

CONVINCING TECHNOLOGY

Innovations with value and benefits

With the Viessmann refrigeration technology product range, almost any application or industrial sector, from food production, the catering industry and the hotel industry through to the shipping industry, and even to the medical and pharmaceutical industry, has innovative and high-quality solutions at its disposal.

Coldrooms, deep-freezing rooms or chiller rooms in Tecto Standard, Tecto Special or in individual custom-built design – for its wide product range with all the corresponding system components, Viessmann uses exclusively high-quality materials and works with innovative processing systems, such as the unique, antimicrobial **SilverProtec® powder coating**, which redefines the standard of hygiene in the refrigeration technology sector.

The manufacturing area, which was restructured and modernised in 2008 at the Hof site, ensures process-optimised production and underlines the Viessmann philosophy of the highest quality standards.

The Viessmann name guarantees products with state-of-the-art technology, sustainable capability and real efficiency. We reinforce the lasting quality of our products with a management system that is integrated and certified in accordance with quality standard DIN EN ISO 9001 : 2000.

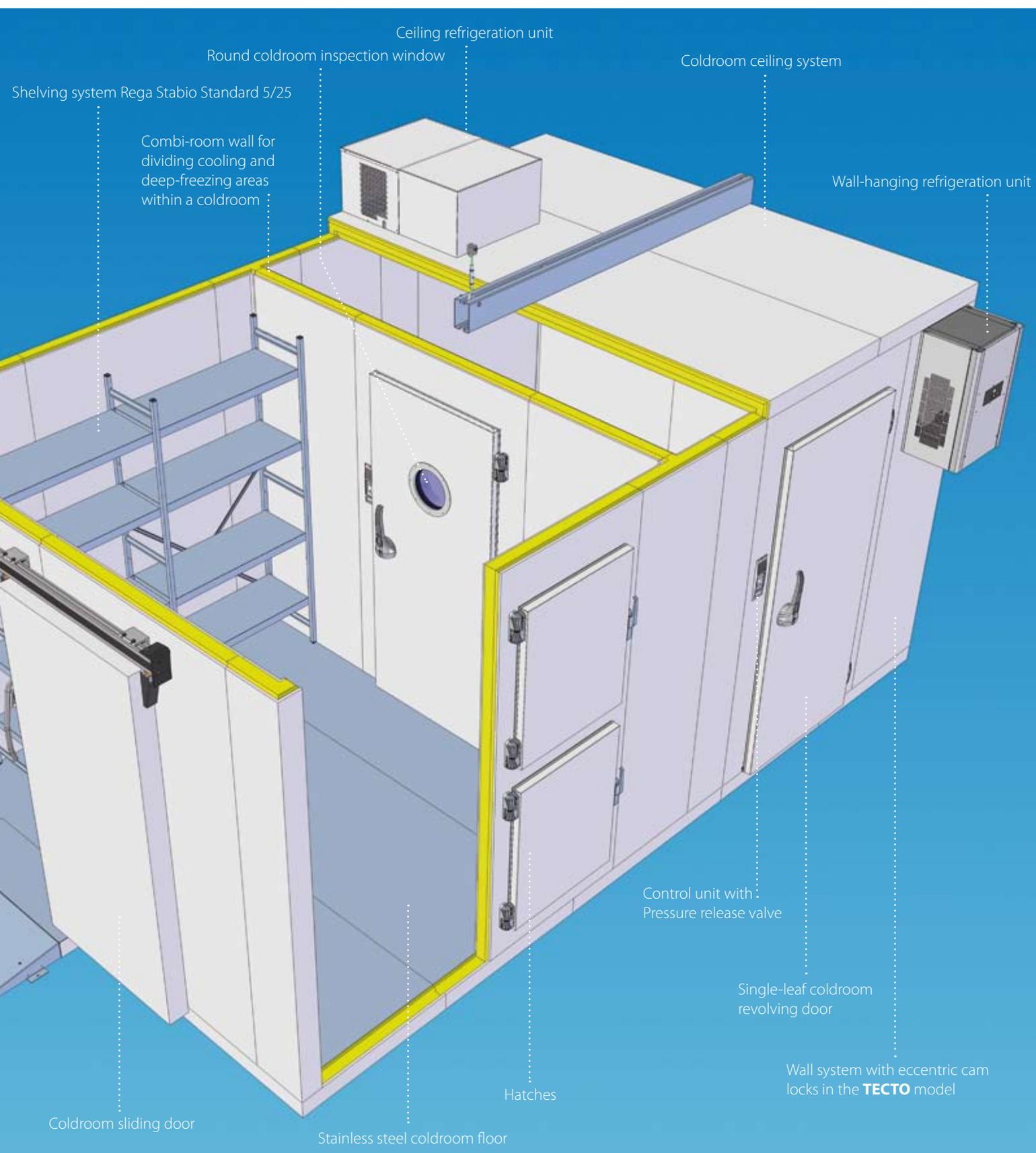


Sophisticated functionality

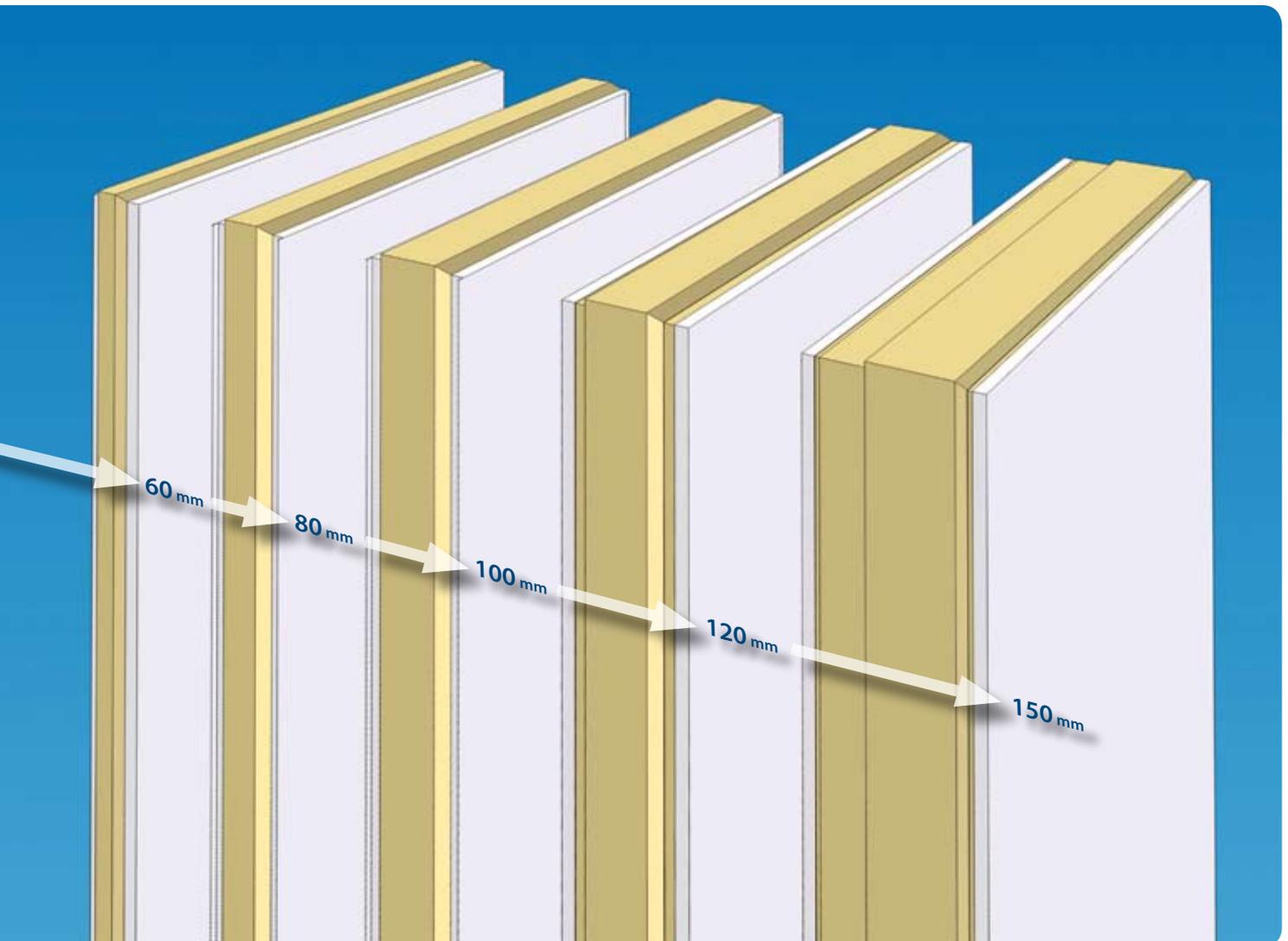
Benefits at a glance

- Thanks to the completely hygienic design, silicone grouting is not necessary
- Excellent standard equipment, including coldroom light, pressure release valve, light switch and thermometer
- Real and well-engineered efficiency thanks to precisely tailored manufacturing and total insulation
- High durability
- Constant operational reliability
- German brand quality with outstanding workmanship
- Skilful planning by our own engineering department
- Sophisticated high-speed assembly system for easy assembly and cost savings
- Perfectly-balanced system technology with Viessmann refrigeration units
- Ecologically optimised thanks to CFC-free manufacture and recyclability
- Extensive provision of services, from advice through to our after-sales support
- Short delivery times thanks to our own fleet of vehicles
- Good and almost limitless spare part availability
- Flexible solutions for individual requirements





Custom-made refrigeration



Tailored to the various usage requirements of trade and industry, Viessmann coldrooms and deep-freezing rooms stand out, thanks in particular to their high flexibility and build quality.

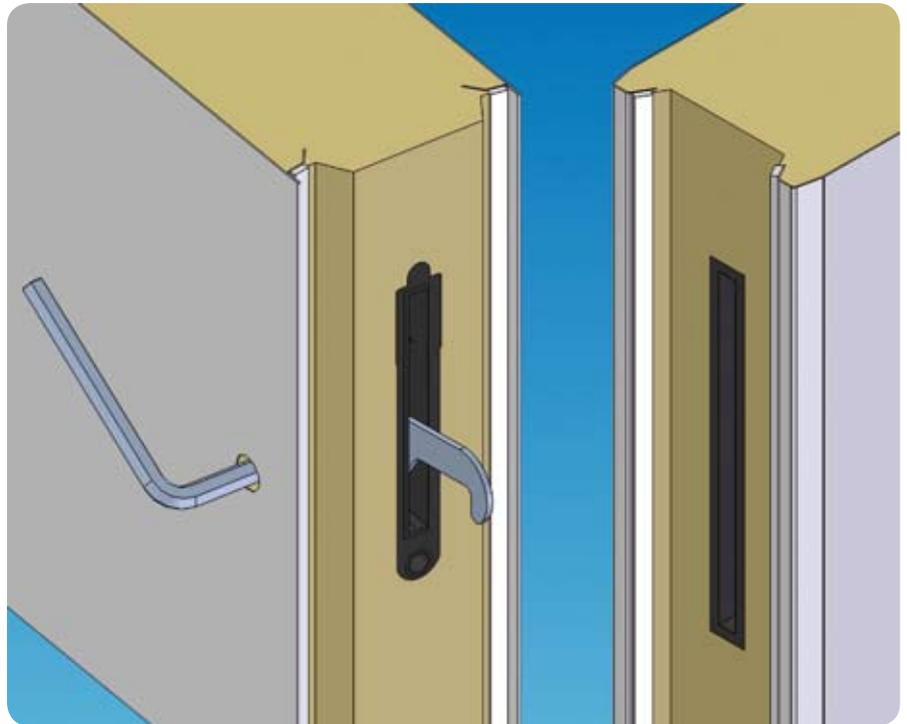
Numerous different room situations require the maximum possible individuality and perfection in planning. Designs with the optimised Viessmann grids of 300 mm and 100 mm (150 mm for partition walls) facilitate easy installation, even for the most diverse room situations.

Chiller rooms, coldrooms or deep-freezing rooms – Viessmann constructs them appropriate to your space requirements and ensures absolute perfection through its precisely tailored manufacturing and modular design. This is custom-made refrigeration, completely without compromise.

Perfect system engineering

Optimum insulation is a basic priority in refrigeration technology, since cold energy is up to ten times more expensive than heat energy, depending on the operation. To save costs, optimum thermal insulation is necessary, which is fulfilled in an excellent way with rigid polyurethane foam (PUR). PUR has the lowest thermal conductivity of all currently relevant insulation materials ($< 0.25 \text{ W/m}^2 \text{ K}$ at $+10^\circ\text{C}$ mean temperature).

In addition, rigid polyurethane foam is resistant to chemicals, solvents, fungi and microbes and is also odourless and free of toxic emissions. The PUR heat insulation of Viessmann coldrooms is foamed with CFC-free cyclopentane. Processing procedures with rigid polyurethane foam can be carried out precisely and true-to-measure. Therefore Viessmann coldrooms are impressive due to their precise tailoring, enormous stability, light weight and wonderfully easy assembly.



Eccentric cam lock

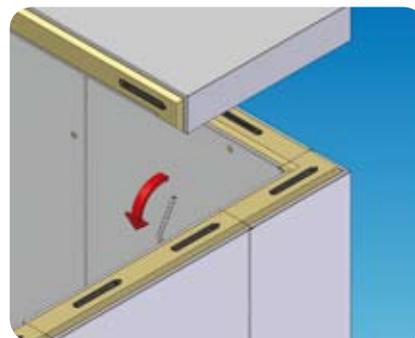
Connecting the coldroom panels

The sandwich coldroom panels (floors, walls, ceilings) are connected using a self-centring groove/tongue system. Eccentric cam locks with plastic housing and corrosion-protected clamping hooks are foamed into the panels. The cam locks are easy to operate from the inside; the coldroom does not have to be accessible from the outside during assembly.

Viessmann ceiling panels

Viessmann ceiling panels complement the well-proven wall panels in the Tecto Standard and Tecto Special product range. Here, the practical groove/tongue system also ensures quick and comfortable assembly. With adequate stiffening or static protection on-site, Viessmann ceiling panels are perfect for attachments such as meat hooks, tubular rails or for installing Viessmann ceiling units.

The maximum width of ceiling panels without any extra support is 6 m for Tecto WL80, WL100, 120 and 150, and 3 m for Tecto 60.



flexible and precisely tailored

For larger spans or for divided ceiling panels, supporting or suspended constructions are needed, which we design and manufacture specifically to your requirements. Self-supporting or suspended supports made from two steel C-profiles are particularly suitable for this, and for instance this enables spans from 6 m to almost indefinite lengths to be

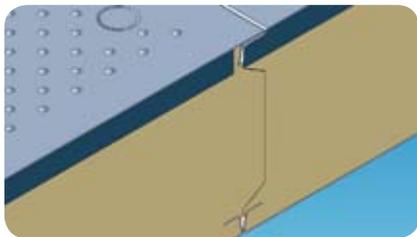
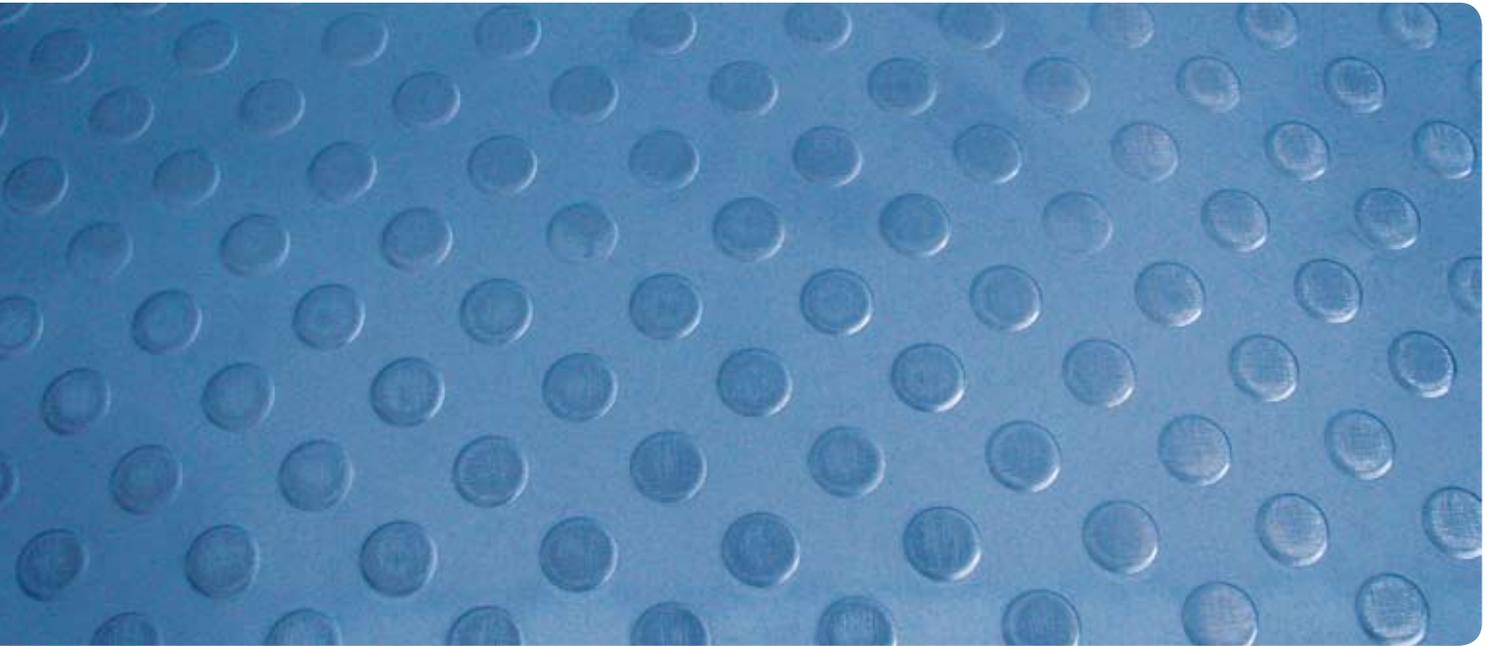
constructed, with an attachment on the ceiling or using an on-site steel construction.

If the circumstances of the construction do not allow the supports to be attached to the structure, self-supporting grid carriers can be used for larger spans.

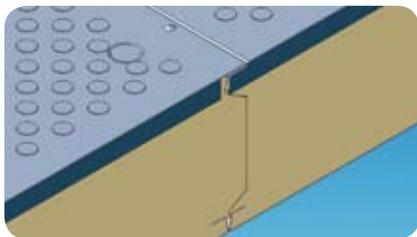
"Floor as ceiling" system

In cases where the heat insulation requirements are demanding, and at the same time there is the requirement to be able to drive into the coldroom on ground level (e.g. in the freezer area), Viessmann ceiling elements can also be used as high quality heat insulation due to their stable construction. They can be integrated underneath the relevant floor covering (e.g. floor finish) through on-site preparation.

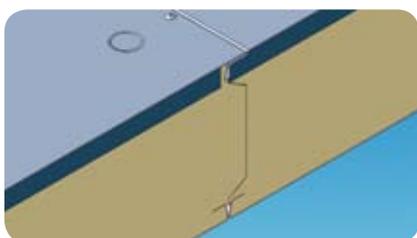
Viessmann stainless steel floors - comfortable safety



Stainless steel floor, cone-pressed



Stainless steel floor, circle-pressed



Stainless steel floor, unpressed

Thanks to the design of Viessmann floors made from stainless steel 1.4301 (stainless steel 1.4571 optional), our coldrooms fulfil the highest hygiene standard requirements. Viessmann stainless steel floors are finished with a joint-free, stepless underlapping.

Non-slip floor pressing

Manufactured with multi-directional non-slip (with certificate) by specific Viessmann pressing, Viessmann stainless steel floors guarantee a decisive plus for safety! For different application areas we can offer you our stainless steel floors in different cone-pressed, circle-pressed and also unpressed versions.

Floor with high load-bearing capacity

Thanks to the processing of high-quality stainless steel, Viessmann coldroom floors have a really high load-bearing capacity and of course, depending on the admissible wheel load, Viessmann coldroom floors can be driven on with small wheels, comfortably and vibration-free

Coldrooms without floor panels

For coldrooms without stainless steel floors, the wall panels are screwed to the floor on site by means of plastic or stainless steel profiles in U-shape.

Type	Finish	Wheel load max.*	Class**	Surface
KR 09	circle-pressed	100 200 400 KP/wheel	R 09	without polish
G 36	without pressing	100 200 400 KP/wheel	R 10	polished lengthwise
KR 11	circle-pressed	100 200 400 KP/wheel	R 11	polished lengthwise
KE 11	cone-pressed	100 KP/wheel	R 11	with/without lengthwise polish
KR 12	circle-pressed	100 200 400 KP/wheel	R 12	polished crosswise

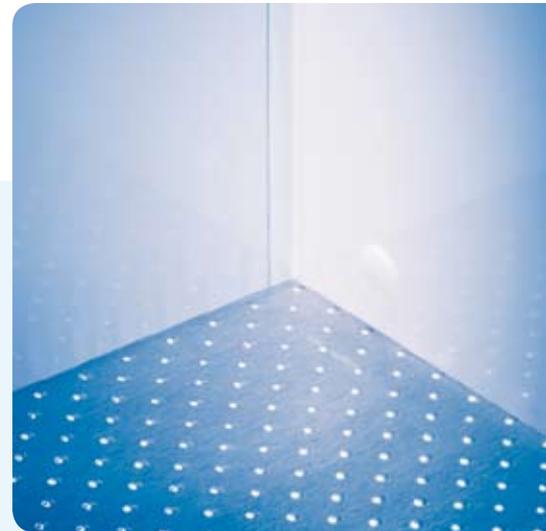
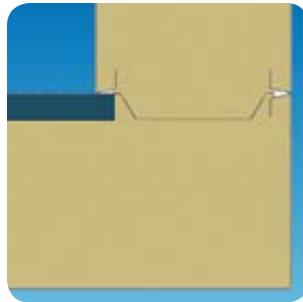
Wheel load: Load surface > 4 cm²/wheel | Group**: Anti-slip quality class (German employer's liability insurance association). Other floor types on request. All floor versions can be welded optionally.*

Tecto – Fully hygienic

Tecto Standard version

Wall thicknesses 60, 120, 150 mm

Our Tecto Standard version efficiently fulfils all the qualities necessary for hygienic and germ-free storage of refrigerated products. With Tecto Standard coldrooms and deep-freezing rooms, the wall panels close immediately on the heat-insulated stainless steel coldroom floor.



Tecto Standard version with cone-pressed stainless steel floor

Tecto Standard WL version

Wall thicknesses 80, 100 mm

The wall panel joints of Tecto coldrooms and deep-freezing rooms Standard WL80 and WL100 are finished by means of groove and tongue and sealing in between. The Tecto overlapping ensures joint-free transition from wall to wall.

The joint-free overlapping of the walls prevents dirt and water collecting.

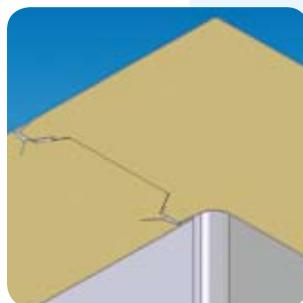
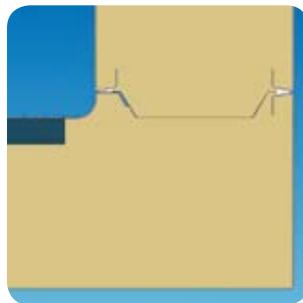


Tecto Special version

Wall thickness 100 mm

In the Tecto Special version, the heat-insulated stainless steel floor is connected to the wall panels with a large, hygienic radius. In addition, the floor corners are rounded, the floor surfaces are designed without joints, with stepless underlapping. This permanently prevents the accumulation of dirt particles.

The coldroom walls are overlapped without any gaps, and when placed on the floor radius are in a raised position. Due to this construction, cleaning water or cooling goods' moisture cannot penetrate between floor and wall panel. Germ accumulation, which develops primarily in joints and corners, is therefore effectively prevented. Additionally, the circulating radius facilitates easy and hygienically effective cleaning. The wall panels are supplied with joint-free Tecto overlapping. The corners of the wall panels are finished with an additional radius on the inside of the coldroom.



Tecto Special version with circle-pressed stainless steel floor

Special versions such as the NSF-certified Tecto Special Cert or coldrooms for ships with USPH standard complement the highly demanding Tecto product range.



Resistant materials and surface finishes



Viessmann powder coating system

Antimicrobial effective **SilverProtec**® powder coating

The surface layers of our sandwich panels consist of hot-galvanised steel sheet which is supplied with the high quality Viessmann standard white powder coating (similar to RAL 9016). This guarantees hygienic-smooth and resistant surfaces with sealed cut edges which would otherwise be subject to possible corrosion.

A novelty in refrigeration technology: All Viessmann chiller rooms, coldrooms and deep-freezing rooms are equipped as standard with the innovative anti-microbial **SilverProtec**® powder coating – completely invisible and at no extra cost.

*There is more information on the unique advantages of our **SilverProtec**® powder coating on pages 20 and 21.*



RAL 9016

Advantages of the antimicrobial **SilverProtec**® powder coating

- Greater layer thickness
- Largely shock-proof and impact-proof
- High mechanical stability
- Very good corrosion protection
- Powder lacquer mixed with antimicrobial **SilverProtec**® agent
- Extremely elastic
- Good electrical insulation
- High chemical resistance
- Environmentally friendly
- Solvent-free

Stainless steel surfaces – hygiene and design "par excellence"

For example, unlike almost any other material, stainless steel surfaces fulfil the most stringent requirements for contemporary design, combined with the best hygiene properties. In addition to our **SilverProtec®** powder coating, there are numerous stainless steel variants with the most diverse pressings for you to choose from. In addition to our standard quality stainless steel 1.4301, we can also offer you Class 1.4571 and 1.4509 designs – the choice is yours!



Grain-polished stainless steel surface

Examples of stainless steel surfaces



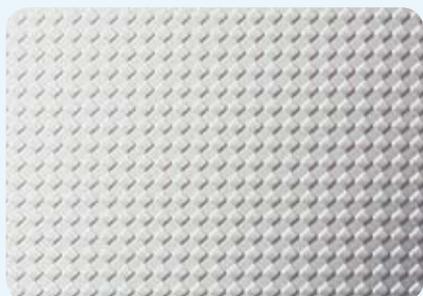
Grain-polished section



Linen structure



Wave structure



Rhombic structure



Leather structure



Circle-matted

SilverProtec®

antimicrobial powder coating



Active protection against uninvited guests

The Viessmann **SilverProtec®** powder coating for cold storage cells and refrigeration units provides active, permanent protection against micro-organisms, even up into the joint areas that are difficult to reach for common cleaning processes. The targeted releasing of natural silver ions leads to the bacterial and fungi being killed-off when they come into contact with the surface. Thus **SilverProtec®** has a three-fold effect: It blocks cellular metabolism, prevents cellular respiration, halts cellular division, thus leading to the death of micro-organisms on contact with the surface.

SilverProtec® is a silver compound with a minimum concentration, i.e. its proportion of silver ions lays within the micro-range. Therefore when compared with higher developed and more complex organisms, such as humans, it does not show any toxic effects, sensitising or irritations.

The **SilverProtec®** surface of the cold-rooms and deep-freezing rooms prevents the transfer and spreading of potentially hazardous bacteria in a natural manner, naturally fulfils the applicable standards and regulations for use in the foodstuffs sector and therefore provides a valuable plus regarding hygiene for the storage of foodstuff and other sensitive goods.

Effective against bacteria and fungi:

Viessmann **SilverProtec®** tests according to JIS Z2801: 2000 (contact 24 hours at 36°C)

- 1 Salmonella enteritidis
Reduction, 100 % / logarithmic
Reduction > 5,43
- 2 Pseudomonas aeruginosa
100 % / > 5,76
- 3 Listeria monocytogenes
100 % / ≥ 3,67
- 4 Staphylococcus aureus
100 % / ≥ 4,95
- 5 Escherichia coli
100 % / ≥ 5,18

Bacteria and fungi on which the SilverProtec® active substance, on the basis of silver ions, has been successfully tested (Excerpt):

Aureobasidium pullulans, Bacillus cereus, Bacillus thuringiensis, Chaetomium globosum, Enterobacter aerogenes, Gliocladium virens, Klebsiella pneumoniae, Legionella pneumophila, Mycobacterium tuberculosis, Porphyromonas gingivalis, Proteus mirabilis, Proteus vulgaris, Saccharomyces cerevisiae, Salmonella gallinarum, Salmonella typhimurium, Staphylococcus epidermidis, Staphylococcus agalactiae, Staphylococcus faecalis, Staphylococcus mutans, Vibrio parahaemolyticus, Stachybotrys, Aspergillus niger, Candida albicans, Penicillium funiculosum, Trycophyton mentagrophytes



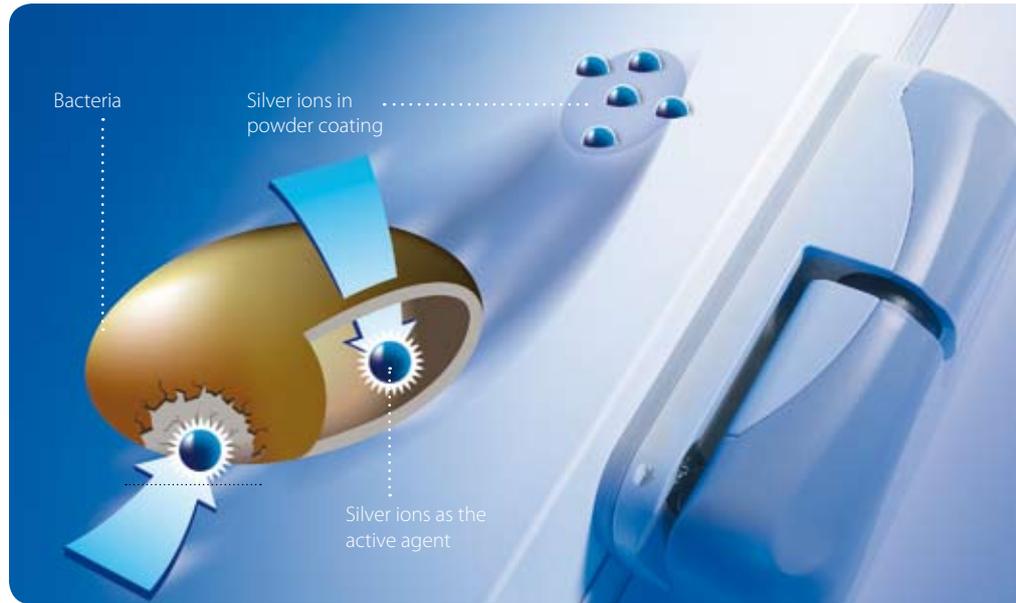
Winner of the VdF Innovation prize 2005.



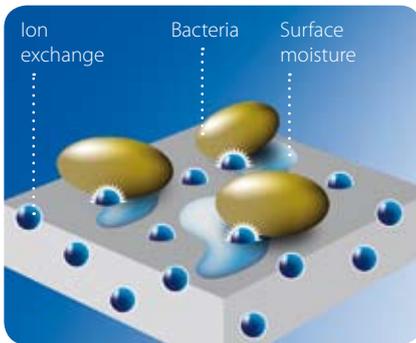
Recommended by the Bundesverband der Lebensmittelkontrolleure e.V. (German Association of Food Inspectors)

Mode of function of the Viessmann **SilverProtec**[®] powder coating

The Viessmann **SilverProtec**[®] powder coating that has been registered for patenting is provided with an inorganic silver compound which releases silver ions, for example due to ambient humidity in the coldrooms. Even with increased humidity and the associated increased risk of the growth of micro-organisms, silver ions are controlled according to the relevant degree of humidity and are released up to a maximum release quantity to the humidity film on each surface. This process is continual and long-lasting. Even after an air conditioning test according to DIN 50017-KK, for the **SilverProtec**[®] powder coated steel sheet exposed to a constant air temperature of 40 °C and a relative air



Ion exchange due to the influence of ambient humidity



humidity of 100% (with thawing the specimen) for 1,000 hours in the air conditioning cabinet, no reduction of the antimicrobial effectiveness of the specimens could be proven. In doing so, the effect of the silver ions is directed against the vitality of harmful micro-organisms, in three-fold form. It blocks cellular metabolism, prevents cellular respiration, halts cellular division, thus leading to the elimination of micro-organisms on contact with the surface.

Silver **Protec**[®] is therefore a valuable enhancement to conventional cleaning processes that remove the microorganisms only from time to time. The surfaces are permanently protected against the growth of bacteria and the consequence of re-contamination.

Effective protection against harmful types of bacteria

Tests by the independent testing institute ISEGA in accordance with the Japanese Industrial Standard (JIS) Z 2801:2000, known throughout the world for proving antimicrobial effectiveness, have shown that **SilverProtec**[®] coatings reduce original concentrations of various known gram-positive and gram-negative bacteria such as those particularly feared in the catering industry like Salmonella Enteritidis or E. coli by 100 % (in terms of initial bacterial count) or by 4 to 6 log levels (in terms of reference sample), which corresponds to safe disinfection. **SilverProtec**[®] guarantees reliable long-term protection against micro-organisms without using chemicals hazardous to the environment and health and that sometimes cause chemical resistance. **SilverProtec**[®] is therefore an investment for safe protection against the constantly growing microbial contamination of modern times.

Protection for people and stores

When compared with higher developed and more complex organisms, such as humans, **SilverProtec**[®] is completely harmless and shows no toxic effects, allergisations or irritations. Naturally it complies with the Law concerning the handling of foodstuffs, tobacco products, cosmetic products and other consumer goods (German Foodstuffs and Consumer Goods Act), and meets the demands of the Decree on Consumer Goods (conversion of the directives 89/109/EEC, 90/128/EEC and 2002/72/EC) and may therefore be used safely for the coating of steel plates used in coldrooms and cold storage chambers.



*Petri dish tests prove the destruction of harmful germs by **SilverProtec**[®] (upper petri dish germ-free)*

www.vkag.de