PRODUCT BROCHURE

SMARTEMP®
IN COMFORT

Cylindrical Plug-flow Diffuser

CP-AD

CP-AD : 022021

DESCRIPTION

The SMARTEMP® Cylindrical Plug-flow Diffuser, type CP-AD (figure 1), is a cylindrical displacement diffuser used in industrial applications, from floor level up to 5m discharge height, to produce a stable plug-flow air pattern radiating from the diffuser that purges contaminants from the path of the diffuser air stream in a piston-like fashion (rather than removing these by dilution, as would occur with mixed airflow). The upward/downward direction of discharge is adjustable (optionally by electric actuator).

Supply air, at a supply-to-room temperature differential of up to -10 K in cooling mode (restricted to a minimum supply air temperature of 18°C if the diffuser is at floor level) and up to +10 K in heating mode, is discharged from a perforated cylindrical discharge face made of galvanised steel that may be optionally be powder coated.

Air is discharged from the perforated face with minimal mixing, to produce a relatively low velocity plug-flow air stream. Spot cooling/heating and contaminant purging occur in the airstream path. Additionally, a low level occupancy microclimate of enhanced indoor air quality is created in the vicinity of the diffuser, in which convective currents from heat sources such as occupants, equipment, machinery and lights rise upwards, drawing in replenishment air from the occupancy microclimate, to envelope the heat sources in cooler, high quality air.

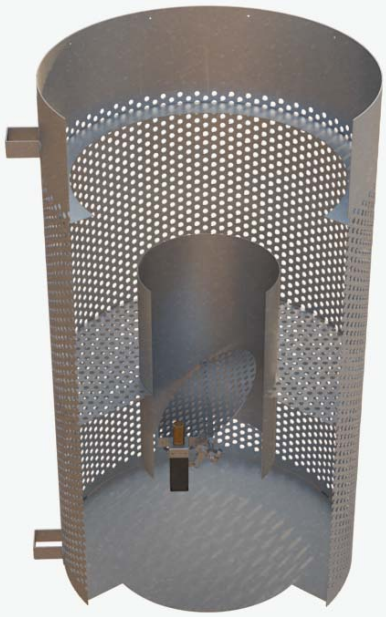
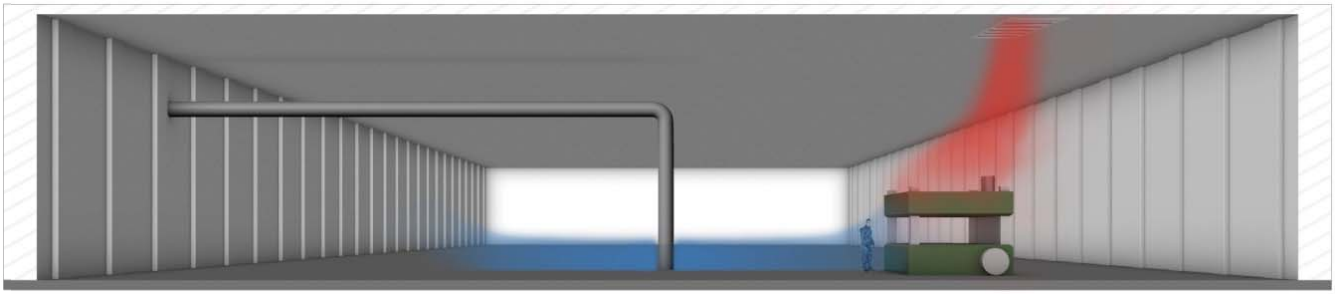


Figure 1

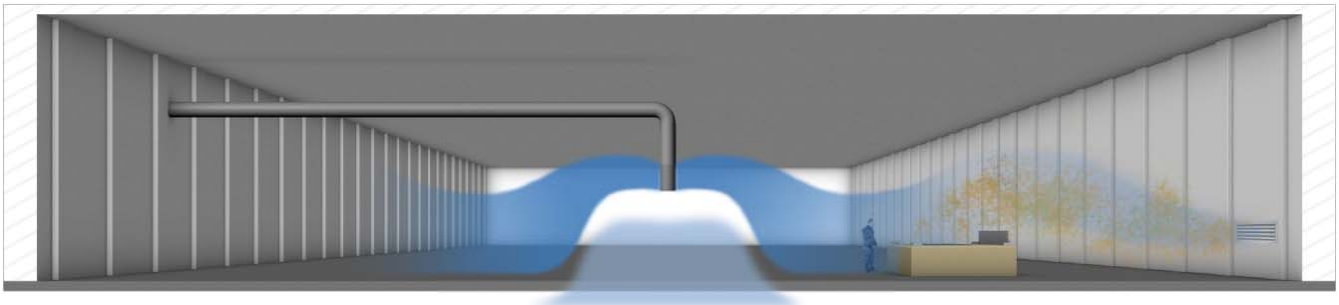
DIFFUSER PLACEMENT

Heat and light contaminants stratify at a high level in concentrated form, where they are removed from the space. Where heavy contaminants (such as particles) also need to be purged, it is recommended that these be removed at a low level from the space. Due to stratification of heat, relatively large supply-to-return temperature differentials are achievable – dependent on ceiling height – despite the relatively high supply air temperature, thereby minimising fan energy.

Energy savings also accrue from the extended free cooling range typically achieved by the elevated supply air temperature, as well as from the potential to reduce outdoor airflow rates due to the enhanced indoor air quality resulting from the improved ventilation effectiveness of the plug-flow industrial displacement supply.

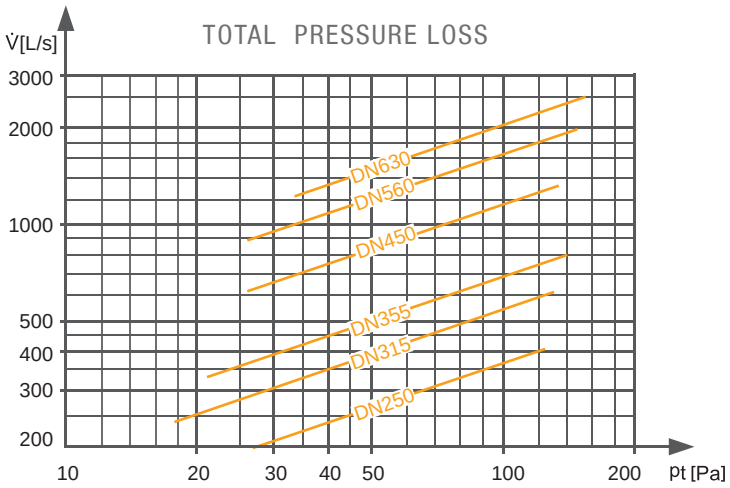


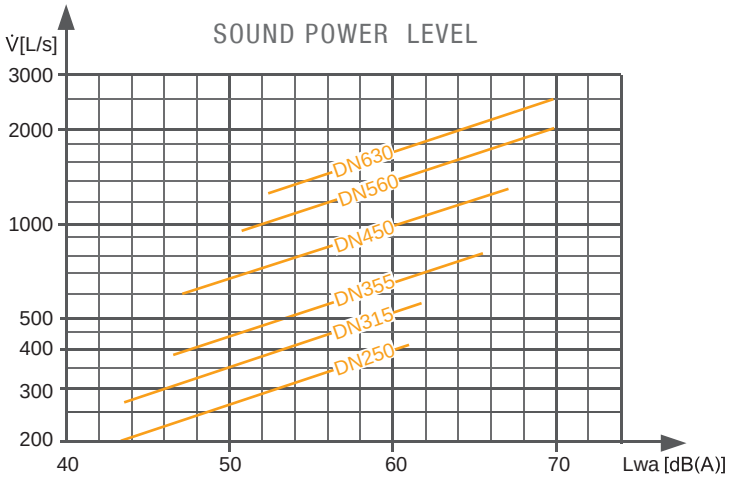
Diffuser placement on the floor, if pollutants are lighter than air (for example in paint shops, printing facilities) or for processes with high heat loads (>120W/m²). Recommended diffuser face velocities between 0.3 and 0.4m/s, with extraction at high level.

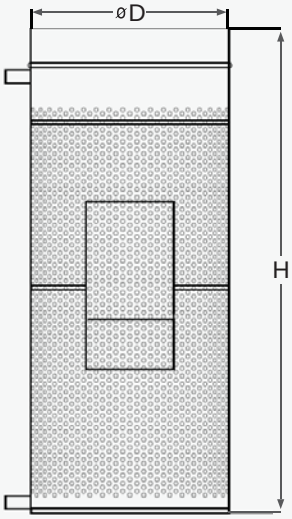


Diffuser placement up to 3m above the floor, if pollutants are heavier than air (for example in mills and in textile industry). Recommended diffuser face velocities between 0.5 and 0.8m/s, with 50% of return air extraction at low level.

TECHNICAL DATA

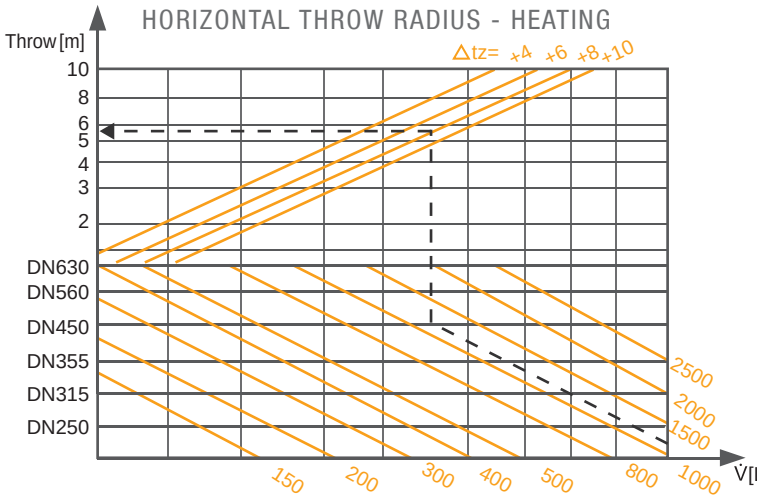


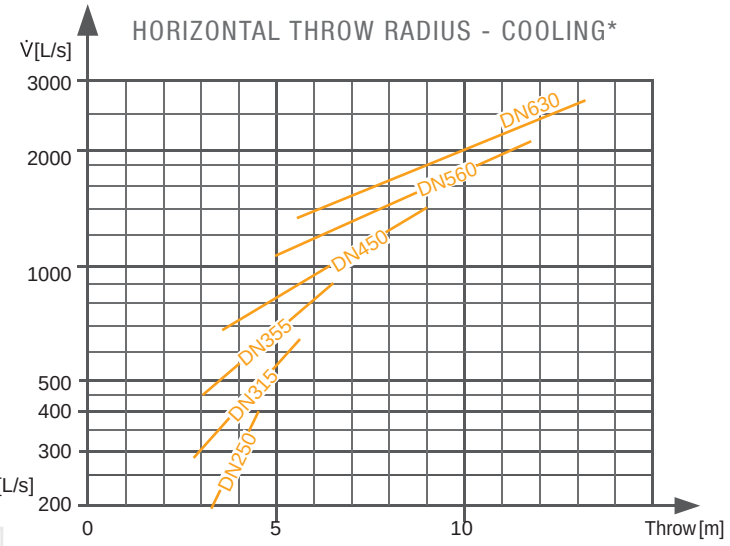




Nominal Diameter	H [mm]	D [mm]	Vmin [L/s]	Vmax [L/s]
250	1000	249	175	420
315	1000	314	275	650
355	1000	354	375	800
450	1000	449	630	1300
560	1000	559	950	2000
630	1000	629	1250	2500

Products supplied may differ slightly from those described in this technical brochure due to on-going product development.





Example: Data given: CP-AD, size DN450,
Volumeflow 1200 L/s, dt_z = +6 K.
Result: Maximum horizontal coverage in heating: 5.7 m

* For freely suspended diffusers. If diffusers are mounted against a wall or column, throw increases by a factor of 1.4

ORDER DETAILS

CP-AD - DN___-__-____

FINISH:
- GAL - Galvanised
- RAL _____

ADJUSTMENT:
- M - Manual
- E - with electric actuator
- T - with self-acting thermal actuator

NOMINAL DIAMETER:
- DN250
- DN315
- DN355
- DN450
- DN560
- DN630

MODEL:
- Cylindrical Plug-flow - Adjustable Direction

Note:
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TENDER TEXT

The SMARTEMP Cylindrical Plug-flow Diffuser, type CP-AD, shall be constructed with a perforated cylinder and duct connection, solid bottom, internal air deflection aperture control rings, air deflector tube and adjustable damper for heating/cooling mode transition. The diffuser components shall be constructed of galvanized steel. The connection spigot, solid bottom and aperture shall be securely affixed to the cylinder. The adjustable damper will be actuated via either a manual lever mechanism or via an electric actuator.

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For additional information, please contact **info@smartemp.com**

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