HIGH DEMAND FOR AIR REQUIRES OPTIMUM AIR DISCHARGE

© Amisola/Gregor Titze
Am Fleischmarkt, Vienna, Austria

If rooms are occupied with many people, good air quality requires frequent air changes; this is usually achieved with a classical all-air system.

The type of air discharge.
Displacement flow ventilation allows for the dissipation of only small cooling loads of 30–50 W/m². It is often used in combination with chilled ceilings, which withdraw heat from the room. Ventilation in cooling mode is very effective, i.e. a very good air quality is achieved in the occupied zone – higher than with a turbulent flow (mixed flow ventilation); this is one of the main advantages of displacement flow ventilation. It is, however, not suitable for heating purposes, and neither for each type of office structure or each type of furniture.

Turbulent mixed flow ventilation allows for higher air change rates and better room purging. It is preferably used for rooms with a high occupancy.

Aerodynamic optimisation.
Aerodynamically optimised air terminal devices are extremely important. Perfect aerodynamic properties ensure maximum safety and thermal comfort in particular with swirl diffusers since the originally high velocity of the turbulent airflow and temperature differences are rapidly reduced.

The installation location also affects the room temperature patterns between the floor and the ceiling and hence on how temperatures are perceived by occupants.

On the next six pages we present various all-air systems and give recommendations for product selection.

SELECTED AIR TERMINAL DEVICES FOR VARIOUS TYPES OF DISCHARGE:

MIXED FLOW

Swirl diffusers

- Rapid change of large air volumes
- For small and large rooms

Ceiling diffusers

- For large air volumes
- Many designs, can be integrated into all types of ceilings

Ventilation grilles

- Classical air terminal devices
- For supply and extract air

Slot diffusers

- Effective air discharge
- Unobtrusive integration
- Adjustable blades for different

Jet nozzles

- Throw the air far into the room
- Electric/manual/self-powered adjustment
- For heating and cooling
- For very large rooms

Combination diffusers

- Inexpensive and space saving solution for supply and extract air
- Installation in partition walls, bulkheads or suspended ceilings

MIXED FLOW / DISPLACEMENT FLOW

Floor diffusers

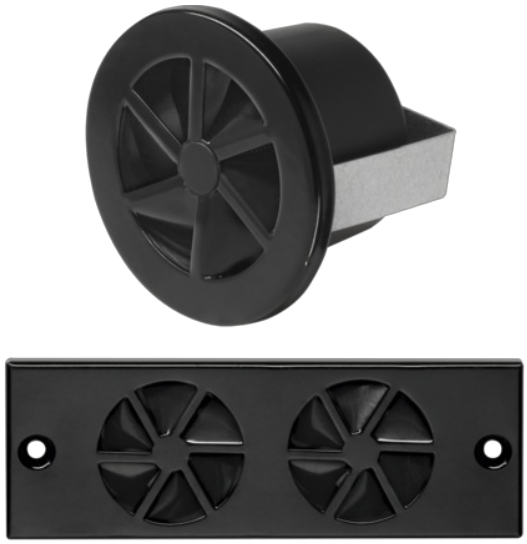
- Combine the advantages of mixed flow ventilation and displacement flow ventilation

- Meet demanding acoustic requirements

DISPLACEMENT FLOW

Displacement flow diffusers

- No turbulence, no draughts
- Good solution for cooling
- Space saving installation in walls or in corners



Staircase swirl diffusers

- Installation in false floors, preferaby in auditoriums etc