

INDUSTRIAL AIR CURTAIN

IndAC₂



biddle

CLIMATE SOLUTIONS

High climate separation efficiency with the IndAC₂ industrial air curtain

Optimal climate separation

The Biddle IndAC₂ industrial air curtain, is the perfect solution for separating climates in industrial buildings. The IndAC₂ air curtain can be used for climate separation between indoor and outdoor environments and for indoor climate separation. When a door is open, the difference between the inside and outside temperature leads to an exchange of air, resulting in cold air entering and warm, heated air, flowing out. When the IndAC₂ air curtain is mounted above or next to an open door it provides a very efficient separation of two climates at the lowest energy consumption. The comfort of staff operating near the door is improved by heating the air curtain outlet stream thus preventing draught. A corridor might seem a relative cheap option but it makes logistic, such as traffic and stock movements, harder. A fast roller shutter door may need to be replaced every few years and requires regular maintenance. An air curtain enables fast and safe logistics and saves energy at the same time. Therefore the IndAC₂ offers a high return on investment.



Easy logistics

By separating the outdoor climate from the indoor conditioned environment the IndAC₂ makes it possible to keep the door open whilst maintaining the indoor temperature and preventing energy loss. The air curtain will contribute to comfortable working conditions because it prevents cold air entering the building. The IndAC₂ keeps the entrance accessible for transport with safer and faster logistics and easy traffic movements as a result.

Energy saving

With the automatic control option fitted, the IndAC₂ continuously selects the correct settings. The automatic control in combination with stepless fans ensures that the settings are always set very precisely, which results in high separation efficiency and energy savings. Once the air curtain is installed and commissioned the user does not have to worry about the settings, as the output of the IndAC₂ will adjust to meet the challenges of the environment.

Leading references

- BMW
- VW
- Bosch
- MAN
- Unilever





Water

Ambient

Various heating sources

The IndAC₂ air curtain is suitable for connection to water sources. Ambient models, without a heated air stream are also available for use in environments with a high ambient temperature and for other specific applications.

Application areas

The air curtain is specifically designed for use in factories, warehouses, logistics centres and production halls but can also be used in cold stores.



Benefits IndAC₂

Optimal climate separation

- separation efficiency – rectifier technology
- stable indoor climate- no draughts
- comfortable working conditions

Easy logistics

- accessible entrance
- safer and faster transport

Energy saving

- exact settings
- maximum efficiency

And even more....

- high performance stepless fans

Thermographic proof

By viewing a thermograph image of a door way, the performance of an air curtain can be fully appreciated. Heat radiation, which is invisible to the human eye, is recorded using a special measuring screen and a high-resolution thermal camera.

The camera makes the temperature of the airflow visible and shows that the IndAC₂ air curtain perfectly separates indoor and outdoor climates. The upper image on the right shows cold air entering over the floor when the air curtain is switched off. The other image shows that when the air curtain is switched on, the air curtain separates the climate perfectly.



Air curtain switched off

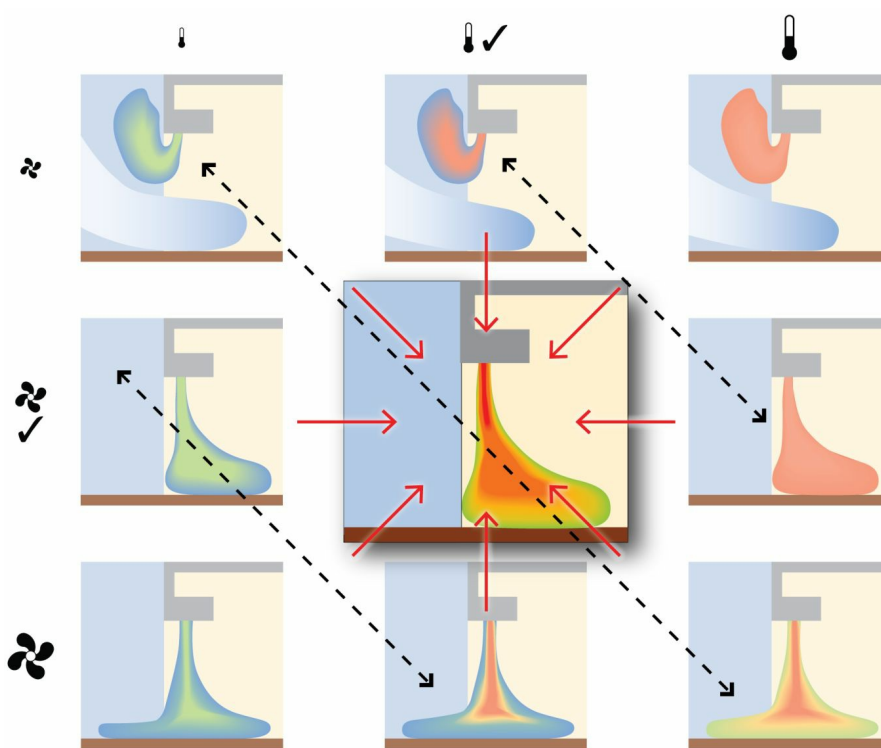


Air curtain switched on

Let IndAC₂ do all the work!

Automatic comfort

With changing weather conditions and insufficient attention to or knowledge of an air curtain, it frequently occurs that an air curtain is not properly set. It blows either too strong or too weak, with a discharge temperature that is too high or it is not switched on at all. As a result there is energy loss, low comfort (draught) and an unnecessarily high noise level. Specifically because air curtains are intended to save energy and provide a high degree of comfort, Biddle has developed the fully automatic and energy saving CHIPS-technology. The CHIPS-technology adjusts the discharge temperature and the strength of the air stream to the changing conditions round the doorway independent of each other. The technology has been translated into a fully automatic control for IndAC₂ industrial air curtain. The diagram below clarifies the operation of the CHIPS-technology in various conditions.



CHIPS

The central image is the optimal situation:

Sufficient strength to reach the floor (optimum climate separation) and sufficient heating to heat incoming air to the indoor temperature required (comfort).

Energy saving

Due to the CHIPS-technology the IndAC₂ air curtain always functions in the correct speed, with optimal energy savings as a result. The energy savings of the IndAC₂ with automatic control can increase by up to 75% compared to a manual controlled conventional air curtain.

Intelligent software

It is not only weather conditions, such as the outside temperature, wind velocity and wind direction, that can change at any time of the day, but the indoor climate changes too because of lightning, use of doors and frequency of customer visits. Therefore the air curtain has to adapt continuously to these changing conditions. Sensors ensure that model IndAC₂ is supplied with all details regarding the climate outside and inside near the doorway. All the information is continuously translated by the CHIPS technology into the correct setting of the air curtain. The temperature and fan speed of the IndAC₂ are automatically adjusted so that the unit is always operating at the desired setting no matter the circumstance. A constant, comfortable and energy efficient indoor climate is the result.

1. b-touch
2. Outside temperature sensor
3. Discharge temperature sensor
4. Air inlet temperature sensor
5. Door contact switch



The desired room temperature is set by the user in the b-touch control panel (1). The outside temperature sensor (2) measures the outdoor temperature. The fan speed of the air curtain is determined based on the set room temperature, the outside temperature and the door height. The air inlet temperature sensor (4) measures the actual room temperature. Based on this room temperature the discharge temperature is being calculated. If necessary, the fan speed is adjusted.

Precise settings

The air curtain is equipped as standard with energy saving and high performance EC fans. These fans have stepless control. The automatic control does not have to choose between pre-determined speed settings, but can be set to the exact level required. This provides a maximal separation efficiency, whilst keeping the energy savings at an optimal level.



User-friendly touchscreen

The fully automatic IndAC₂ comes with Biddle's touchscreen control panel: the **b-touch**. The simple menu structure of the b-touch makes it very easy to choose the desired settings using the clear preset menu. The IndAC₂ can be automatically set up using the intelligent software which is situated inside the air curtain. Usage and fault diagnostic data can be easily extracted via the b-touch data port. The data port also permits software updates, which means it is no longer necessary to open the unit for this. Extracting information from the air curtain can easily be achieved via the b-touch. Once set, the control panel is no longer necessary.

Modbus communication

The IndAC₂ fitted with automatic control enables communication via Modbus from a remote PC or BMS system. If required b-touch and Modbus can be used in parallel allowing local and remote control of the air curtain.

Multiple units

When more units are connected, the first unit will operate as master, the others as slave. In that case, only the master unit contains the intelligent software. A maximum of three units can be controlled via the b-touch control panel.

Benefits automatic control

Automatic comfort

- self-regulating
- under all circumstances
- intelligent software

Energy saving

- up to 75% energy savings
- always correct settings
- maximum separation efficiency

User-friendly

- touchscreen control panel: b-touch
- Modbus communication





b-control

Accurate stepless control

The b-control is a 0 -10 V potentiometer that functions stepless and makes it easy to manually set the air curtain accurately to the desired fan speed. To be assured of the best possible climate separation the manual setting should be adjusted to circumstances several times a day.

Automatic on and off

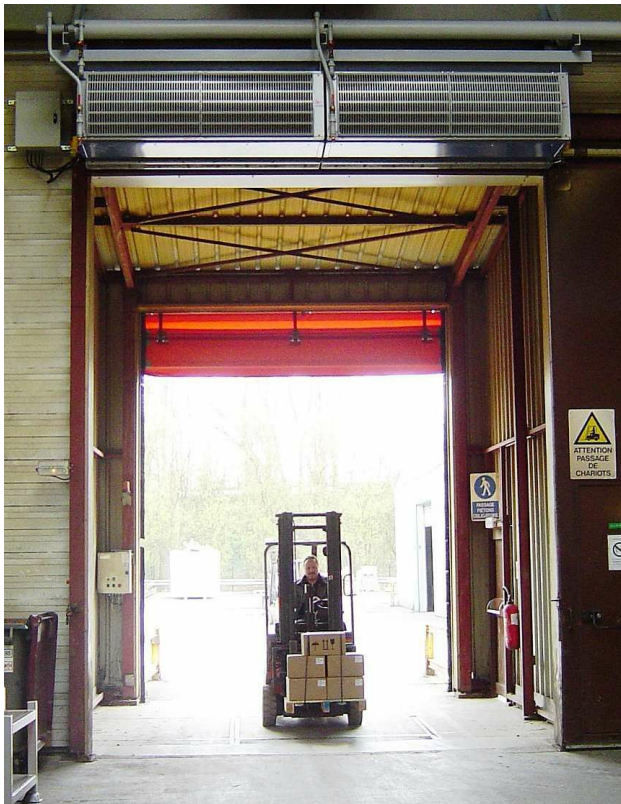
Use of the optional door contact switch enables the IndAC₂ to be automatically switched on when the door opens and off when the door is closed.

Energy saving

The IndAC₂ is standard equipped with energy saving and high performance EC fans. These fans support the stepless operation of the b-control.

Control of multiple units

With one b-control multiple units can be controlled. The IndAC₂ ST can cover door widths of 5 m (16 ft). The IndAC₂ MX can cover door widths of 7,5 m (24 ft).



Benefits basic control

- Stepless control (0-10V)
- Energy saving EC fans
- Easy to control
- Control of multiple units

Patented Double Rectifier

When a door is open, the difference between the outside and inside temperature leads to an exchange of air, resulting in cold air entering and warm heated air flowing out. An air curtain above or next to the open door provides separation of the two climates. Whilst developing the IndAC₂, Biddle chose to use its well-known outlet discharge pattern, the Double Rectifier. The IndAC₂ is equipped with radial backward curved fans which homogeneously distribute the air across the whole discharge opening, producing high efficiency and comfort levels.



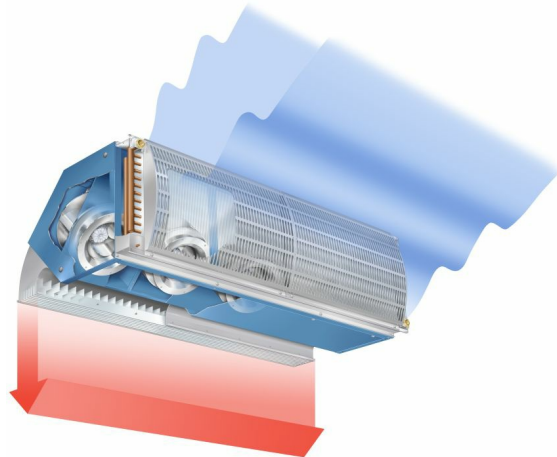
If a conventional industrial air curtain without a rectifier discharges air at the same velocity as a unit with a Double Rectifier, the downward penetration is tangibly less. The air stream does not reach the floor, and the open door is not covered off properly. Consequences include draught, loss of heat and comfort complaints.

Excellent downward penetration

Due to the industrial air curtain with a Double Rectifier the incoming cold air is heated so that it is no longer experienced as draught. The Double Rectifier has vertical fins mounted on top of the horizontal fins to streamline the air flow in a better way, resulting in an excellent downward penetration.

The IndAC₂ makes sure the air, which is about to flow out through the open door, stays in the room. The Double Rectifier, which minimizes turbulence in the discharge air stream and surrounding air, ensures that the air movement generated by the fans, is directed downward in a deeply penetrating laminar air stream.

As a consequence the energy consumption is reduced and comfort levels are increased all year round.



A solution for every situation



Types

The IndAC₂ is available in a standard (ST) and a maximal version (MX). The selection is based on the door heights.

- IndAC₂ ST: 3-6 m (10 - 20 ft)
- IndAC₂ MX: 5-8 m (16 - 26 ft)

Lengths

- IndAC₂ ST: 150, 200 and 250 cm (60", 80" and 100")
- IndAC₂ MX: 150 and 225 cm (60" and 90")

Coil types

- Water heating (H1): high water temperatures, 1-row element
- Water heating (H2): low water temperatures, 2-row element
- Water heating (H1P): high water temperatures, high pressure*
- Ambient (A): no heating coil

* on customer order, always with welded flanges

Control options

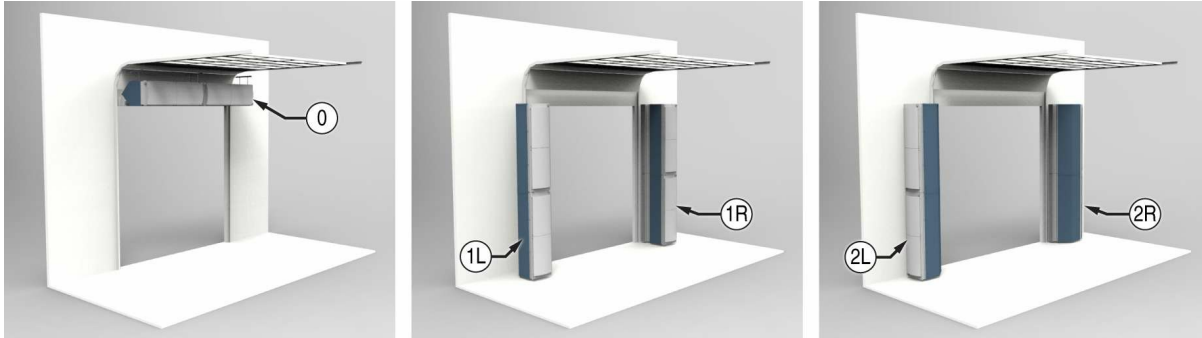
- Automatic control with b-touch control panel and CHIPS Technology
- Basic control with b-control (0-10V)
- BMS: Modbus communication (automatic control)

Easy mounting with flexible suspension system

IndAC₂ air curtains in combination with an automatic control can be installed directly above the door. IndAC₂ with basic control can also be installed next to the door. With horizontal installation, the unit is suspended above the door by using four threaded rods (M12) and the suspension brackets supplied. As a flat surface is essential with vertical installation, it is recommended to place the IndAC on a base plate. By using the supplied coupling plates and wall bracket it is easy to fix and secure the unit.

Installation position

The available room layout around a door determines where and how an air curtain can be best installed. Thanks to a diverse range of installation positions, the IndAC₂ air curtain can be matched to the constructional possibilities offered by the local situation. Depending on the situation, the air curtain is either installed horizontally above or vertically next to the door, covering the full length or width of the doorway. For the vertical position there are two options: square to the wall and parallel to the wall. The unit should always be positioned as close to the door as possible. In case the situation does not allow a position close to the door, Biddle offers optional side shields. There are a total of five installation positions, which are shown below.



0 = Horizontal, above door

1L = Vertical, left side, square to wall

1R = Vertical, right side, square to wall

2L = Vertical, left side, parallel to wall

2R = Vertical, right side, parallel to wall

Modular design

The modular design of the IndAC₂ facilitates the installation of multiple devices next to or above each other, in order to cover all door heights or widths. The IndAC₂ ST with b-control can cover door widths of 5 m (16 ft). The IndAC₂ MX with b-control can cover door widths of 7,5 m (24 ft). With the automatic b-touch control maximal three units can be connected. For the exact amount of your specific type of air curtain, please inform the sales department of Biddle bv. They will be happy to give you a tailor-made advice.

Easy to clean

The various parts of the IndAC₂ are very easy to access, making it easy to install, maintain and clean. The unit contains a minimum of 'internal obstacles', resulting in a smooth air flow through the unit in which dust has little chance of collecting.

Design

The IndAC₂ has a robust and modern design. With the pronounced industrial design of this air curtain, the appearance is consistent with the latest developments within the industry.

What's in it for me?

Standard delivery

- two suspension brackets - for horizontal installation
- two coupling plates – for vertical installation (only for basic unit)
- wall bracket – for vertical installation (only for basic unit)

These components are also needed:

- automatic control (b-touch) or basic control (b-control)
- base plate / plinth (required for vertical installation)

Optional:

- filter module (filter G4) for IndAC₂ ST
- flanges
- side shields

Operating package

The unit can be supplied with a basic control or an automatic control. A corresponding operating package is supplied.



Automatic control

- b-touch touchscreen control panel
- Biddle control cable
- outdoor temperature sensor
- door contact switch
- water-side control (valve and actuator)
- room sensor for automatic CHIPS control (optional)



Basic control

- b-control 0 – 10 V stepless fan controller
- door contact switch (optional)



Subject to change without prior notice

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