



POWERED BY **SCAN-AIR**

GENERAL PRODUCT INFORMATION



Revolutionary solution in terms of air flow

In 2007, Tulderhof developed the Flash air inlet. This inlet represented a revolutionary evolution in terms of air control. The throw (air direction) is not affected by the position of the slide (amount of air). Tulderhof patented this idea in the past and is still the specialist for this type of air inlet. Meanwhile, this air inlet has proven its value in thousands of houses around the world.

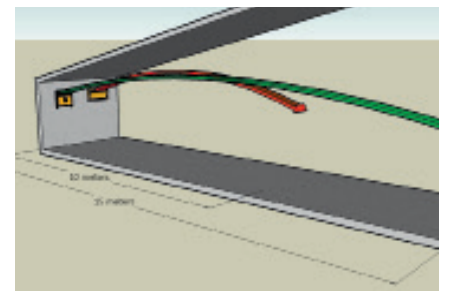
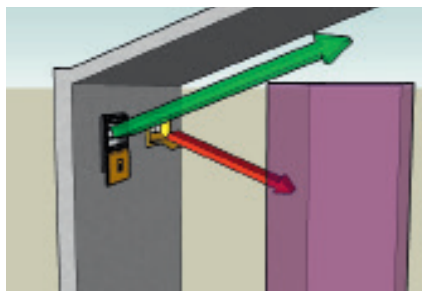
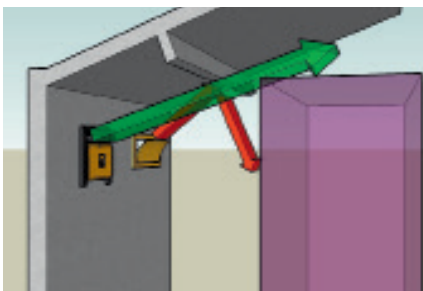
ADVANTAGES FLASH 3300

- › Low transport costs
- › Simple mounting
- › Flexible air flow
- › Insulated
- › Ideal for cold areas
- › Air inlet frame available



OPERATION FLASH 3300

The Flash steers the incoming fresh air before it enters the building. The air gets its direction through manually adjustable spoilers. The amount of air is regulated with a vertically well insulated moving slide.



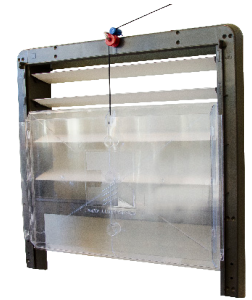
The Flash is capable to steer air extremely deeply, avoiding obstacles such as nests and cages. For this reason the Flash is particularly suitable for any situations with extra high demands for air circulation.

AIR INLET INFORMATION

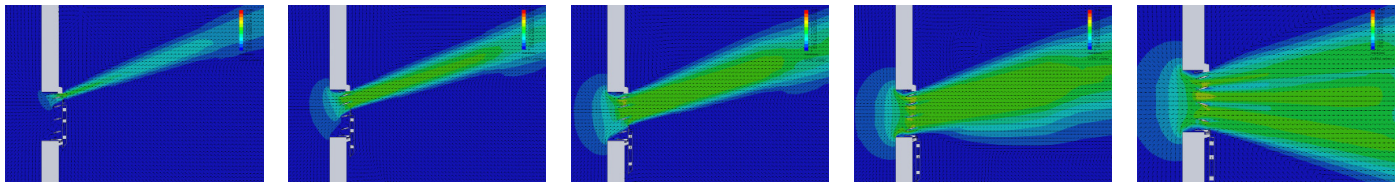
Type	Flash 3300
10 Pa - m ³ /h	2,400
20 Pa - m ³ /h	3,300
30 Pa - m ³ /h	4,100
Surface - cm ²	1,570
Length - mm	580
Height - mm	390
Depth - mm	60
Stroke - mm	420
Force - kg	3.7



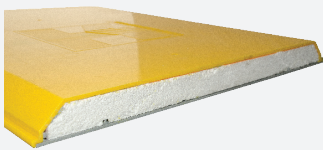
The Flash 3300 is also available in a daylight version



AIR FLOW



GENERAL INFORMATION

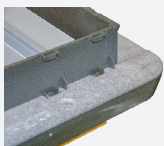


INSULATION SLIDE

The Flash 3300 slide system is located on the 40 mm wide flange in the house. To keep this flange even warmer, 20 mm thick insulating material can be inserted in the back of the flange. This will prevent it from freezing.

U-value: 1.08 W/(m².K)

R-value: 0.93 m².K/W



OPTIONS FOR COLD AREAS

For cold areas, Tulderhof developed a special flange insulation for the Flash 3300. These flanges are filled with 26 mm[®] Neopor, a highly insulated and expanded polystyrene with a U-value of 1.08.

- > Flange insulation
- > Spring-assisted opening
- > Snow protection

U-value: 1.08 W/(m².K)

R-value: 0.93 m².K/W



SNOW PROTECTION

To prevent snow from blocking the inlet opening, we recommend fitting a cover in high snowfall areas. Note that the cover will also reduce air flow through the inlet.

Cover with light trap

Perfect fit for Flash 3300 and suitable for other inlets models

These covers are the ideal solution to reduce the influence of rain and wind. With the optional light trap it also possible to reduce the incidence of light. This is highly recommende with rearing and breeder stock. The cover is made out of black UV-resistant plastic.

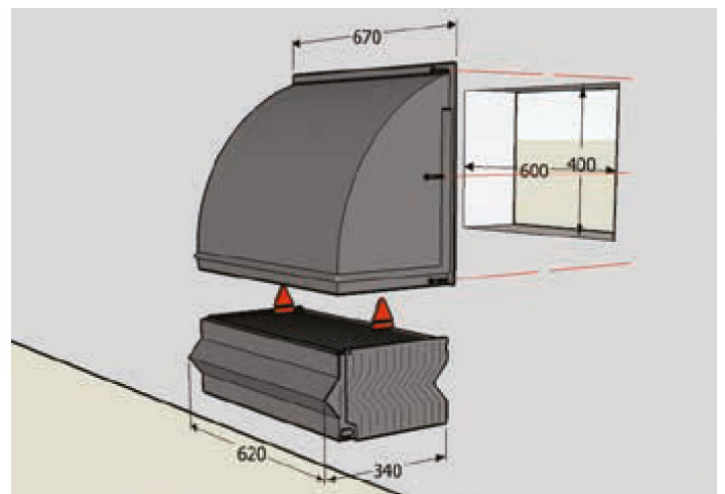
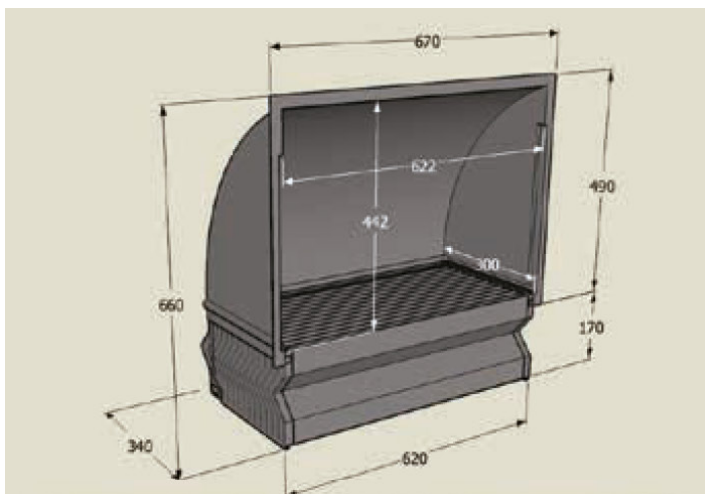
- > Anti wind
- > Anti rain
- > UV proof
- > Black out
- > Easy installation
- > Sturdy design



ADDITIONAL BENEFITS

The cover can fit any type of wall. Furthermore, the light trap provides complete black out of the air inlet which also reduces insect attraction, minimizing the spread of illnesses.

Cover with light trap		
Type	Without light trap	With light trap
10 Pa - m ³ /h	1,800	1,600
20 Pa - m ³ /h	2,450	2,300
Surface - cm ²	1,800	1,250
Width - mm (X)	670	670
Height - mm (Y)	490	660
Depth - mm (Z)	300	340



These are standard sizes in mm. Covers can be placed directly next to each other and they are suitable for any type of inlet.

An extremely versatile air inlet with many possibilities

The X-Stream is Tulderhof's reinvention of the classic air inlet. An air inlet with good air flow and a lot of possibilities. The X-Stream is manufactured from durable plastics and the best insulated inlet on the market. Furthermore, it has a delayed opening system if chosen for the self-closing version. There is also a self-opening X-Stream.

ADVANTAGES X-STREAM

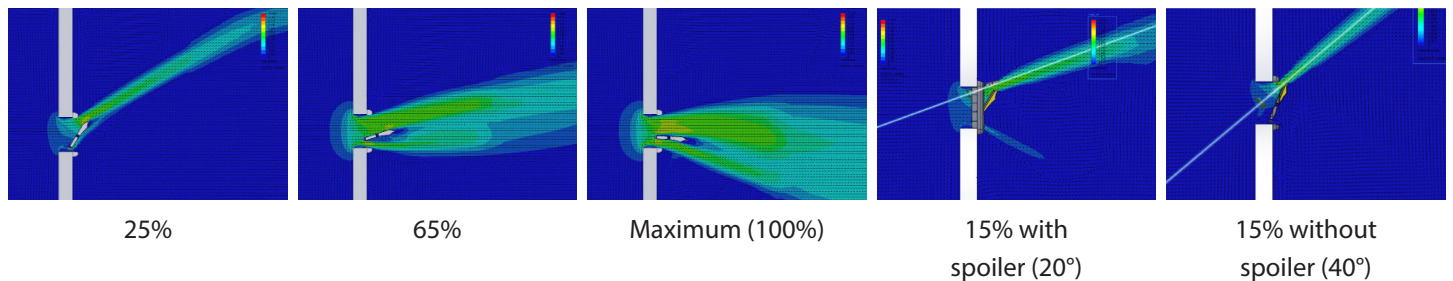
- › Delayed opening system
- › Self-opening of self-closing
- › Very well insulated
- › Jet stream spoiler
- › Air inlet frame available



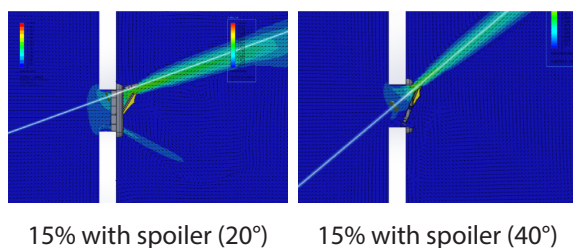
OPERATION OF X-STREAM

With the delayed opening system you can create a better air flow during minimum ventilation while using just one winch motor. The first inlets that open have a higher mass creating a better throw of incoming air. In maximum ventilation the X-Stream steers the air down, directly on the birds creating a cooling effect.

AIR FLOW



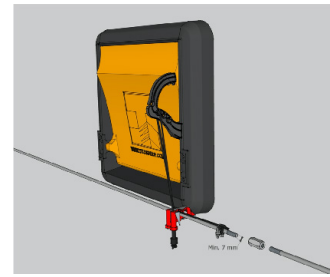
AIR FLOW JET-STREAM



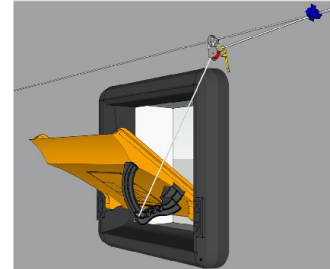
AIR INLET INFORMATION

Type	X-Stream I	X-Stream II	X-Stream III
10 Pa - m ³ /h	1,500	3,000	4,500
20 Pa - m ³ /h	2,200	4,400	6,600
30 Pa - m ³ /h	2,750	5,500	8,250
Surface - cm ²	1,100	2,200	3,300
Lenght - mm	385	805	1,220
Height - mm	355	355	355
Depth - mm	45	45	45
Hole size - mm	392 x 360	812 x 360	1,232 x 360
Stroke SO / SC - kg	260 / 355	260 / 355	260 / 355
Force SO / SC- kg	2.1 / 5	4.2 / 10	6.3 / 15

SO = self-opening
SC = self-closing

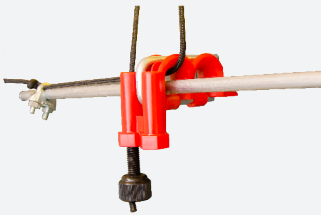


X-Stream self-closing



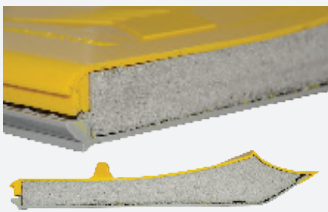
X-Stream self-opening

GENERAL INFORMATION



FINETUNING

After installation the inlets are very easy to fine-tune, this is achieved thanks to the rope with adjustable length and its corresponding fine-tuning screw. When using the self-closing version, Tulderhof advises to use a galvanized rod of at least 7 mm to avoid excessive stretch on the wire/rod.



SLIDE INSULATION

The X-Stream slide is filled with 26mm Neopor[®], expanded insulation material. The outside of the slide is a "High Impact Polystyrene Plastic", a wear-resistant material.



FLANGE INSULATION

The flanges of the X-Stream comes with a standard of 20mm Neopor[®] insulation. This prevents condensation on the flanges and a cold bridge. The U-value equals 0.93, which results in a 30% better insulation than the standard PU-inlets.

U-value: 0.93 W/(m².K)

R-value: 1.08 m².K/W



JETSTREAM SPOILER

The Jetstream spoiler has vertically converging plates that concentrate the air flow 2 meters in front of the inlet. This creates a jet-stream. When using the Jetstream, the air flow is stronger and will throw the air 1 to 2 meters further into the house.

A high quality polyurethane foam air inlet with jet stream

The BL 4500 air inlet is a side inlet of high quality polyurethane foam with a high insulation value. This air inlet comes in 2 versions;

- > a self-opening and
- > a self-closing inlet.

ADVANTAGES BL-4500

- > Polyurethane foam inlet
- > 4,500 m³/hour at 20 Pa
- > Excellent finetuning
- > Aerodynamic flow
- > Airtight when closed
- > Air inlet frame available



OPERATION OF BL 4500

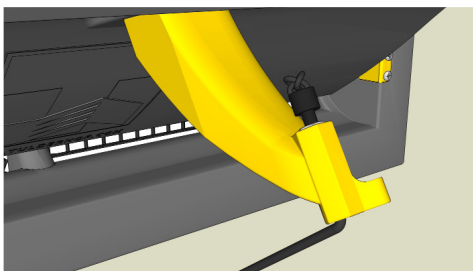
The self-closing variant has the advantage that one can make a delayed opening system e.g. 1 in 3 inlets will open first. Together with the option of a jetstream valve, one can have a total automatic control over the minimum ventilation.

INSULATION

The BL 4500 is made of 20 mm thick polyurethane foam with a density of 190 grams per liter. Therefore the frame and the valve have a high insulation value. The surface is strong and smooth and therefore easy to clean.

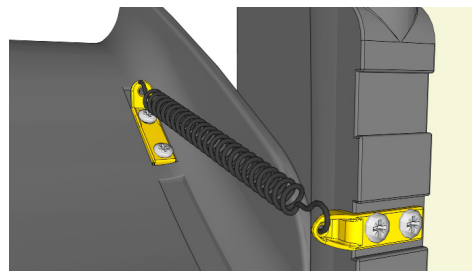
U-value: 1.41 W/(m².K)

R-value: 0.71 m².K/W



FINETUNING

A special screw makes a perfect finetuning easy.



SPRINGS

Stainless steel springs and plastic holders have the advantage of not rusting.

AIR INLET INFORMATION

Type	BL 4500
10 Pa - m ³ /h	3,100
20 Pa - m ³ /h	4,500
30 Pa - m ³ /h	5,500
Surface - cm ²	2,200
Length - mm	857
Height - mm	373
Depth - mm	115
Stroke SO / SC - kg	550 / 680
Force SO / SC - kg	2.0 / 8.0

SO = self-opening
SC = self-closing



BL 4500
with jetstream

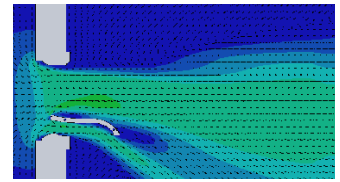
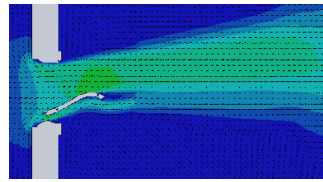
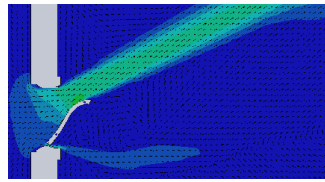
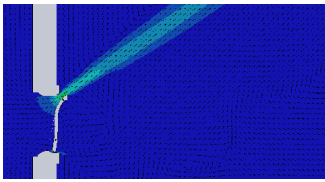


BL 4500 (SC)
self-closing

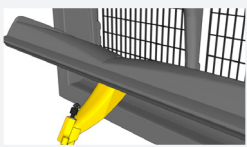


BL 4500 (SO)
self-opening

AIR FLOW

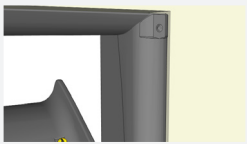


GENERAL INFORMATION



JETSTREAM

Concentrates the air for a better minimum throw.



AERODYNAMICS

Round edges gives the inlet 8% more air flow.



AERODYNAMIC GRID

UV-resistant plastic mesh with optimized air flow.



DRAUGHT STRIPS

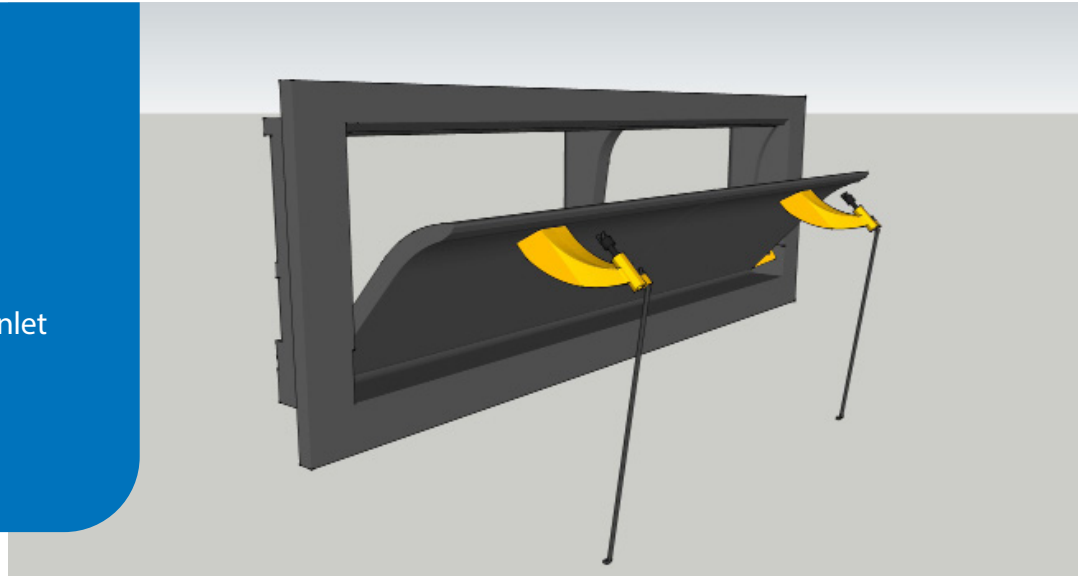
The air inlet features draught strips for airtight closed position.

An aerodynamic design that gives 8% more air flow

BL stands for Black line, an inlet made of PU-foam. De BL 6200 (also known as BT-01) has a flange of 40 mm all around. Leaving upper or bottom flanges aside, the inlets can be mounted on top of each other. These inlets are made of black PU-foam.

ADVANTAGES BL 6200

- › Polyurethane foam inlet
- › Perfect closing
- › Only 3.5 kg pulling force
- › Aerodynamic
- › Usage as side or tunnel inlet
- › Excellent finetuning
- › Winterdoors possible
- › Air inlet frame available



OPERATION OF BL 6200

Synchronisation of the inlets is easy with the fine tune screw. The BL series can be self opening or self closing. The self closing version has the big advantage of being completely closed even if the inlets are not synchronised. The force needed to open 5 inlets on top of each other is only 16 kg, only 3.2 kg per inlet. Aerodynamic design gives the BL series 8%

BLACK LINE TUNNEL

Placing the BL 6200 on top of each other gives you the opportunity to place these inlets in the front of the house as a Tunnel inlet.



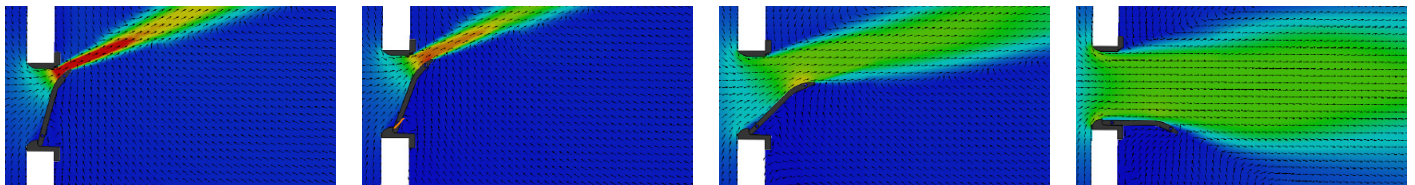
AIR INLET INFORMATION

Type	BL 6200 (BT-01)
10 Pa - m ³ /h	4,300
20 Pa - m ³ /h	6,200
30 Pa - m ³ /h	7,500
Surface - cm ²	3,100
Length - mm	1,180
Height - mm	355
Depth - mm	110
Stroke SO / SC - kg	420 / 420
Force SO / SC - kg	4.2 / 6



SO = self-opening
SC = self-closing

AIR FLOW

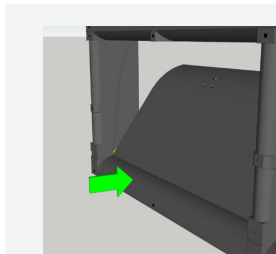


GENERAL INFORMATION



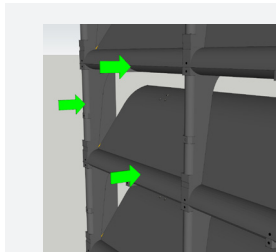
FINETUNING

A special screw makes a perfect finetuning easy.



WATER

The water can't flow inside because of the round bottom edge.



ROUND EDGES

Round edges gives the inlet 8% more air flow.

An aerodynamic multisolution for tunnel ventilation

BT stands for Black line Tunnel, a tunnel inlet made of PU-foam. The BT-01 has a flange of 40 mm all around. Leaving upper or bottom flanges aside, the inlets can be mounted on top of each other, combining together multiple BT-01 to create the BT-02, BT-03, etc. Synchronization of the inlets is easy with the fine tune screw. In addition, the BT series can be self-opening or self-closing.

ADVANTAGES BT 02-05

- › Polyurethane
- › Perfect closing
- › Only 3.5 kg pulling force
- › Aerodynamic
- › Excellent finetuning
- › Air inlet frame available

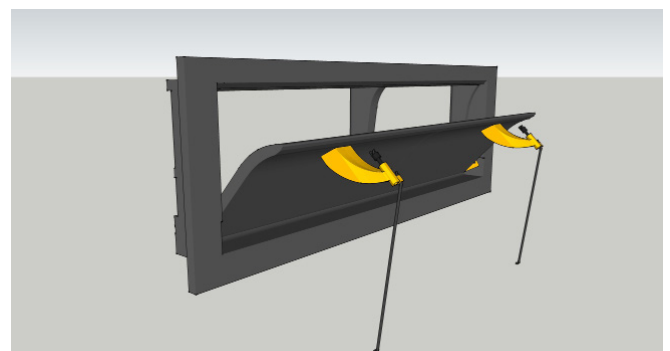


OPERATION OF BT-TUNNEL

Synchronisation of the inlets is easy with the fine tune screw. The BL series can be self opening or self closing. The self closing version has the big advantage of being completely closed even if the inlets are not synchronised. The force needed to open 5 inlets on top of each other is only 16 kg, only 3.2 kg per inlet. Aerodynamic design gives the BL series 8% more air flow.

BLACK LINE TUNNEL

Placing the BL-6200 on top of each other gives you the opportunity to place these inlets in the front of the house as a Tunnel inlet



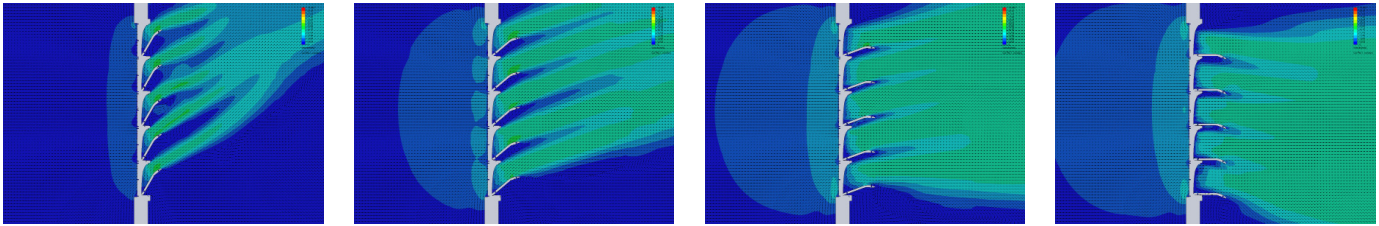
AIR INLET INFORMATION

Type	BT-02	BT-03	BT-04	BT-05
10 Pa - m ³ /h	8,600	12,900	17,200	21,500
20 Pa - m ³ /h	12,400	18,600	24,800	31,000
30 Pa - m ³ /h	15,000	22,500	30,000	37,500
Surface - cm ²	6,200	9,300	12,400	15,500
Lenght - mm	1,180	1,180	1,180	1,180
Height - mm	710	1065	1420	1775
Depth - mm	110	110	110	110
Stroke SO - kg	420	420	420	420
Stroke SC - kg	420	420	420	420
Force SO - kg	4.2	6	7.8	9.6
Force SC - kg	8	11	13	16

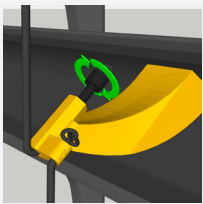


SO = self-opening
SC = self-closing

AIR FLOW

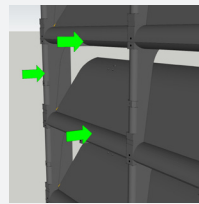


GENERAL INFORMATION



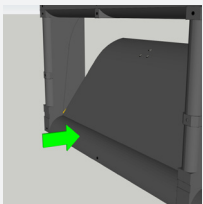
FINETUNING

A special screw makes a perfect finetuning easy.



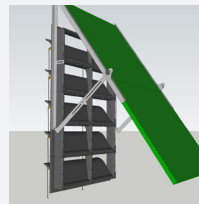
ROUND EDGES

Round edges gives the inlet 8% more air flow.



WATER

The water can't flow inside because of the round bottom edge.



WINTERDOOR

Extra insulation option with 40 mm sandwich door.

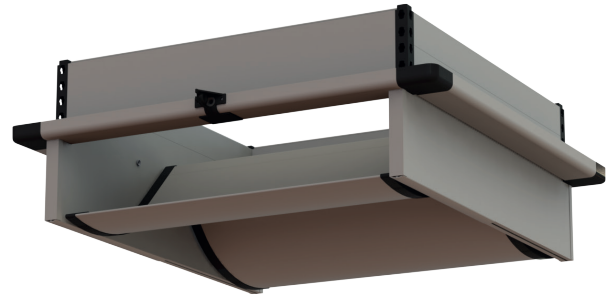
Ceiling inlet Horizontal PVH

Benefits of Ceiling Inlet Horizontal PVH:

- › Horizontal air control due to curved flap
- › Optimal air control due to curved flap
- › Self opening
- › Insulated flap

Options:

- › Single
- › Double
- › Unassembled
- › Multiple
- › Ventilation chimney with PVH
- › Tailor made



TUNNEL AIR INLETS

Ceiling inlet Vertical PVV

Benefits of Ceiling Inlet Vertical PVV

- › Vertical air control due to straight flap
- › Self opening
- › Insulated flap

Options:

- › Single
- › Double
- › Single with telescopic flange
- › Double with telescopic flange
- › Tailor made



Better air steering with minimum ventilation

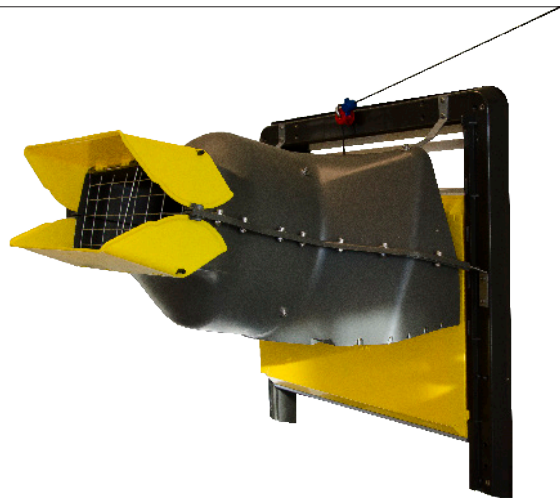
When minimum ventilated, the Tulderhof Air Optimizer mixes oxygen rich outside air with warm stable air. A fan is used to blow the air into the middle of the house and also pulls down the unused hot air to animal level.

ADVANTAGES AIR OPTIMIZER

- › Constant air pattern even without underpressure
- › Better air steering with minimum ventilation
- › Low heating costs
- › Stepless variable

PRODUCT INFORMATION

Characteristics	Ziehl Abegg fans
Max. capacity - m ³ /h	2,800 (2,200 at 0 Pa)
U [V]	230
f [Hz]	50
P [kW]	0.13
I [A]	0.60
n [rpm]	1,300
[db]	65



A fresh air distributor with flexible air steering

The Equalizer is developed for equal pressure and negative pressure systems. Also ideal for mono block barns. This product is available in a diameter of 920 mm. It is a fresh air inlet chimney with the option to adjust the incoming air flow with adjustable spoilers/vanes.

ADVANTAGES AIR EQUALIZER

- > Fresh air inlet chimney
- > Adjustable air flow
- > Polyester coating
- > 30 mm PU
- > By-pass
- > Easy controlled and rigid
- > 19.500 m³/h



AIR INLET INFORMATION

Type	Air Equalizer
0 Pa - m ³ /h	19,500
Diameter - mm (X)	920
Surface - cm ²	2,200
Length - mm (X)	1,000
Height - mm (Z)	1,600
Depth - mm (Y)	1,000
Heat conductivity - W/m.K	0.022



SPOILERS

There are 8 horizontal air directions per Equalizer. The airflow can be adjusted vertically separately for each zone or even completely blocked.



ACTUATOR

The damper and the by-pass are controlled by a 0-10 Volt Belimo actuator. When the damper closes, the by-pass opens and vice versa.

OPERATION OF AIR EQUALIZER

With adjustable louvres the fresh incoming air can be changed. For example when the Air Equalizer is placed above a cage system, the air can be directed upwards, which results in no draft at animal level. With cold outside temperatures the air in the barn can be mixed, so the air over the animals is warmer. The incoming air can be thrown with adjustable louvres and the air can be thrown around.

Ideal daylight solution for poultry houses

Black out roof windows are an ideal daylight solution for poultry houses. In between the window, movable slats are made to assure proper darkening when needed. The slats can be operated manually or with an electric winch.

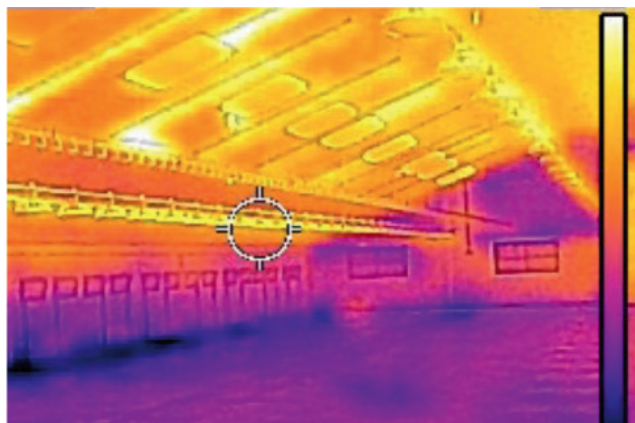
ADVANTAGES ROOF WINDOWS

- › High insulation value
- › Wide stables
- › Obscures
- › Tailor made
- › Renovation



OPERATION OF BLACK OUT ROOF WINDOWS

The windows are tailor made, so they fit exactly between the purlins. In between the top -and bottom layer of the window movable slats are made to assure proper darkening when needed. The slats can be operated manually or with an electrical winch.



PREHEATED BARN

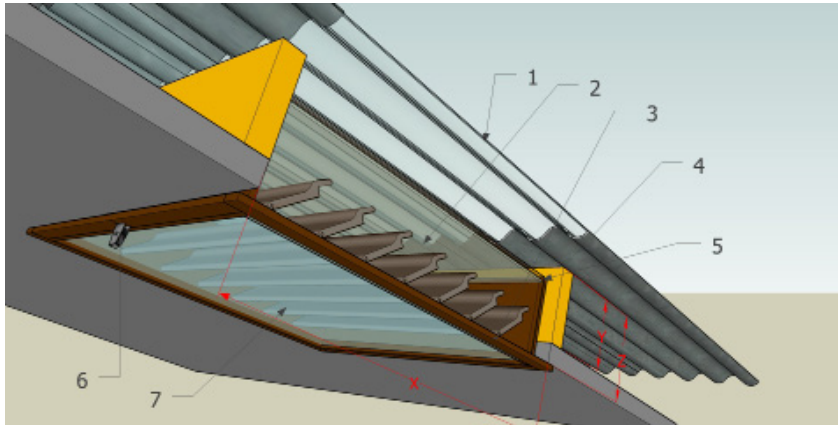
The roof doesn't show any heat loss.

TECHNICAL INFORMATION

Type	R (m ² .K/W)	U (W/m ² .K)
Roof window HR+ single 0-25	2.02	0.50
Roof window HR+ double 10-25	2.49	0.40



HR+ slats



Legenda

1. Transpant corrugated sheets
2. Roof window with HR+ slats
3. HR+ slats
4. Purlin
5. 10 mm polycarbonate op top
6. Pulley, operated from the house
7. 25 mm polycarbonate underneath

When ordering we need the following measurements:

X = the exact size between the purlins;

Y = the exact size between the bottom of the insulation and the bottom of the corrugated sheet;

Z = the exact size between the bottom of the purlin and the bottom of the insulation

ROOF WINDOW OPENING



Open



Semi-closed 40%



Closed 60%



Black out ridge

Gives the best light distribution across the house

A black out ridge is a very good solution to allow daylight into a poultry or pig house. Daylight entering from the roof gives the best light distribution across the building. This is also the case when the ridge is partly closed.

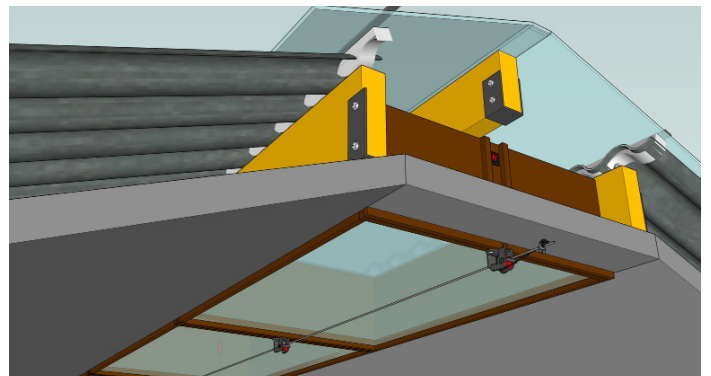
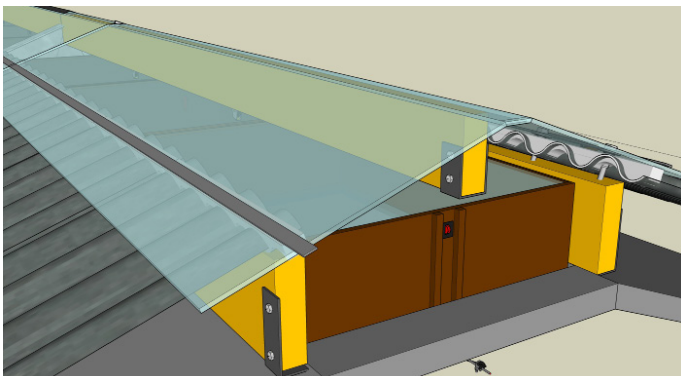
ADVANTAGES BLACK OUT RIDGE

- > Beautiful light distribution
- > New houses
- > Gradually black out
- > High insulation value



BROILERS WITH DAYLIGHT

The most common norm is 3% of the ground surface. This should be installed as daylight in the roof (Germany, England, France etc.) With a black out ridge one can easily meet these regulations. With 3% daylight installed, one is also certain of 20 Lux in the house.



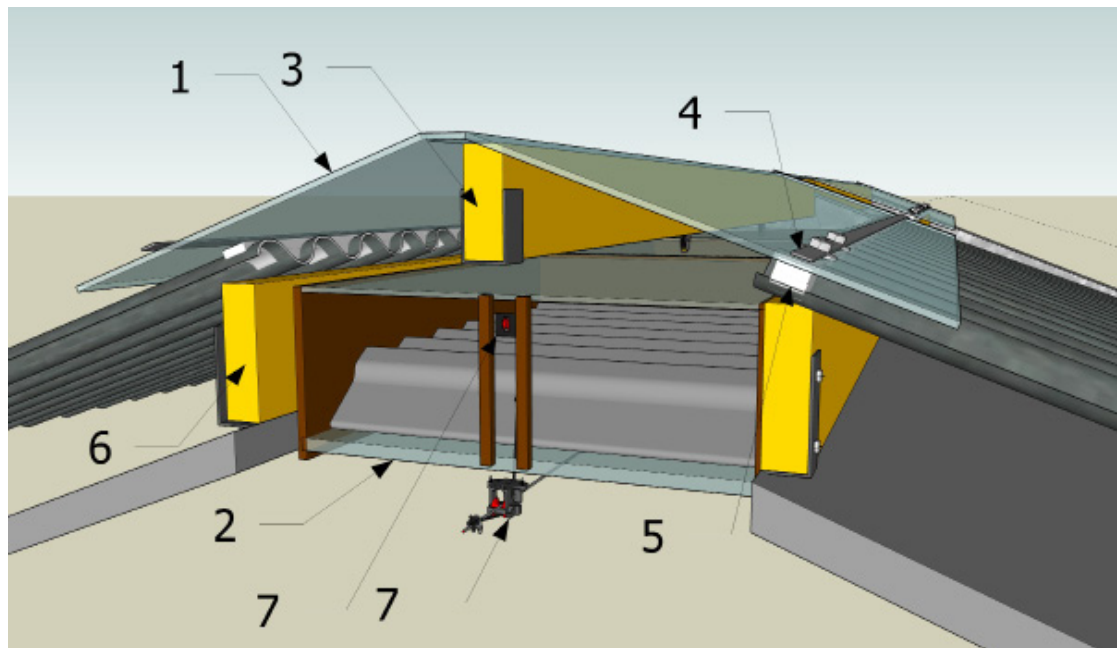
TECHNICAL INFORMATION

Type	R (m ² .K/W)	U (W/m ² .K)
Black out ridge HR+ 0-25	1.99	0.50
Black out ridge HR+ 10-25	2.38	0.42
Black out ridge HR+ 25-25	2.71	0.37

* Value of the corrugated sheet inclusive



HR+ slats



Legenda

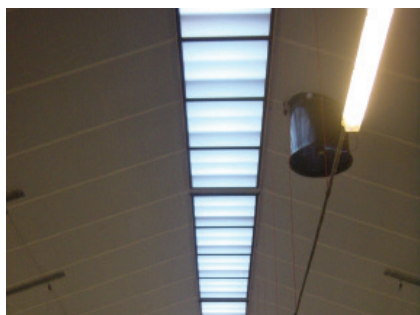
1. 10 mm polycarbonate
2. Ridge with HR+ slats
3. Ridge beam
4. Alu strip 40 x 4 mm
5. Sealing foam
6. Purlin (upright)
7. Pulley

Ideal for newly built stables

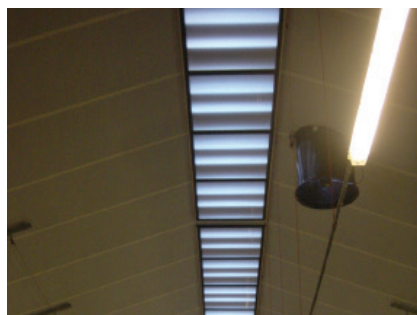
This ridge is suitable for newly built stables. For a good fit it is important that the uppermost purlins stand straight in the L-structure (see drawing).

On top of the roof lies a 10 mm polycarbonate plate, beneath lies a 25 mm polycarbonate plate. Together they provide good insulation.

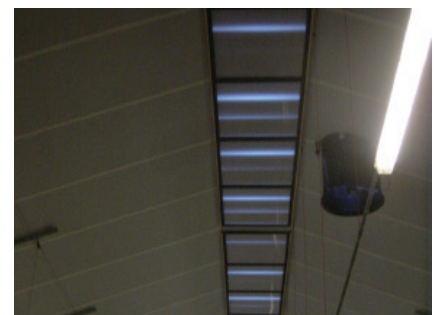
BLACK OUT RIDGE OPENING



Open



Semi-closed



closed 95%

Waterproof and maintenance free side window solution for daylight

Polycarbonate windows made by Tulderhof are a beautiful and affordable solution to meet regulations concerning daylight in pig- and poultry housing.

ADVANTAGES OF SIDE WINDOWS

- › It can be mounted outside
- › Well insulated
- › Opal or clear
- › Black out option possible
- › 4 different types



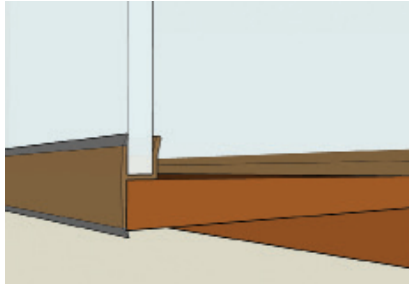
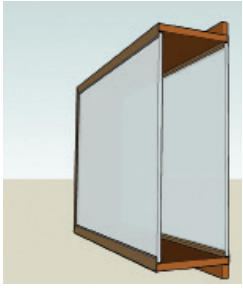
OPERATION OF BLACKOUT SIDE WINDOWS

The windows are always tailor-made and can be build in what we call a "light-street". In this case the contractor leaves a continuous opening in the wall of a certain height. We will fill this opening alternately with windows and air inlets. We strongly recommend equipping your daylight solution with a blackout system. We can integrate a blackout system in every type of window. This way you can adjust the amount of light which is important in e.g. cannibalism among hens.



SUPERIOR TYPE

This is a standard polycarbonate window with extra adjustments, consisting of a black aluminium composite panel (humidity resistant) that provides optimal black out. The superior type has 2 layers of 10 mm polycarbonate window. You can choose for clear or opaque/milky.



Polycarbonate windows:

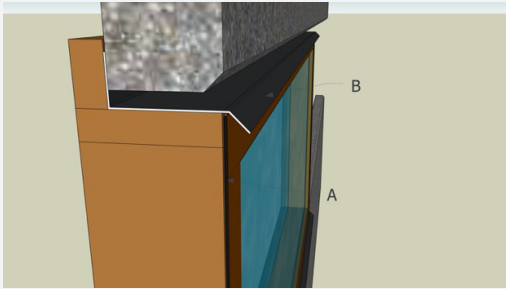
Polycarbonate windows are available in all sizes and for all wall types. Any type of air inlet can be installed between the windows.

Two different types are available:

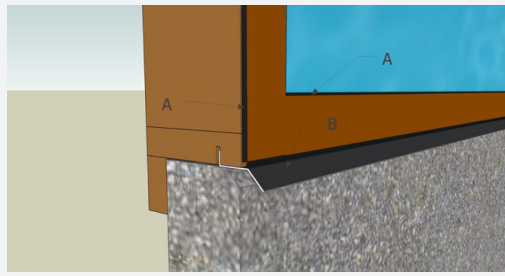
- > Clear (blurry sight)
- > Opaque / milky

OPTIONS

- > Rain deflector



Waterproof top



Waterproof bottom



The perfect free range solution for poultry houses

SUPERIOR POP-HOLE DOOR



For an extra high insulation value, we make a pop hole door with a slide of 32 mm thick sandwich PS panel. Around this pop hole door there is an aluminum profile in which a rubber seal is mounted for a draft-free seal.

On top of the very high insulation value, these pop hole doors meet the requirements for fire class B and they can be mounted on the outside of the house (in the wintergarden).

The superior pop hole door is available in three sizes, for net opening: 1200 x 500, 1500 x 500, 2200 x 500. These can also be combined together.

U-value: 0.96 W/(m².K)

R-value: 1.04 m².K/W

DAYLIGHT POP-HOLE DOOR

The Superior daylight pop-hole door from Tulderhof. Available in a clear or opaque version.

Superior: This version is made out of 32 mm polycarbonate. This door is provided with a rubber seal and closes without any draft.



opaque version

U-value: 1.00 W/(m².K)

R-value: 1.00 m².K/W



3 types of exhaust fans

On the ED30 and the ED36, the electric motor projects outside the grid at the back. If you have ordered a light filter or an insulated door, you will also need a spacer.

TYPE OF EXHAUST FANS

- › EM50
- › ED36
- › ED30



Ventilation Chimneys

It is essential getting the fresh air well divided, with the right speed to your animals. The Tulderhof intake and exhaust chimneys are the perfect solutions for this. Tulderhof offers the following intake chimneys.

Intake Chimney ILK

- › Single or double wall
- › Complete out of HDPE
- › Impact resistant
- › UV-resistant
- › Compact version (80% volume reduction)
- › Different roof profiles available

Options

- › Chimney with rain cap
- › Bird wire around cap supports
- › Distribution plate
- › Winch kit for distribution plate
- › Damper
- › Outflow ring
- › T-piece, elbow, etc.
- › Perforated tube



Exhaust Chimney AVK



- › Single or double wall
- › Complete out of HDPE
- › Impact resistant
- › UV-resistant
- › Compact version (80% volume reduction)
- › Different roof profiles available

Options

- › Chimney with rain cap
- › Chimney with rain ring
- › Chimney with drip tray
- › Stiffening ring
- › Butterfly valve (built-in or built-up)
- › Damper
- › Inflow ring
- › Light trap



Developed according to specifications Tulderhof

In 2013, Tulderhof it's introduced its own brand of winch motors. These winch motors have been categorised into two types. The TW-150 and the TW-250, and all have been developed according to our own high specifications.

ADVANTAGES WIINCH MOTORS

- > Density of water and dust (IP55 standards)
- > Simple mounting
- > Interchangeable with all common brands
- > Developed for intensive livestock breeding



WINCH MOTOR TW-SERIE

The two motor types have been designed with a winch drum on the drive shaft. (Number of rotations are 1.3/2.6/5.2).

- > 1-phase motor
- > 3-phase motor
- > Double axe (chain coupling)



TW-serie with winch drum

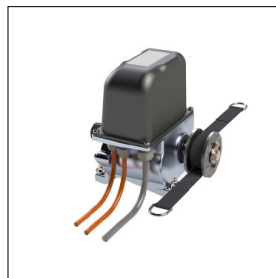


TW-serie with chain coupling

WINCH MOTOR MULTIWINCH

The Multiwinch is a powerful, self-breaking gear motor. With a traction force of 340 kg and a torque of 90 Nm.

The standard speed of 0.8 revolutions per minute (0.4 rev/min. with the DIP switch on the PCB) enables highly accurate climate regulation.



Multiwinch with winch drum

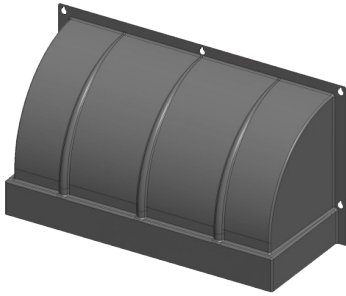


Multiwinch with chain coupling

Developed according to specifications Tulderhof

In addition to the various products previously described, we also offer a number of other products that support the optimal design of the stables.

Wind Hoods



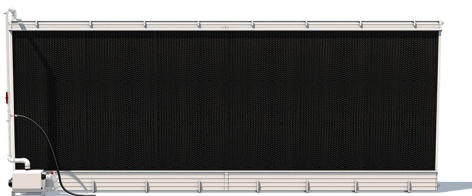
- Dimensions based on wall inlets
- Wall mounting or mounting on inlet
- White or transparent back panel
- Limits wind influences

High pressure evaporative cooling



- Made entirely of stainless steel and plastic
- Easy to install
- Easy to clean
- More in control over the stable temperature
- Prevents heat stress
- Keeps animal growth on track

Padcooling



- Easy to install
- UV-resistant
- Easy to clean
- No leakage water
- More in control over the stable temperature
- Prevents heat stress
- Keeps animal growth on track

Minimist Smoke machine and canisters & patterns



- Produces a clean white smoke
- Smoke is harmless
- After preheating usable without power
- Smoke quantity stepless adjustable
- Optional with insulated carrying case

Lighttraps



- Maximum light reduction
- Low air resistance
- Built-in or built-up
- With galvanized or plastic housing

Tube Fans



- Maximum efficiency
- Fast delivery
- Energy efficient

Plastic Processing



- CNC milling
- Hot air welding
- Extrusion welding
- Butt welding
- Sawing
- Development from concept to end product



POWERED BY **SCAN-AIR**

For more information about our projects, visit our brand new website

www.tulderhof.com

TULDERHOF VENTILATION & WELFARE

Kokerbijl 23 • 5443 PV Haps • The Netherlands
NL Tel. +31 (0) 404 00 63 13

sales@tulderhof.com • www.tulderhof.com