

A photograph of two male workers on a construction site. The worker on the left is wearing a yellow hard hat, safety glasses, and a yellow high-visibility vest over a blue shirt. The worker on the right is wearing a blue hard hat and a yellow high-visibility vest over a blue shirt. They are both smiling and looking at a document held by the worker on the right. The background is a blurred construction site with warm lighting.

## HEAT DISSIPATION AND AIR EXCHANGE IN HOT WORKING PLANTS

# HEAT DISSIPATION AND AIR EXCHANGE - THE ADVANTAGES OF NATURAL VENTILATION

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**SHEV systems are obligatory as a component of modern safety technology for business premises. However, if openings in the roof are not only provided in the event of fire but also for ventilation, they gain a cost-effective additional benefit that provides you with added value every day.**

**A lot of heat is sometimes generated during production in the heavy and automotive industries as well as in other branches of industry.**

With our natural smoke and heat exhaust ventilation systems (NSHEV), we are working towards ventilation that is not only almost energy-free but also extremely efficient.

We use physical laws to transport the energy naturally to the outside. By means of temperature and pressure differences, thermal lift (chimney effect) and a 90° ventilation position for our double flap systems for daily ventilation, we achieve this with maximum success.

## THE ADVANTAGES AT A GLANCE

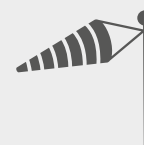
With roda systems, you can rely on quality products that meet the highest requirements.



Up to 3.5 times higher air exchange



Maximum cost effectiveness



Full ventilation up to wind speed 8

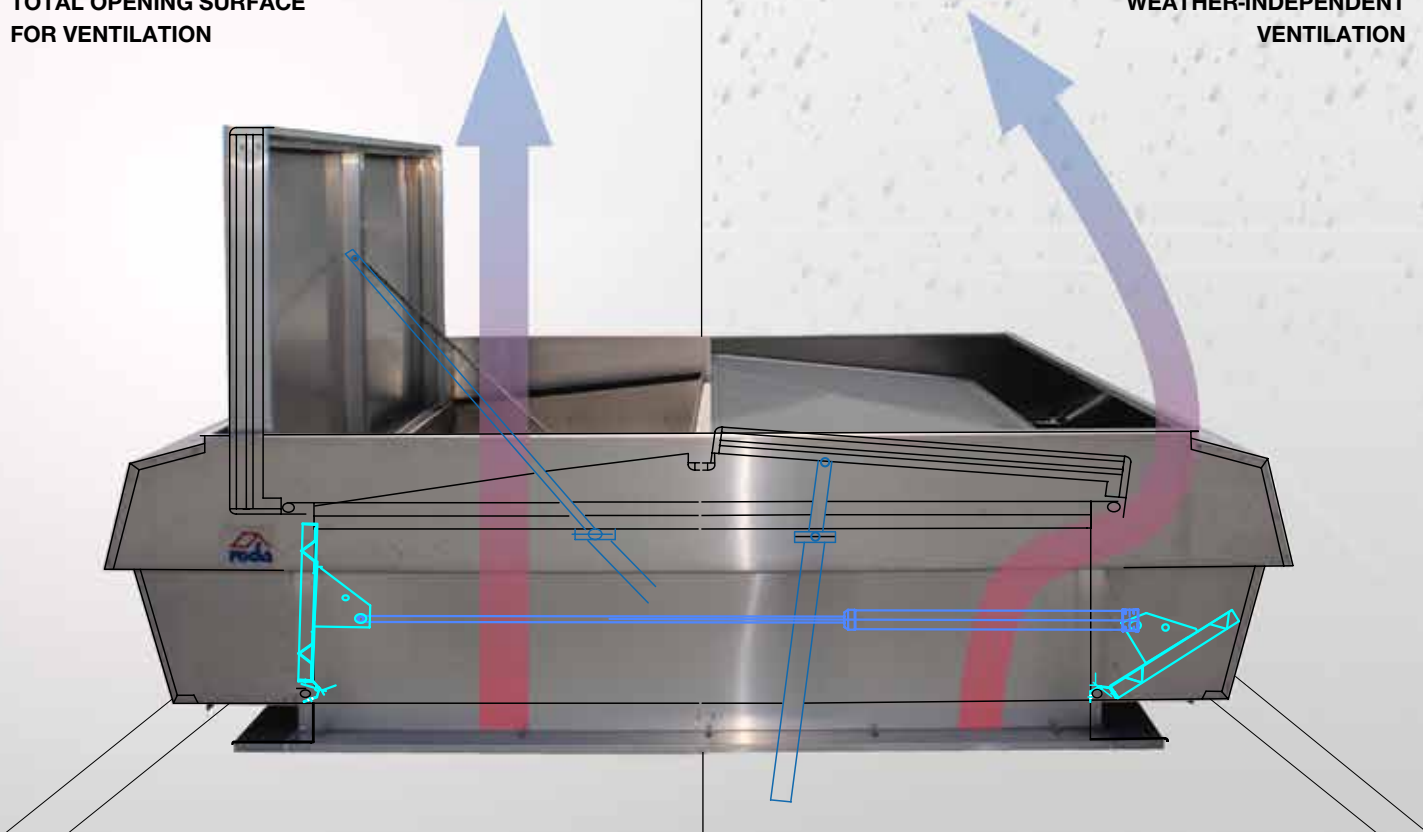
## COMPATIBILITY

Roda systems also offer maximum compatibility in existing buildings. Replace your SHEV systems that are not suitable for heat dissipation and use your existing roof openings.

# AIR EXCHANGE RODA MULTI-PURPOSE VENTILATOR

TOTAL OPENING SURFACE  
FOR VENTILATION

WEATHER-INDEPENDENT  
VENTILATION



AIR EXCHANGE ROOFLIGHT DOME



Fair weather ventilation



Adverse weather ventilation

# MULTI-PURPOSE VENTILATOR MEGAPHÖNIX

## RAINPROOF VENTILATION SYSTEMS

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**Our double flap with rainproof ventilation is ideally suited to hot working plants. In dry conditions, MEGAPHÖNIX uses the entire aerodynamically effective opening surface by opening the upper hood to a 90° position. The robust construction of our systems enables almost continuous full ventilation throughout the day/night.**

When it starts to rain, the upper hoods close automatically, controlled by a rain sensor, and the side flaps open. As the outside temperature drops when it rains, a rising temperature difference between the inside and outside temperature causes a higher pressure difference, which increases the speed of the air flow and thus, despite the smaller opening cross-section, provides almost the same ventilation capacity as when the upper hoods are opened.



**Ventilation area** - the entire aerodynamically effective opening surface can also be used for ventilation.

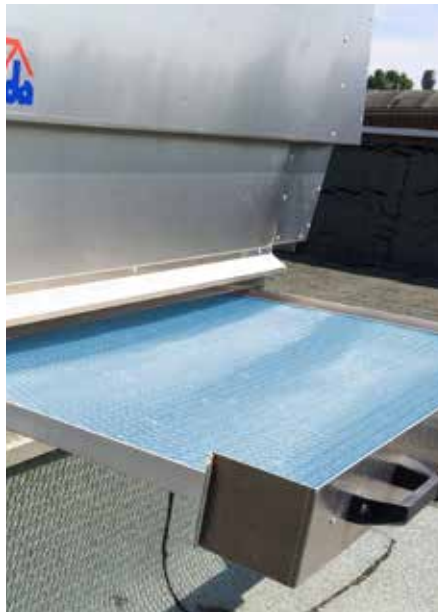
**Ventilation in bad weather** – rainproof ventilation via side flaps and side boxes.

**Energy efficiency** – maximum efficiency, permanent air exchange guaranteed.

**Sustainability** – the product is recyclable and comes without harmful materials

## TECHNICAL DATA

Dimensions	Free planning – accurate to the millimetre
Air exchange	Opening areas Ageo up to 5.7m <sup>2</sup> / device can be achieved
Extreme conditions	Suitability for use in corrosive atmospheres
Service life	Testing of the devices for 10,000 opening cycles
Efficiency	Almost energy-free operation



### SOUNDPROOFING

Roda offers tailor-made solutions, even for noisy plants. With the duct silencer, it is possible to meet structural requirements even under the most extreme conditions. A silencer of 54 dB ensures that the melodies at the Berlin State Opera stay inside and are not transmitted into the neighbourhood.

### INSECT PROTECTION

In the multi-purpose ventilators, the gratings are either integrated as drawers or installed in the side boxes, where they do not impair the aerodynamically effective opening area required in the event of fire. In both cases, they can be cleaned from the roof during operation. When retrofitting in existing buildings, the systems can be installed without interfering with the roof cladding.

### FALL-THROUGH PROTECTION

Falls through an opening in the hall roof are not uncommon and often end fatally. Around half of all fatal accidents at work are accidents due to falls from a height (BG Bau). The fall-through protection of NSHEVs and skylights must be guaranteed not only during installation but also afterwards, especially when maintenance work is to be carried out on open devices.





"With our injection moulding machines, waste heat is the biggest challenge for us in creating good working conditions. I would not have thought it possible to manage this with natural ventilation. However, with the corresponding systems, we have been able to observe a significant improvement in working conditions. We would like to thank roda for the excellent consultation and we are looking forward to further projects."

**UWE DÖLLING**  
Head of Operations Engineering Steinel Elektronik GmbH & Co. KG

#### EXAMPLE CALCULATION:

**Building height: 6 m**

**Plastic injection moulding machines of 1.5 K heating per m hall height:**

$V = \sqrt{g \times h \times \Delta T / T_A}$   $T_A$  (mean temperature in Leipzig) set at 10 degrees (283K)

This results in:  $V = (9.81 \text{ m/s} \times 6 \text{ m} \times 9 \text{ K} / 283 \text{ K})$

$V = 1.36 \text{ m/s}$

☀ **Fair weather ventilation**  $16 \times 3.75 \text{ m}^2 = 60 \text{ m}^2 \times 1.36 \text{ m/s} = 293,760 \text{ m}^3/\text{h}$

☁ **Adverse weather ventilation**  $16 \times 1.5 \text{ m}^2 = 24 \text{ m}^2 \times 1.36 \text{ m/s} = 117,504 \text{ m}^3/\text{h}$



“Roda’s natural ventilation systems ensure pleasant working conditions in all workshops at our plants in Leipheim, Kirchheim and the Czech Republic. Since the systems are also designed for smoke and heat extraction and, in addition, daylight enters through the transparent hoods, there is a multi-purpose benefit for our employees. We can recommend roda as a specialist company without reservation.”

**GERHARD SOBCZYK**  
Operations Manager at Wanzl Metallwarenfabrik GmbH



#### EXAMPLE CALCULATION:

**Building height: 8 m**

**Plastic injection moulding machines of 1.5 K heating per m hall height:**

$V = \sqrt{g \times h \times \Delta T / T_A}$   $T_A$  (mean temperature in Leipheim) set at 8.3 degrees (281.45K)

This results in:  $V = (9.81 \text{ m/s} \times 8 \text{ m} \times 8.3 \text{ K} / 281.45 \text{ K})$

$V = 1.52 \text{ m/s}$

☀ **Fair weather ventilation  $12 \times 4.75 \text{ m}^2 = 57 \text{ m}^2 \times 1.52 \text{ m/s} = 311,904 \text{ m}^3/\text{h}$**

☁ **Adverse weather ventilation  $12 \times 1.7 \text{ m}^2 = 20.4 \text{ m}^2 \times 1.52 \text{ m/s} = 111,629 \text{ m}^3/\text{h}$**



Scan this to discover more about  
roda systems!



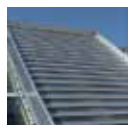
PHOENIX AND MEGAPHOENIX



FIREFIGHTER



VENTURISMOKE VS1/VS2



SMOKEJET AND MULTIJET



SMOKE CURTAINS



LOUVER WINDOWS



DAYLIGHT TECHNOLOGY



NATURAL AND MECHANICAL  
VENTILATION



SMOKE AND HEAT  
EXHAUST VENTILATION



RENOVATION



MIROTEC GLASS AND  
METAL CONSTRUCTIONS



LAMILUX DAYLIGHT SYSTEMS

The technical data listed in this brochure correspond to the current status at the time of printing and are subject to change. Our technical data refer to calculations, supplier information or have been determined by an independent testing institute in the course of a test in accordance with the applicable standards. The heat transfer coefficients for our plastic glazing were calculated using the "method of the finite elements" with reference values according to DIN EN 673 for insulating glass. In doing so, the temperature difference of 15 K between the outer surfaces of the material was defined, taking into account practical experience and the specific characteristics of the plastic. The functional values refer only to test pieces in the dimensions intended for the test. No further guarantee for technical values is given. This applies in particular to changed installation situations or if subsequent measurements are made on the building site.



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