



Dear Reader,

Electrical installation presents great demands on a enclosures technology, especially when it is installed outside. It is also true for thermoplastic enclosures in high degree of protection, which are particularly well-suited for outdoor installations.

Hensel is the specialist in this area.

The external influences like intense sun rays, rapid temperature changes such as between day and night and high humidity can cause condensation to form in otherwise hermetically sealed enclosures.

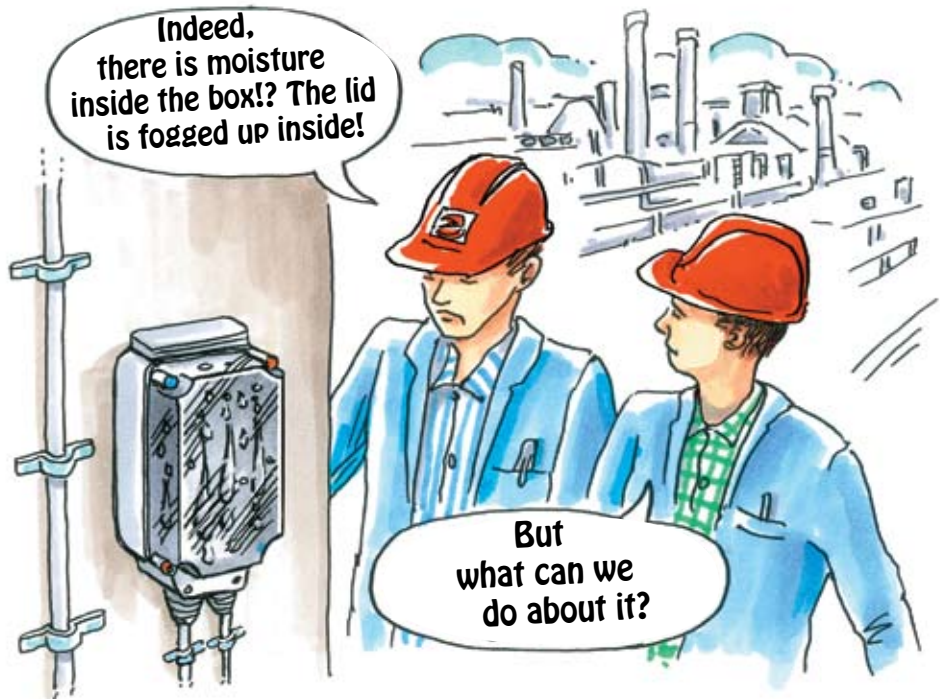
The consequences may be corrosion, short circuits or other damage that may severely hinder the proper functioning of the electrical installation.

There are some targeted measures and solutions to these problems that have proved extremely reliable in practice. The measures include climate glands and ventilation flanges which can provide permanent and reliable solutions for outdoor installations. Please consult Elektro-Tipp or simply request further information from us.

Thank you for your trust and we are looking forward to continued successful and pleasant cooperation with you.

Sincerely

Felix G. Hensel
Managing partner of
Gustav Hensel GmbH & Co. KG



When does a box start to sweat?

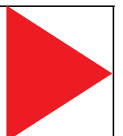
Condensed water in enclosures with a high degree of protection?

Condensation in boxes is particularly common in outdoor installations.

The rapid change in temperature (day/night, changes in weather, intense sunshine) or load changes in the equipment can cause condensation to form on the walls of closed boxes on the inner surfaces.

To prevent problems such as corrosion, electrical short circuits and in some cases complete equipment failure, targeted action needs to be taken.

How and when does condensed water forming appear?



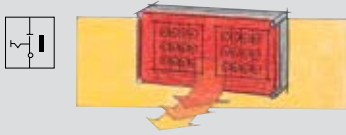
How and when does condensation appear in enclosures with high degree of protection and what does the safety standard IEC 60 364-5-52 state?

1. How does condensed water forming appear?

The extent of water saturation in the air (humidity) depends on the temperature.

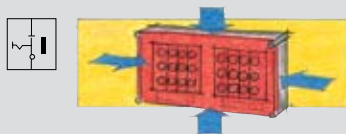
In case of large difference in the air temperature inside and outside of the closed box then condensation will form in boxes.

Example: Load change in processing



Equipment switched on.

The temperature in the box is generally higher than the external temperature due to the dissipated heat.



Equipment switched on.

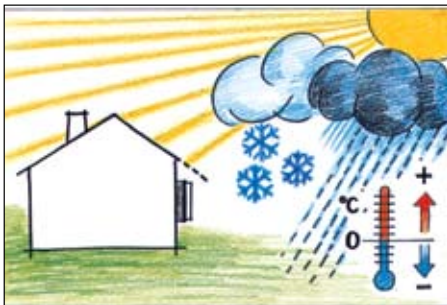
The warm interior air increases humidity, that enters with the ambient air as enclosures are not gas-tight.



Equipment switched off.

The interior temperature sinks when the equipment is switched off. The moisture in the air condenses and settles on the inner surfaces.

2. Where does condensed water forming occur?



“Sweating” boxes primarily occur in locations where temperatures tend to change:

I.e. primarily in protected and unprotected outdoor installations. Indoors, e.g. close to large gates, washing lines, washing rooms, in agricultural buildings and other places)

3. WHAT does the IEC 60 364-5-52 safety standard state:

IEC 60 364-5-52 “Erection of low-voltage installations”, Chapter 52: Wiring systems, clause 522.3.2 stipulates: “If water can accumulate or condensation water can form within wiring systems, precautions for the water evacuation must be taken.”

The standard for cable junction boxes specifies a \varnothing 5 mm condensation hole.

Measures to prevent condensation from forming in boxes...



Noted for you:

Hensel succeeds in Indian market

Prize for extraordinary success in doing business with India goes to Hensel

As part of this year's traditional annual meeting of the German-Indian chamber of commerce, the “Hidden Champion” or the most successful German-Indian joint venture was honored on June 16th in Düsseldorf. The German-Indian chamber of commerce honors companies whose dynamic development and successful strategies make a sizeable contribution to moving both countries forward.



Picture: Nirmal Bhogilal, president of the German-Indian chamber of commerce, handed out the certificate and plaque to Felix G. Hensel, managing director of the Gustav Hensel GmbH & Co. KG and Rajan Rajesh, managing director of Hensel Electric India.

Felix G. Hensel and R. Rajesh in their short presentation quickly made it clear that the company is not only growing in Europe but in Asia as well. “We began moving into the Indian and South-East Asian markets with our own subsidiary back in 2002,” recalled Felix G. Hensel as he expressed satisfaction with the way Hensel Electric India has developed since then. “Since that point, the company has become an acknowledged specialist in top-quality electrical installation and distribution systems in the Indian and South-East Asian market.”

Today more than 120 employees, who work in an area of more than 5,000 square meters, are supplying the Indian and Asian markets with our products. The forward-looking investment in a large site ensures that Hensel will be able to go on expanding over the coming years at its Indian site.

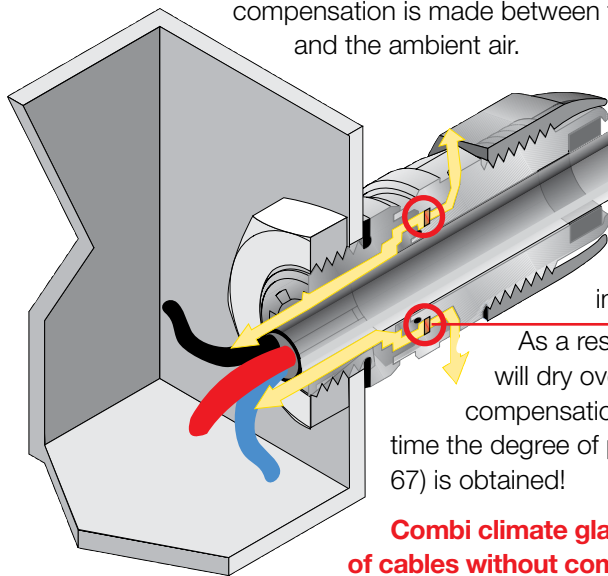
New from Hensel: Ventilation solutions that prevent the formation of condensation!

It is generally impossible to prevent the formation of condensed water in closed enclosures in installation areas with large temperature differences.

Hensel solution: Pressure compensation via combi climate glands

To adhere to the required degree of protection, the ventilation of the box is done by installing a special combi climate gland.

Combi climate glands use an installed membrane to make sure that compensation is made between the air in the interior of the box and the ambient air.



This **membrane** prevents ingress of humidity from outside.

As a result any condensed water will dry over time as a result of the air compensation or will dissipate. At the same time the degree of protection for the box (up to IP 67) is obtained!

Combi climate glands allow additional entry of cables without compromising the pressure compensation.



Openings for air exchange

Channels for air exchange

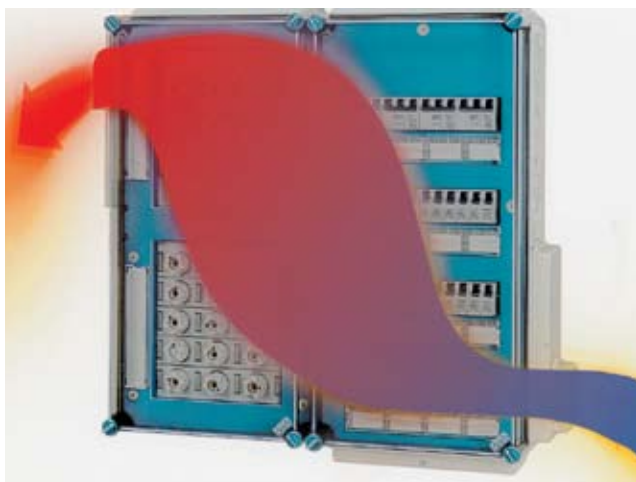


The combi climate glands prevent condensation caused by rapid temperature changes, changes in the weather, intense sun shine etc from accumulation in boxes with high protection classes.

The benefit of the new combi climate glands:

- Cable entry and simultaneous ventilation
- Degree of protection is obtained
- Reliable avoidance of damage to electrical and electronic devices from condensed water.

Hensel solution: Ventilation via ventilation flanges



Ventilation flanges for ventilation of Mi and ENYSTAR distribution boards in case of extremely high inside temperature or the risk of water condensation.

Degree of protection: IP 44



Integrated solutions for the future: Combi climate glands and ventilation flanges reduce condensed water forming in boxes!

Combi climate glands for metric cable entries

- For indoor and unprotected installations outdoors (harsh environment and/or outdoor)
- One gland for cable entry and ventilation
- With integrated membrane for ventilation
- With strain release and counter nut
- Degree of protection: IP 69K, IP 68 (0.6 bar for 30 Min.), IP 67 (submersion up to 1 m, max. 15 Min.)
- Material: Polyamide
- Glow wire test IEC 60 695-2-11: 960°C



Colour: grey, RAL 7032

KBM 20	ISO thread M 20 x 1.5	Sealing area Ø 6-13 mm	Bore hole Ø 20.5 mm	Wall thickness up to 3 mm
KBM 25	ISO thread M 25 x 1.5	Sealing area Ø 9-17 mm	Bore hole Ø 25.5 mm	Wall thickness up to 3 mm
KBM 32	ISO thread M 32 x 1.5	Sealing area Ø 13-21 mm	Bore hole Ø 32.5 mm	Wall thickness up to 3 mm



Colour: black, RAL 9005

KBS 20	ISO thread M 20 x 1.5	Sealing area Ø 6-13 mm	Bore hole Ø 20.5 mm	Wall thickness up to 3 mm
KBS 25	ISO thread M 25 x 1.5	Sealing area Ø 9-17 mm	Bore hole Ø 25.5 mm	Wall thickness up to 3 mm
KBS 32	ISO thread M 32 x 1.5	Sealing area Ø 13-21 mm	Bore hole Ø 32.5 mm	Wall thickness up to 3 mm

Ventilation flanges for Mi and ENYSTAR distribution boards

- For indoor and unprotected installations outdoors (harsh environment and/or outdoor)
- Degree of protection: IP 44
- Material: Polycarbonate
- Glow wire test IEC 60 695-2-11: 960°C



Ventilation flange for Mi distribution boards

in the event of extremely high internal temperatures or a risk of water condensation

Mi BF 44 for box wall 300 mm



Ventilation flange for ENYSTAR distribution boards

in the event of extremely high internal temperatures or a risk of water condensation

FP BF 18 for box wall 1 (180 mm)

FP BF 27 for box wall 2 (270 mm)

FP BF 36 for box wall 3 (360 mm)



ENYCASE
DK Cable junction boxes
1.5 to 240 mm², IP 54-67



ENYBOARD
KV Small-type distribution boards up to 63 A, 3 to 54 modules, IP 54-65



ENYSTAR
Distribution boards
Combinable enclosure system with door up to 250 A, IP 65



ENYMOD
Mi Distribution boards
up to 630 A, IP 54-65



ENYFIT
Cable entry systems



ENYCON
Construction board panels
up to 630 A, IP 44-65



ENYSUN
Photovoltaik distributors
that meet the standards



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Delivery in South East Asia via Hensel authorized distributor network in all ASEAN countries.



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