Luftschleieranlagen

TTL Products

Comfort

TTL-ES

Air curtain systems
with EC-fan technology

Air curtain systems ES

– the energy saving air curtain for open doors of shops, stores and sales units with selling areas up to 300 m² and for shop counters and counter openings

TTL air curtain systems guarantee high functionality and a quality that has been tested against standards.

Using innovative technology, outstanding design and a wide programm suitable for all applications, TTL is a first class reference with respect to climate separation and energy savings at doors and gates.

Modern sales psychology relies today on generous architecture, also and especially in the doors area. Shopping today is an adventure, this includes feeling good - not only for the customer but also for the personnel.

Decor intake grate
Intake grates with quick fasteners, can be folded for easy inspection access, cleaning and air filter exchange. Optional with micro intake grate.

Plastic coated steel sheet housing
The steel sheet housing is equipped with an easy to install equipment mounting bracket and can be delivered in the standard color white (RAL 9016). Individual colorings or a surface design in stainless steel are available.

Blow-out system
Air guiding lamella aerodynamically formed, made of aluminium, nature color anodized with rectifying effect, swiveling in both directions.

- Prevent energy losses in the door area and lower the energy costs
- Remove access barriers and finding customers
- Offer functionality and the architectural integration options
- Secure comfort in the interior space and prevent health related averse effects due to drafts

These are the tasks of state-of-the-art, high performance air curtain systems. TTL has it!
In energy effiency TTL air curtain devices are in accordance to guideline ErP 2015!
Get proof of our competency, reliability and our service!

MITGLIED DENEFF
DEUTSCHE UNTERNEHMENSINITIATIVE ENERGIEEFFIZIENZ

Mitglied der DGNB
Deutsche Gesellschaft für Nachhaltiges Bauen e.V
German Sustainable Building Council

ES-type ceiling-mounted – seriell assembly

ES-type ceiling-mounted – standard installation (STE)

ES-type as visible device with additional covered heating pipes – standard installation (STE)

System design

Equipment shape: Comfort
Neutral housing shape made from plastic coated paneling sheets, standard color white (RAL 9016).
Easy and installation friendly mounting using rivet nuts M8 at the upper side of the device.

Intake

Decor intake grate, powder coated RAL 7042, with integrated regenerative G2 filter (in accordance with DIN EN 779, can be opened without tools and closes through quick fasteners.

Fans

In Green-Tech EC technology
- energy saving and high efficiently
(information see: www.ec-luftschleier.de),
Single monitored with pulse tachometer signal and single motor protection per fan.
Low-vibration and noise reduced, durable, maintenance free, in robust and consolidated design, Contact protection with CE-compliant fan safety screen.

Heat exchanger

For PWW as a wide band low temperature heat exchanger made from Cu/Al with special lamella for optimum heat transfer. Heat connection selectable at the top or the side. Max. rated pressure PN 16 bar at 110 °C. For steam or hot water in stainless steel/steel, zinc plated. For electric heating as finned tube heat register including safety circuit.

Blow-out

Across aluminum air guiding lamella aerodynamically formed, nature color anodized.
The rectified air jet guarantees a large jet distance across the entire system width.

Electrical connection

The power supply is provided by an internal terminal block. Control devices are contacted with a ready-made data line or with a re-clamping adapter via uniform bus connectors. The electronic connection and control board in the air curtain offer additional control and programming options, connection and control accesses for the building control system as well as external contact sensors for automatic modes and for the actuation of the solenoid valve and/or pump.

Accessories

Electronic operating panels, maintenance and repair switch, frost protection thermostat.
Hydraulical accessories like static control valves , selenoid valves.
Fastening materials and accessories for mounting inside suspended ceilings.

Control unit

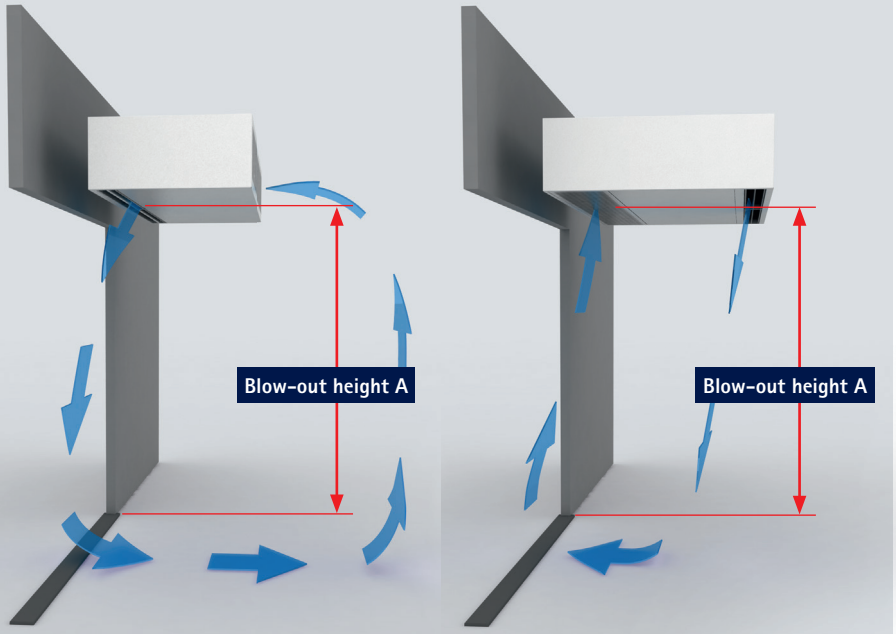
see index
Control Sensor System

Installation options

STE – standard installation
with air intake from the room direction and blow-out above the door.
Design of an air curtain roller, whose rotation direction supports the inflowing cold air.
Therefore a relative large zone with increased air movement in the door area.
A solution for smaller rooms, buildings without vacuum and situations where permanent work places are not located in the door area.

AWE – shielding roller installation
with air intake above the door and blow-out in the room.
Design of a shielding roller, whose rotation direction works against the inflowing cold air.
This results in a significant increase of the shielding performance, a reduction of the required shielding air volume, the noise level and a reduction of the zone with increased air movement in the entrance area.

Schematic diagram



Equipment selection

The physical air exchange in the door area must be considered for the correct dimensioning of an air curtain system. Major influence factors are the size of the door, the room surface and room height, the thermal lift, the back pressure as well a the number of additional doors and openings in the building.

The following is normally applicable:
The larger the room surface the higher are the physical influence factors in the door area.

Factors for the equipment selection include:

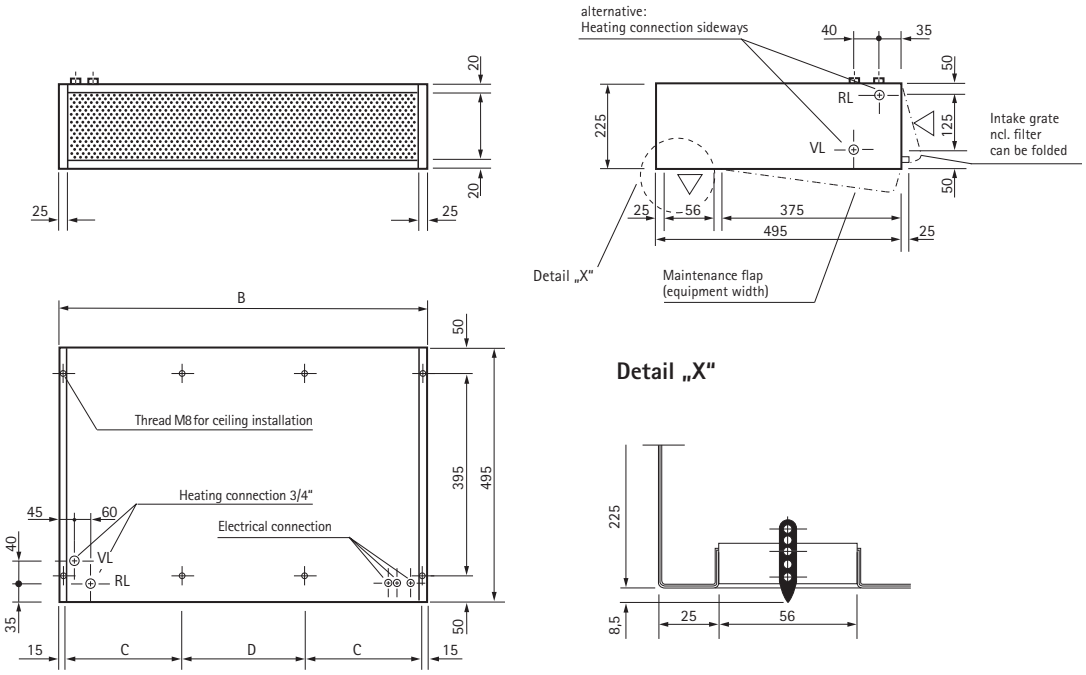
- Door size
- Room surface
- Room height
- Thermal lift and back pressure
- Number/position of additional doors and openings

Table 1 includes the room surface to be shielded for a normal building, with pressure balance on the door level, for the pre-selection of an air curtain system.

Table 1: Room surface in m² at a blow-out height A in cm with room height up to 4m
(larger room heights entails a worse shielding effect)

Blow-out height A	STE-Installation				AWE-Installation			
[cm]	210	230	250	300	210	230	250	300
ES ... -5	150	100	-	-	300	200	100	-

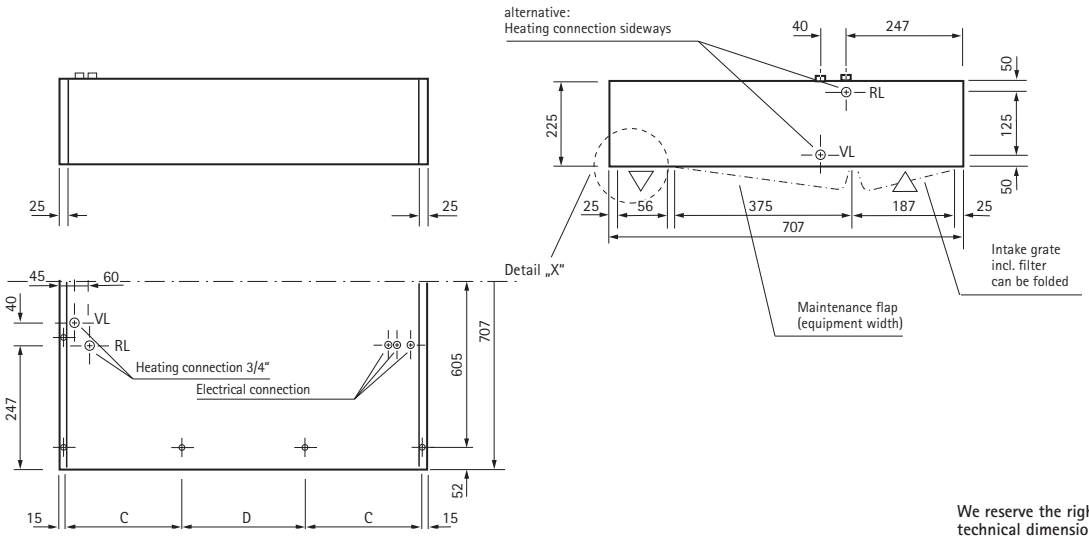
ES ... -5 - Air intake frontal (STD)



Detail „X"

We reserve the right to change the technical dimensions and the information

ES ... -5 -AK - Air intake underside



We reserve the right to change the technical dimensions and the information

Type	Measures			Number of fastening points		Ceiling installation using a TTL aluminium-blind frame	
	B [mm]	C [mm]	D [mm]	Intake frontal (STD)	Intake underside (AK)	Cut-out of ceiling Width x Depth [mm]	External dimensions of frame Width x Depth [mm]
ES 100	990	960	–	4	4	1046 x 763	1076 x 793
ES 150	1490	1460	–	4	4	1546 x 763	1576 x 793
ES 200	1990	1960	–	4	4	2046 x 763	2076 x 793
ES 250	2490	730	1000	8	8	2546 x 763	2576 x 793
ES 300	2990	980	1000	8	8	3046 x 763	3076 x 793

The information about the heater output in the table is calculated for a temperature increase of 12 K for the standard installation (STE) and 22 K for the shielding roller installation (AWE).
The maximum heat outputs of the heat exchangers are in parts significantly higher. These values are available on request.

32 °C are normally the optimum blow-out temperature for air curtain systems. Lower temperatures result in draft occurrences, higher temperatures reduce the shielding output..

Note:
The heat exchanger must be dimensioned for the lowest intake temperature for a heat circuit (sliding) controlled depending on the outside temperature. An intake air temperature limit through a control valve (mechanically, electrically) is recommended.

Installation STE — Air intake +20 °C

ES ... N-5 for PWW-heating (specifications for blow-out temperature t_{LA} = 32 °C)

Type	Door width	Air volume		Heat output	Water resistance for media				Connection
		min.	max.		70/50 °C	80/60 °C	80/40 °C	60/40 °C	
	[cm]	[m³/h]	[m³/h]	[kW]	[kPa]	[kPa]	[kPa]	[kPa]	[inch]
ES 100 N-5	100	500	1350	5,53	3,49	3,38	1,00	3,62	3/4
ES 150 N-5	150	800	2000	8,19	3,56	3,45	1,00	3,65	3/4
ES 200 N-5	200	1000	2850	11,68	4,13	4,00	1,22	4,27	3/4
ES 250 N-5	250	1250	3550	14,55	2,71	2,63	1,00	2,80	3/4
ES 300 N-5	300	1550	4450	18,23	4,71	4,57	1,39	4,87	3/4

N = wide band heat exchanger for all media, max. 110 °C, PN 16
The actual maximum output of the heat exchangers depends on the media and the intake temperature
Heat exchanger for heat pump operation on request

Installation STE — Air intake +20 °C

ES ... N-5 for E-heating

Type	Door width	Air volume		Heat output			Electrical connection air curtain systems
		min.	max.	stage 1	stage 2	stage 3	
	[cm]	[m³/h]	[m³/h]	[kW]	[kW]	[kW]	
ES 100 E-5	100	500	1350	2,0	4,0	6,0	400 V / 3 Ph + PE + N / 50 Hz
ES 150 E-5	150	800	2000	2,5	5,0	7,5	400 V / 3 Ph + PE + N / 50 Hz
ES 200 E-5	200	1000	2850	4,0	8,0	12,0	400 V / 3 Ph + PE + N / 50 Hz
ES 250 E-5	250	1250	3550	5,0	10,0	15,0	400 V / 3 Ph + PE + N / 50 Hz
ES 300 E-5	300	1550	4450	6,0	12,0	18,0	400 V / 3 Ph + PE + N / 50 Hz

E = Ribbed pipe heater, Electrical connection 400 V / 3 Ph / 50 Hz, special circuit configurations on request

Air curtain systems are designed for the installation in dry rooms with normally utilized air.
Ambient temperature min. 0 °C / max. 45 °C. Humidity max. 75 %.
Special solutions on request.

Motor data / Housing data ES -5

Type	Door width	Fan		Power connection	Sound level*		Equipment weight [kg]	
	[cm]	[kW]	[A]	(with electric-heating)	min. [dB(A)]	max. [dB(A)]	Air intake frontal	Intake underside
ES 100 N/E-5	100	0,10	0,90		32	51	31	36
ES 150 N/E-5	150	0,19	1,60	230 V / 1 Ph / 50 Hz (400 V / 3 Ph / 50 HZ)	33	53	47	55
ES 200 N/E-5	200	0,23	1,80		34	54	60	70
ES 250 N/E-5	250	0,30	2,40		35	54	76	88
ES 300 N/E-5	300	0,35	2,70		35	55	90	105

* = Noise pressure level at a distance of 3 m from the noise source at 300m" Sabin

The information about the heater output in the table is calculated for a temperature increase of 12 K for the standard installation (STE) and 22 K for the shielding roller installation (AWE).
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32 °C are normally the optimum blow-out temperature for air curtain systems. Lower temperatures result in draft occurrences, higher temperatures reduce the shielding output.

Note:
The heat exchanger must be dimensioned for the lowest intake temperature for a heat circuit (sliding) controlled depending on the outside temperature. An intake air temperature limit through a control valve (mechanically, electrically) is recommended.

Installation AWE — Air intake +10 °C

ES ... N-5 for PWW-heating (specifications for blow-out temperature t_{LA} = 32 °C)

Type	Door width	Air volume		Heat output	Water resistance for media				Connection
		min.	max.		70/50 °C	80/60 °C	80/40 °C	60/40 °C	
	[cm]	[m³/h]	[m³/h]	[kW]	[kPa]	[kPa]	[kPa]	[kPa]	[inch]
ES 100 N-5	100	500	1350	10,06	10,00	9,78	2,95	10,39	3/4
ES 150 N-5	150	800	2000	14,90	10,26	9,97	3,01	10,59	3/4
ES 200 N-5	200	1000	2850	21,23	11,93	11,61	3,49	14,32	3/4
ES 250 N-5	250	1250	3550	26,44	7,85	7,64	2,29	8,09	3/4
ES 300 N-5	300	1550	4450	33,15	13,68	13,32	3,98	14,10	3/4

N = wide band heat exchanger for all media, max. 110 °C, PN 16
The actual maximum output of the heat exchangers depends on the media and the intake temperature
Heat exchanger for heat pump operation on request

Installation AWE — Air intake +10 °C

ES ... N-5 for E-heating

Type	Door width	Air volume		Heat output			Electrical connection air curtain systems
		min.	max.	stage 1	stage 2	stage 3	
	[cm]	[m³/h]	[m³/h]	[kW]	[kW	[kW]	
ES 100 E-5	100	500	1350		on request		400 V / 3 Ph + PE + N / 50 Hz
ES 150 E-5	150	800	2000		on request		400 V / 3 Ph + PE + N / 50 Hz
ES 200 E-5	200	1000	2850		on request		400 V / 3 Ph + PE + N / 50 Hz
ES 250 E-5	250	1250	3550		on request		400 V / 3 Ph + PE + N / 50 Hz
ES 300 E-5	300	1550	4450		on request		400 V / 3 Ph + PE + N / 50 Hz

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	[cm]	[kW]	[A]	(with electric-heating)	min. [dB(A)]	max. [dB(A)]	Air intake frontal	Intake underside
ES 100 N-5	100	0,10	0,90	230 V / 1 Ph / 50 Hz (400 V / 3 Ph / 50 HZ)	32	51	31	36
ES 150 N-5	150	0,19	1,60		33	53	47	55
ES 200 N-5	200	0,23	1,80		34	54	60	70
ES 250 N-5	250	0,30	2,40		35	54	76	88
ES 300 N-5	300	0,35	2,70		35	55	90	105

* = Noise pressure level at a distance of 3 m from the noise source at 300 m" Sabin

System solutions for all application areas

As a leading company for the manufacture and the sale of air curtain systems, TTL offers proven and energy optimized technologies for an efficient design of the entire building air conditioning. This includes department stores, shopping centers, public buildings, airports, railway stations and factory buildings.

TTL designs technological trends that represent a real added value in practical installations. TTL places the highest priority on energy savings and ease of operation for the products. The large program variety is supplemented by individual special solutions that are created for the customer if this is required.

The best energy efficiency, a comfortable room climate, highest comfort, the most simple installation and maintenance as well as a comprehensive engineering and planning support are decision criteria, which have placed TTL in a leading position on the European air curtain market.

- **Retail and department stores**
  Retail outlets, shopping centers, furniture stores
- **Public buildings**
  Banks, public offices, airports
- **The hotel industry and gastronomy**
  Hotels, restaurants, bars, event rooms
- **Industry**
  Factory workshops, gates, refrigerated warehouses
- **Logistics and warehousing**
  Loading ramps, distribution centers, product storage

VDMA Mitglied Member

MADE IN GERMANY

ENERGIE EFFIZIENZ made in Germany

TTL Luftschleieranlagen

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