



Big Dutchman®



Fresh air supply systems

Optimum fresh air supply for every type of pig housing

Fresh air supply systems – the right solution for every type of pig housing!

Big Dutchman offers a wide range of products to ensure optimal provision of fresh air. Depending on building design and special requirements of your pigs, different ventilation systems are possible, including negative or balanced pressure systems, diffuse fresh air

distribution, natural ventilation, tunnel or CombiTunnel ventilation systems. Our product range includes the following options:

- wall inlets;
- ceiling inlets;
- DiffAir ceilings;

- fresh air chimneys;
- large air inlets for tunnel ventilation;
- curtain systems.

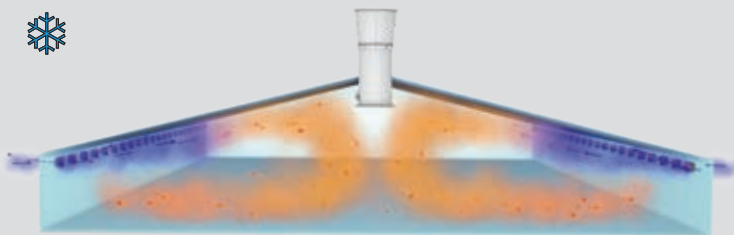
Let our experts advise you about the best fresh air supply system for your barn.

FRESH AIR INLETS FOR INSTALLATION INTO THE WALL

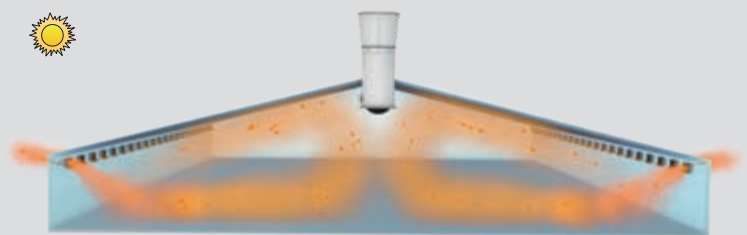
Wall inlets are very well suited for non-centralised air supply in pig housing. Whether the inlet is to be embedded in a wall or used as a flange inlet for walls made of sandwich

panels, Big Dutchman offers the best solution for every application. For both high and low outside temperatures, the target is creating stable and circulating air flow so temperature

conditions are the same for all pigs in the barn.



When outside temperatures are low, the fresh air flows along the ceiling, where it warms up before it slowly enters the animal area.



When outside temperatures are high, the wall inlets are fully opened and the pigs directly benefit from the fresh air.

CL 1200 and CL 1911 F series

The inlets with the greatest range!

Our well-proven wall inlets are made of a shock-proof, recyclable, non-deformable and UV-stabilised plastic material. The insulated inlet flap is kept in a closed position by rustproof steel springs (not applicable for inlets type B/F), thus sealing the building airtight. The inlet flap opens through downward pull. This allows very precise regulation of the inlet opening in each season.

The corresponding control set opens the fresh air inlets either all at once or individually. With the patented advanced inlet control (not

applicable for inlets type B/F), a single action at each inlet pre-defines which inlets open first and which open later. If the number of opened inlets is reduced, the remaining inlets can be opened further, especially during the cold season or while heating is necessary. This makes for a more stable air flow.



CL 1211/F Anti-Freeze – flange inlet with the best possible insulation of inlet flap and frame for very cold regions with temperatures below -25°C: virtually no formation of ice at the inlet



CL 1200 – multi-purpose wall inlet



CL 1211 F – flange inlet for sandwich panels



CL 1200 B/F – economical flange inlet



CL 1911 F – flange inlet for sandwich panels, with a high air flow rate



CL 1911 F transparent – we developed this flange inlet for customers who want to participate in the German Animal Welfare Initiative. The transparent area of the windows must amount to at least 1.5 percent of the room's floor area. This inlet has a transparent area of 0.14 m². For CL 1200, the transparent area is 0.086 m² per inlet.



CL 1911 F Tropical – flange inlet for regions with temperatures always above 10 °C



| Our best series of fresh air inlets with the best accessories!

| Practically maintenance-free!

| A service life of more than 20 years is not the exception, but the rule!



CL 1211 F wall inlet with air deflector

Air flow rate with inlet fully open (in m³/h)

Type Code no.	CL 1211 F 60-44-3111	CL 1200 B/F 60-43-3009	CL 1220 60-44-3140	CL1224 60-44-3144	CL 1229 60-44-3149	CL 1233 60-44-3153	CL 1911 F 60-43-4011
-10 Pa	1 000	1 000	1 200	1 250	1 280	1 350	1 750
-20 Pa	1 450	1 450	1 700	1 750	1 800	1 940	2 500
-30 Pa	1 700	1 700	2 050	2 120	2 170	2 300	3 050

The advantages at a glance

- ✓ ideal supply of fresh air with negative pressure ventilation;
- ✓ advanced inlet control creates stable air jets, especially with minimum ventilation;
- ✓ strong tension springs close the insulated and non-deformable inlet flap (integrated profile made of aluminium) so the barn is absolutely airtight;
- ✓ exact control of the inlet opening thanks to strong tension springs: stable air circulation all the way to the centre of the barn, uniform temperatures in the entire barn while heating requirements remain low;
- ✓ the use of high-quality materials ensures a long service life of the inlets;
- ✓ very versatile application;
- ✓ a high-pressure cleaner can be used without any concern.

The perfect accessories for our wall inlets

Useful, effective and sometimes indispensable

1 Protective grid against birds

This grid stops birds and small animals from entering the barn through the inlet.

For the CL 1200 series, we offer a self-supporting plastic net that comes in two different mesh sizes. The net is attached to the outside of the inlet by a simple locking mechanism.



2 Air deflector

With the air deflector, the direction of the air flow can be adjusted individually for each building, simply by changing the angle between deflector and wall. This makes for a precise distribution of the fresh air. A too steep angle when the air flow hits the ceiling is also prevented so that the air does not drop into the animal area unintentionally. The air deflector is easy to mount at the upper edge of the inlet. We offer a short version as well as a 15 cm long version for ceilings that are not smooth.



3 Intake nozzle with protective grid against birds for CL 1911 F

This nozzle significantly reduces turbulence when the air flows into the inlet, thus ensuring more stable air jets, even with a small inlet opening. When the inlet is opened fully, air flow rates will increase by approx. 20 percent! This means that either the number of wall inlets to be installed can be reduced, or the maximum negative pressure is lowered, thus increasing the fans' efficiency. The nozzle can be used up to a wall thickness of 10 cm and can be retrofitted.



4 Fly protection

To stop flies and other insects from entering the barn, thus reducing the transmission of pathogens through incoming fresh air, Big Dutchman offers the fine-meshed fly screen for the CL 1200 series. The screen is mounted using our anti-wind cap. When cleaned regularly, the fly screen hardly affects the air flow rate of the CL 1200 wall inlets.

Our product range also includes a second, very cost-efficient fly protection solution. Irrespective of the wall inlet type, this fly screen can be installed along the entire barn length. If the side wall has openings such as doors, the fly screen must be divided into several parts.

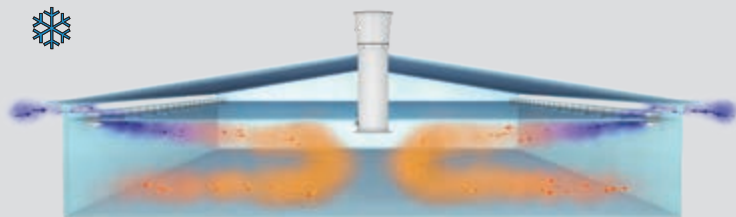


FRESH AIR INLETS FOR INSTALLATION INTO THE CEILING

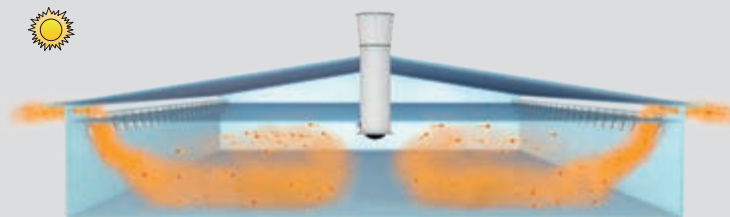
Ceiling inlets are well-suited for non-centralised fresh air supply in barns with a ceiling below

the attic. For both high and low outside temperatures, the target is creating stable and

circulating air flow so temperature conditions are the same for all pigs in the barn.



When outside temperatures are low, the fresh air flows along the ceiling, where it warms up before it enters the animal area.



When outside temperatures are high, the inlet flap is fully opened and the pigs directly benefit from the fresh air.

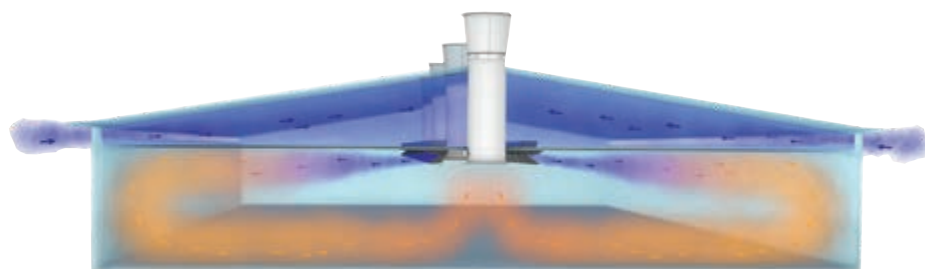
CL 1540

Fresh air inlet for installation in a ceiling below the attic

The CL 1540 ceiling inlet is made of a recyclable, shock-proof, non-deformable and UV-stabilised plastic material. It should be installed into a ceiling that has been insulated, if possible. Even with a ceiling inclination of up to 15 degrees, CL 1540 will close reliably. This is guaranteed by rust-proof steel springs

that keep the insulated inlet flap closed. Fresh air enters the barn through the attic. The roof should also be insulated to prevent heat build-up in the summer. The inlet flap opens through downward pull, which allows control of the amount of incoming air. The air always flows along the ceiling (which should be as

barrier-free as possible), whether the inlet is opened fully or only slightly. With the corresponding control set, the ceiling inlets are either opened all at once or individually.



If the centre of the barn is the warmest place, the inlets can also be installed there



CL 1540 – multi-purpose ceiling inlet

The advantages at a glance

- ✓ ideal supply of fresh air from the attic with negative pressure ventilation;
- ✓ very versatile;
- ✓ advanced inlet control creates stable air jets, especially with minimum ventilation;
- ✓ strong tension springs close the **insulated** inlet flap so the barn is absolutely airtight;
- ✓ exact control of the inlet opening thanks to tension springs: stable air circulation all the way to the centre of the barn,
- uniform temperatures while heating requirements remain low;
- ✓ because the air “sticks” to the ceiling, the negative pressure required even for large throwing ranges is low;
- ✓ the use of high-quality materials ensures a long service life of the inlets;
- ✓ operation is practically maintenance-free;
- ✓ a high-pressure cleaner can be used without any concern.

Air flow rate with inlet fully open (in m³/h)

Type	CL 1540	
Code no.	46-70-0717	
- 10 Pa	1 250	1 450*
- 20 Pa	1 750	2 100*
- 30 Pa	2 100	2 550*

* with intake funnel, code no. 60-40-1323



CL 1540 – wide open inlet flap in the summer

One of the main characteristics of our CL 1540 inlet is the inlet flap, which is shaped like a large shovel. This unique selling point ensures that even when the inlet flap is wide open, the air flows along the ceiling, where it mixes with the warm house air.

For regions that are very warm and humid, the flap can be opened even further than the standard 100 percent position (i.e. parallel to the floor). The air can then flow vertically into the animal area, at a high speed, creating the windchill the pigs need to cool down, especially in warm and humid regions.



CL 1540 – use in the nursery

If your barn has a sloped ceiling, our CL 1540 ceiling inlet can be used up to an inclination of 15 degrees without issues. Strong return springs ensure that the ceiling inlet closes reliably even in this installation position.

Heating is necessary in many regions, especially for piglet rearing. Based on experience, we recommend combining a ceiling inlet with a fin heater for this purpose.



Use of a CombiDiffuse ventilation system in a service centre

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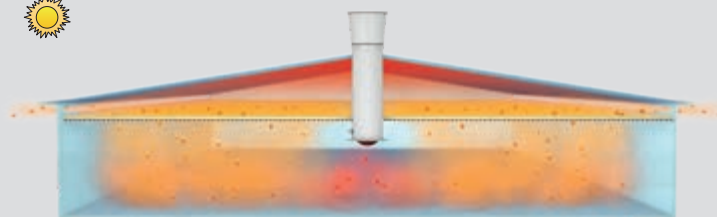
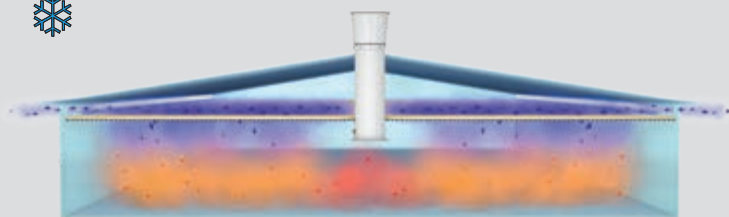
CombiDiffuse ventilation is a combination of two ventilation systems. With low outside temperatures, fresh air is supplied through the DiffAir ceiling. The fresh air enters throughout the entire ceiling, very evenly and at a low speed. With high outside temperatures, the ceiling inlets are automatically opened by the 307pro or 310pro climate computer. This effect causes the air to enter the barn at a much higher speed. The animals then feel much more comfortable with the perceived lower temperatures created by higher air speeds.

DIFFUSE FRESH AIR THROUGH THE CEILING

Fresh air is supplied uniformly along the entire ceiling for an even air distribution at a very

low air speed. The slow and even distribution of the fresh air is an advantage especially in

the winter and in nurseries because draughts are prevented.



DiffAir ceiling

Fresh air provided through the entire ceiling

The DiffAir ceiling serves both as a diffuse fresh air supply system and economical ceiling insulation. It consists of glass-reinforced plastic (GRP) trapezoidal or aluminium sheets.

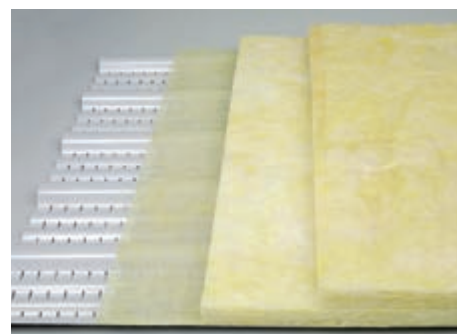
Aluminium sheets have the advantage of being incombustible. DiffAir ceilings are installed at a height of 2.40 to 3 m.

The insulation consists of specially treated glass

wool. Two air-permeable layers of the glass wool are provided, with an additional layer of non-woven fabric between the glass wool and the DiffAir plate acting as a water repellent.



Use of a DiffAir ceiling in a gestation house for sows



Structure of a DiffAir ceiling



DiffAir plate made of aluminium

Technical data	DiffAir plate made of GRP	DiffAir plate made of aluminium
Standard size:	5.10 m x 1.05 m*	5.10 m x 1.05 m*
Plate thickness:	0.9 mm or 1.5 mm	0.35 mm
Weight:	approx. 3 kg/m ² (incl. glass wool)	approx. 2.7 kg/m ² (incl. glass wool)
Perforation:	approx. 7 %	approx. 7 %
Insulating material:	2 glass wool layers of 4 cm each and glass fibre non-woven	2 glass wool layers of 4 cm each and glass fibre non-woven
Fastening material:	plumber sealing screws V2A; 4.5 x 35 mm	plumber sealing screws V2A; 4.5 x 35 mm
Max. span:	1.20 m for a plate thickness of 0.9 mm 2.40 m for a plate thickness of 1.5 mm	1.20 m for a plate thickness of 0.35 mm

* Customised lengths upon request

FRESH AIR CHIMNEY FOR NEGATIVE AND BALANCED PRESSURE VENTILATION

Fresh air chimneys draw fresh air from the roof and distribute it evenly throughout the barn. Using them makes sense especially when:

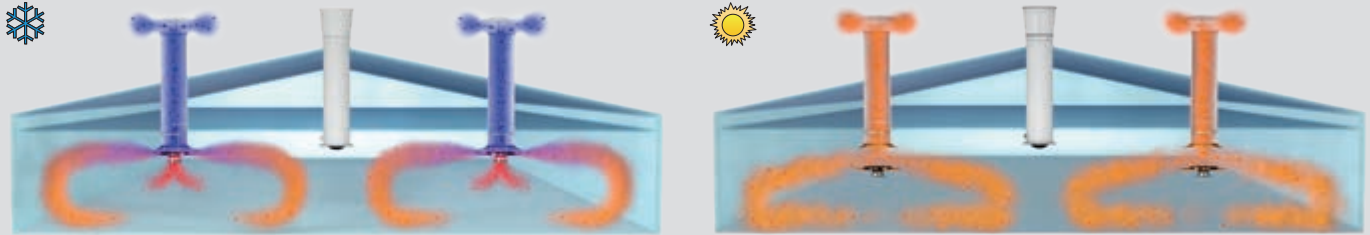
- ✓ fresh air distribution along the side walls

or an intermediate ceiling is not possible due to building design, or not requested;

- ✓ the barn is extremely wide and low so that good air circulation with only wall

inlets is not feasible;

- ✓ a balanced or negative pressure system is to be used, e.g. due to leakage of the building.



F.A.C. 2 (Fresh Air Chimney) Fresh air supply from the roof

F.A.C. 2 consists of a stable pipe system that is GRP coated on the inside and the outside. The pipe is well insulated with 30 mm of polyurethane. F.A.C. 2 is easy to clean, has a long service life and is available in four diameters (650, 730, 820 and 920 mm). The fresh air distributor at the lower end of the chimney ensures that the incoming air is distributed evenly inside the barn. This creates a stable air flow even with minimum ventilation. F.A.C. 2 is available with central or individual control. For individual control, the CL 175 actuator is installed directly at the chimney. Central control of multiple chimneys requires just one actuator and uses cables and tension rods.

As pigs are very sensitive to draughts, a recirculation unit including a fan is a standard feature of F.A.C. 2. This unit distributes cold incoming air more evenly in the barn, especially in winter. The recirculation fan then creates a mixture of fresh air and warm inside air. Depending on the outside temperature and the ventilation level, the recirculation fans can be switched on and off by the 307pro/310pro climate computer. As an option, F.A.C. 2 can be equipped with a fan inside the chimney. This fan pushes the fresh air drawn in by the chimney through the fresh air distributor and into the barn to create a balanced pressure system.



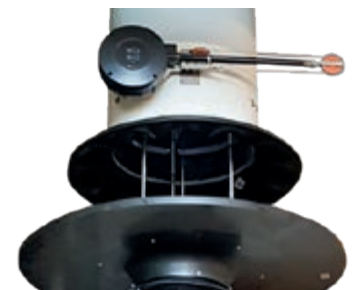
F.A.C. 2 with recirculation unit for even distribution of the fresh air



Use of F.A.C. 2 in a nursery

Air flow rate with chimney fully open (in m³/h)

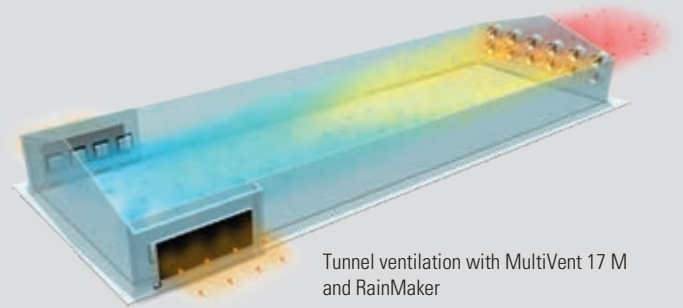
Pa / dia	650 mm	730 mm	820 mm	920 mm
-10 Pa	4 900	6 100	6 700	9 500
-20 Pa	7 000	8 900	11 000	13 700
-30 Pa	8 600	11 000	13 500	16 900
Balanced pressure	13 600	17 900	24 700	24 600



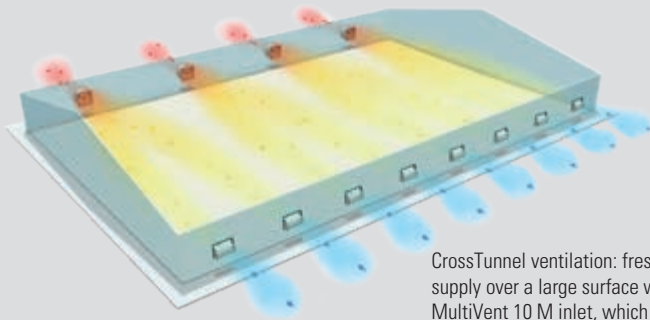
Individual control of F.A.C. 2 with CL 175

LARGE AIR INLETS FOR TUNNEL VENTILATION

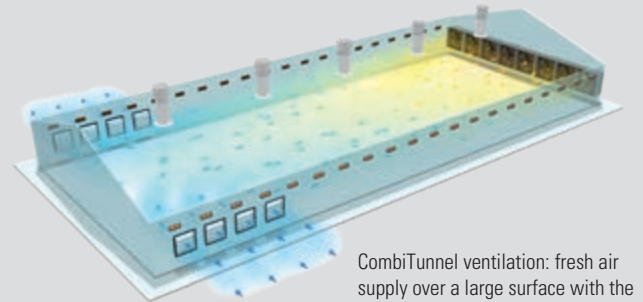
Using a tunnel, CrossTunnel or CombiTunnel ventilation system requires large air inlets. Depending on the selected system, the inlets are installed either near the gable on both sides of the barn, directly in the gable or along one long side of the barn. The inlets allow the fresh air to enter the barn over a large surface, displacing the stale air without mixing with it. Constant and high air speeds at animal level (aim: 2 to 3 m/s) lower the temperature perceived by the pigs (windchill factor).



Tunnel ventilation with MultiVent 17 M and RainMaker



CrossTunnel ventilation: fresh air supply over a large surface with the MultiVent 10 M inlet, which can also be combined with our RainMaker cooling system



CombiTunnel ventilation: fresh air supply over a large surface with the MultiVent 17 M inlet in tunnel mode

MultiVent 10 M & 17 M and SOB 50 Inlets for fresh air supply over a large surface

Our MultiVent inlets are characterised by a very high air flow rate. They can be used as air inlets for tunnel ventilation or for additional summer ventilation. Air flow and air direction can be controlled easily. In the winter, the inlet flaps close reliably. The flaps are insulated so temperature losses are minimised. For

warmer regions, a non-insulated version of the inlet flap is also available. MultiVent and SOB 50 have the advantage of being very flexible. Using the Big Dutchman actuators, these inlets also allow very good control of incoming air volume. While each of the motor-driven SOB 50 shutters has its own

small actuator, the amount of air entering through the MultiVent inlets is controlled by a central CL 175 or EWA actuator.



MultiVent 17 M in the gable wall for tunnel ventilation



MultiVent 10 M transparent



SOB 50 – galvanized, motor-driven shutter

Air flow rate with inlet fully open (in m³/h)

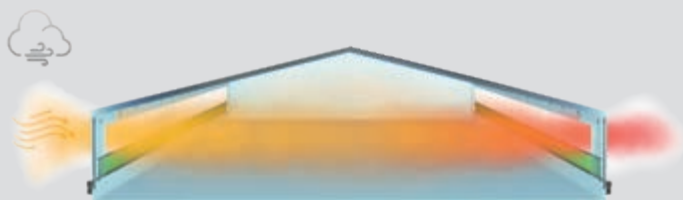
Pa	MultiVent 10 M	MultiVent 17 M	SOB 50
-10 Pa	9 530	19 450	17 000
-20 Pa	13 480	27 300	24 300
-30 Pa	16 520	34 250	29 300
-40 Pa	19 170	39 550	33 800

CURTAIN SYSTEMS FOR NATURAL VENTILATION

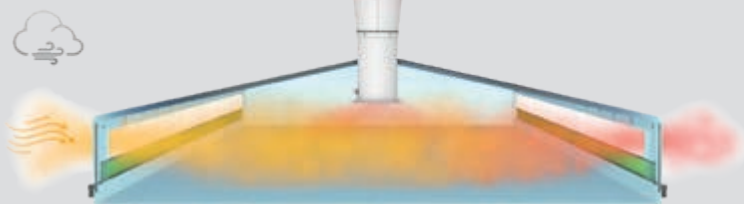
Natural ventilation in pig housing is a good option especially in regions without frost – and available at a reasonable price. Investment costs for natural ventilation systems are low, and they consume little energy. The air exchange depends on wind

direction and wind speed. To control the air exchange, curtains with electric winches are installed along both long sides of the building. The curtains are controlled either based on temperature only or additionally supported by a weather station, irrespective of the side.

An improved thermal flow or a slight negative pressure can be achieved by installing an adjustable roof ridge or exhaust air chimneys in the centre of the barn.



Natural ventilation in barns up to 15 m wide



Natural ventilation in wide barns with exhaust air chimneys or adjustable ridge

Drop curtain

Cost-effective closing system for natural ventilation



Using drop curtains is a simple but very effective method for controlling the natural air exchange in a barn. Our EWA actuator automatically opens and closes the curtains.

Roller curtain

Closing system with winding mechanism for natural ventilation

Roller curtains are a well-proven closing system. Thanks to the winding mechanism, the curtain is perfectly protected while wound up: there is no room for rodents, the curtain stays clean and its service life increases. Especially with lower temperatures in the mornings and to prevent draughts, curtains should always open from the top to the bottom. The cooler fresh air will enter the barn at the top first, without reaching the pigs. There is no stress on the curtain thanks to the compensation mechanism of the telescopic coupling. Re-adjustments are not necessary.



Roller curtain opening from the top to the bottom using the EWA actuator

Open-air barns with outside run are ideal to keep pigs in conditions that are as similar as possible to their natural environment, and to offer them different functional and climate areas. Natural ventilation is the preferred ventilation system for such barns. To protect

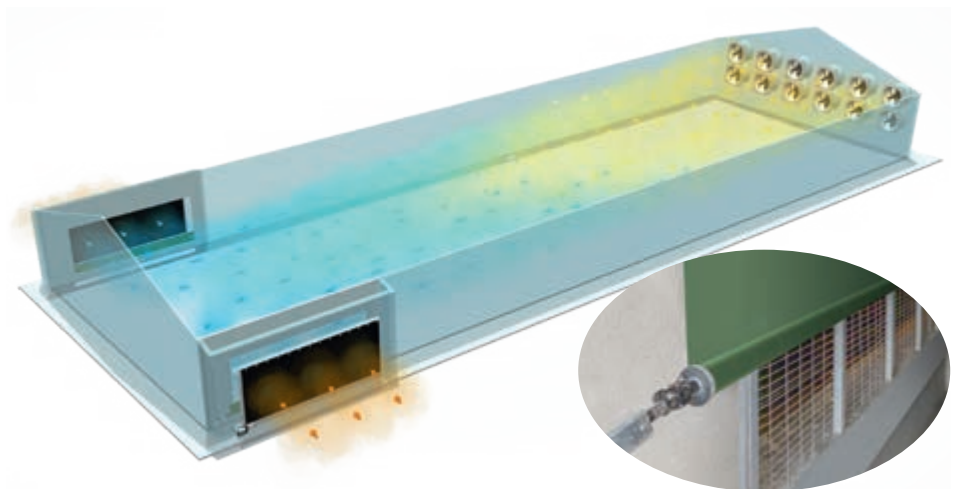
the pigs from bad weather (storm, rain, cold), roller curtains are a good closing system. The natural movement of the air, in combination with the thermal flow, ensures that sufficient fresh air flows through the barn. In addition to curtain control based on the temperature, we

also recommend integrating a weather station to determine wind speed and direction.



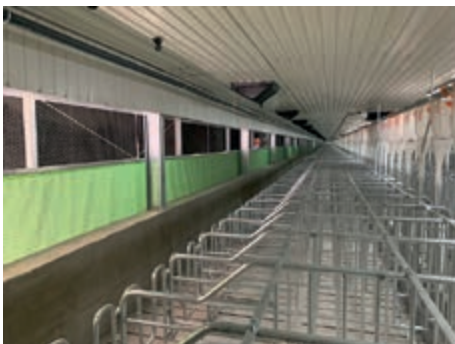
Pig house with open-air run and curtains as protection against the weather

For airtight closing of large openings in barns with CombiTunnel ventilation while temperatures are low, roller curtains are the perfect solution. They fit closely to the tunnel opening because of the negative pressure in the barn. When switching into tunnel mode, the curtains are opened as required for ideal fresh air supply.



Roller curtain reliably closing a tunnel door, here in connection with the RainMaker pad cooling system

Roller curtain in a doghouse – opening from the bottom



Service centre with roller curtain and RainMaker with CrossTunnel ventilation

In addition to the drop curtain that opens from the top to the bottom, Big Dutchman also offers a curtain that opens from the bottom to the top. With this system, the roller tube is not loaded with weight thanks to the special winch motor. This guarantees a reliable winding process and thus preserves the

fabric. Winding systems that open from the bottom are available with a fixed drive or a climbing drive. With very high curtains, this allows foregoing a long telescopic tube.

Actuators

Automatic opening and closing of any fresh air inlet

Actuators of a high quality are absolutely necessary for reliable fresh air distribution. They control the flap position of any fresh air

inlets, whether these are wall or ceiling inlets, fresh air chimneys, tunnel doors or roller curtains. Essential requirements such as

functional reliability and robustness are met perfectly by the CL 175 and EWA actuators offered by Big Dutchman.



CL 175 – the linear motor with a tractive force of up to 6000 N

- ✓ regulates how far wall and ceiling inlets or the F.A.C. 2 fresh air chimneys are open;
- ✓ compact design, robust and maintenance-free;
- ✓ variable travel range between 60 and 600 mm;
- ✓ available for 24 V DC and all alternating current (AC) networks;
- ✓ electronic position feedback for highest operational reliability;
- ✓ buttons for manual operation directly on the motor;
- ✓ protection rating IP 65;
- ✓ easy installation without winding of the cable;
- ✓ speed: 1.2 mm/s.



EWA – the winch motor that meets the highest standards

- ✓ controls wall and ceiling inlets, tunnel doors and curtain systems;
- ✓ robust winch, compact form;
- ✓ available for 24 V DC and all AC networks as well as for 3-phase;
- ✓ high speed, perfect for pulse-pause applications;
- ✓ emergency operation possible with cordless screwdriver (without emergency opening);
- ✓ automatic operation even after manual emergency operation for high operational reliability;
- ✓ 10-year guarantee for EWA winches with electronic limit switch.



Big Dutchman

Europe, Middle East & Africa:
Big Dutchman International GmbH
P.O. Box 1163 · 49360 Vechta, Germany
Tel. +49(0)4447 801-0 · Fax -237
big@bigdutchman.de
www.bigdutchman.de

USA: Big Dutchman, Inc.
Tel. +1 616 392 5981 · bigd@bigdutchmanusa.com
www.bigdutchmanusa.com

Brazil: Big Dutchman (Brasil) Ltda.
Tel. +55 16 2108 5300 · bdbr@bigdutchman.com.br
www.bigdutchman.com.br

Russia: 000 "Big Dutchman"
Tel. +7 495 229 5161 · big@bigdutchman.ru · www.bigdutchman.ru

Asia/Pacific: BD Agriculture (Malaysia) Sdn. Bhd.
Tel. +60 3 334 83 555 · bdasia@bigdutchman.com · www.bigdutchman.com

China: Big Dutchman (Tianjin) Livestock Equipment Co., Ltd.
Tel. +86 10 6476 1888 · bdcnsales@bigdutchman.com
www.bigdutchmanchina.com