesh Elements:	3,303,720
Calculation Time:	500 cycles, approx. 5 hours (8 cores), steady state analysis

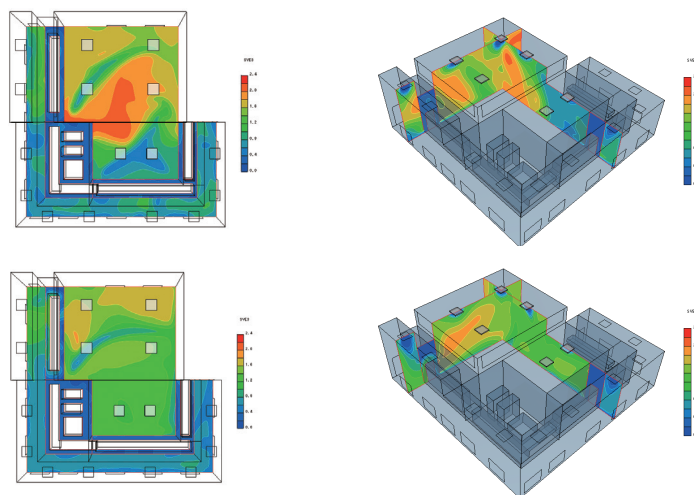
- Existing plan (upper diagrams) and revised plan (lower diagrams)
- The airflow is adjusted to minimize turbulent interactions with other air supply jets within operational area

\* SVE 3 is the index of the age of air is represented by a ratio of concentration of diffusive species to that of contaminants which are diffused instantaneously and uniformly over the entire room.

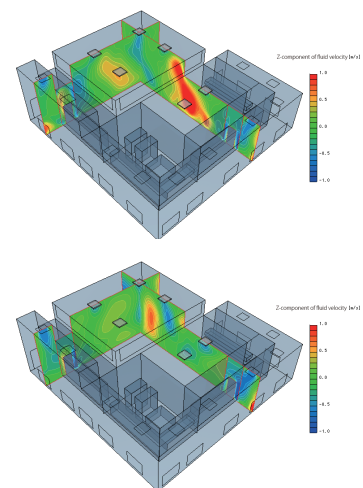
## Enhancement of Cleanliness by Applying Airflow Control

The degree of cleanliness can be assessed using ventilation efficiency index in scSTREAM.

### Ventilation efficiency distribution



### Vertical velocity of indoor airflow



- Existing plan (upper diagrams) and revised plan (lower diagrams)
- Removing eddies from the airflow improved ventilation efficiency

## Notes

A cleanroom can contain physical objects and temperature generating equipment that challenge achievement of a well-ventilated, air space. Using scSTREAM to predict the complex airflow patterns inside the cleanroom and assess solutions early in the design process can simplify installation set-up and ensure robust operation during production.