

**FRIGOR TEC**  
Cooling to the point

FrigorTec GmbH • Germany

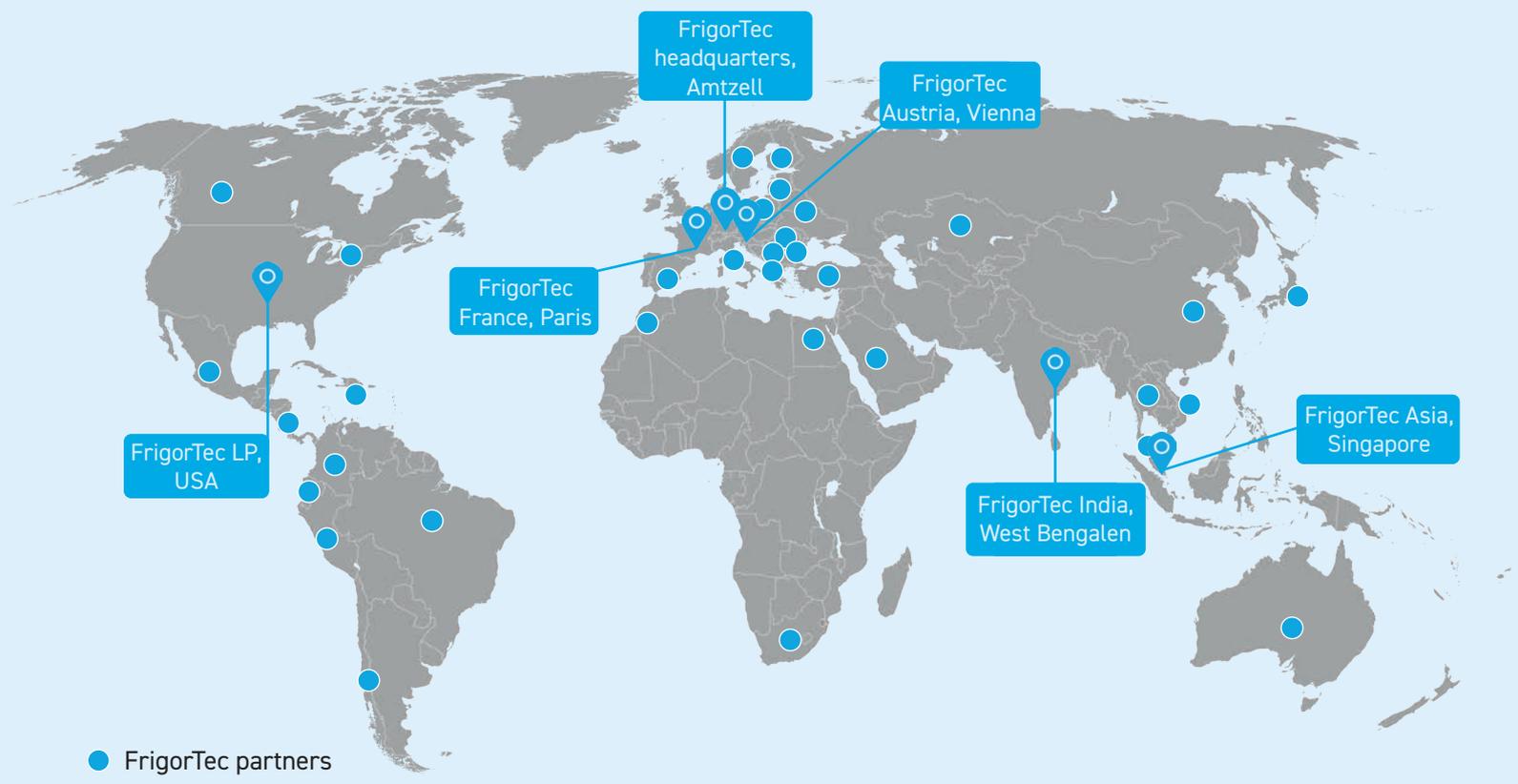


# GRANIFRIGOR™ *green*

## Ecological Grain Conservation

[frigortec.com](http://frigortec.com)





## FrigorTec: Innovative and reliable refrigeration technology

Since our foundation, we have earned an excellent reputation worldwide and are considered a synonym for excellent refrigeration technology. With decades of experience and modern technology, we offer both standard cooling units and customised solutions. Our daily work is driven by an uncompromising focus on quality, innovation and close customer relationships.

The success story of GRANIFRIGOR grain coolers began in 1963. Today, GRANIFRIGOR offers a wide range of grain coolers, specifically developed for different storage sizes and climate zones - Made in Germany!

To this day, our units are developed and manufactured at our headquarters in Amtzell, Germany. In addition, we have our own subsidiaries in the USA, Singapore, France, India and Austria, as well as an international network of competent partners. This enables us to offer our customers a comprehensive sales and service network worldwide.

We are aware of our responsibility towards the environmental consciousness and are committed to minimise our ecological footprint through sustainable production methods and energy-efficient products.

The use of the most modern refrigerants in all our air-conditioning units, ensures not only the highest performance standards but also an excellent environmental record.



*Sulzer Escher Wyss produces its first units*



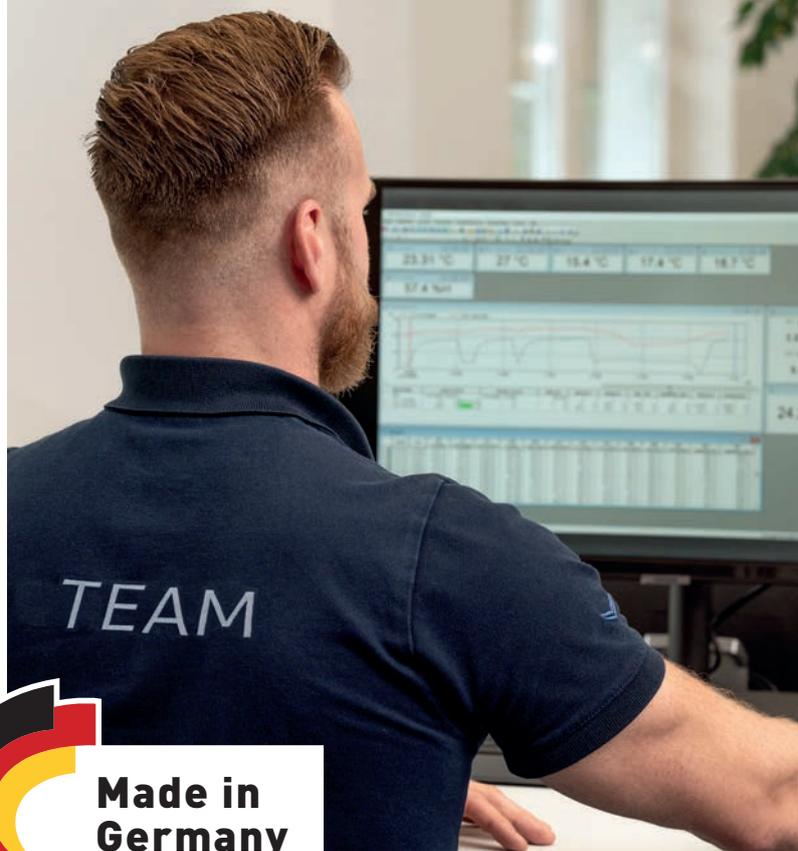
*First GRANIFRIGOR grain cooler, developed with the University of Düsseldorf*



*Product expansion with the GRANIFRIGOR Tropic line*



*First GRANIFRIGOR with Siemens S7 control system*



## Production and Quality

### Quality - a matter of course for us!

Only air conditioning units that can endure the harshest conditions will stand the test of time and guarantee our long-term success. That is why we focus on employing qualified staff who continuously enhance their skills. Our technical department is made up of engineers specialising in physical technology, building and air-conditioning technology, process engineering and electrical engineering. In our production team, we exclusively employ skilled professionals, such as electricians and mechatronic technicians with expertise in refrigeration technology. Using premium materials and components from leading manufacturers, they manufacture reliable air-conditioning units that meet the highest standards.

### FrigorTec Technical Centre

Every unit undergoes a stringent quality check in our in-house technical centre after production. During an extensive multi-hour test run, we rigorously test their safety functions, measure their performance and meticulously assess their manufacturing quality.

### Certifications

FrigorTec has been certified in accordance with DIN ISO 9001 for many years. This internationally recognised quality management standard demonstrates our commitment to delivering products and services of the highest quality. As part of regular certification audits, we verify our processes in many areas, including quality assurance, risk management, customer focus and continuous improvement.

Furthermore, because our units are TÜV-tested at our factory, additional testing at the installation site is usually not necessary.

As an authorised economic operator and AEO-certified company, we enjoy simplified customs procedures for all exports. In 2009, we became the first company in Baden-Württemberg to receive operational certification under Section 6 of the Chemical Climate Protection Ordinance.



*FrigorTec takes over the Cooling Unit Division of Sulzer Escher Wyss*



*FrigorTec units in over 75 countries*



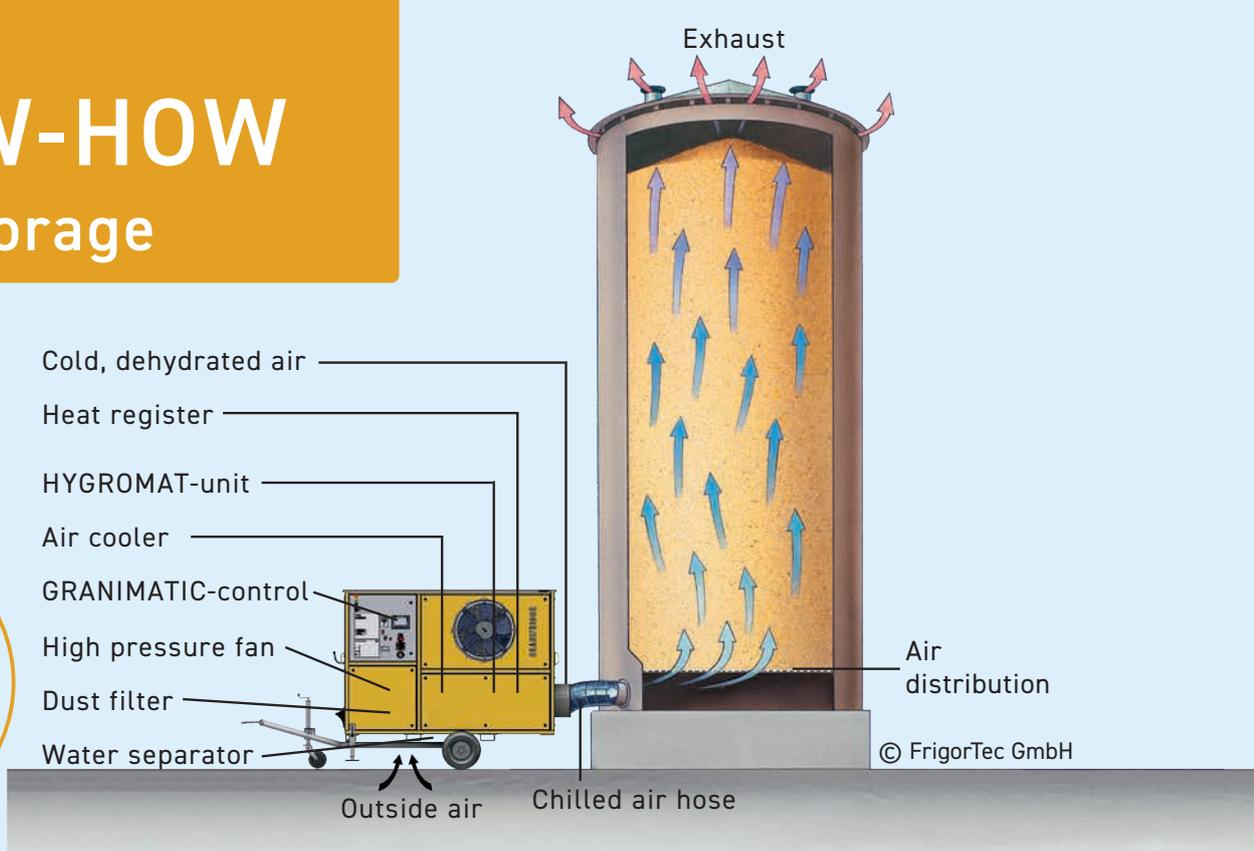
*FrigorTec releases app for controlling GRANIFRIGOR units remotely*



*Presentation of the new generation GRANIFRIGOR green*

# KNOW-HOW

## Grain storage



## Protect your harvest – ecological and effective!

Storing grain at high temperatures often causes significant losses. Systematic hygiene regulations and the call for natural treatment of the product grain without chemical substances are standards that must be attained. The solution for all these demands: GRANIFRIGOR™.

Carbon dioxide, water and heat are released by respiration – with extensive consequences: Loss of dry substance as well as the development of insects, microbes and mildew. Spontaneous heating depends on the grain's moisture content and temperature. The principle is also valid for oil seeds like rapeseed (canola), brewing barley, soy beans, legumes and seeds.

The GRANIFRIGOR cools the grain immediately after harvesting, regardless of weather conditions, thus protecting it from spoilage.

Rapid cooling to below +15 °C after grain intake offers several advantages:

- Insects fall into hibernation or do not enter the storage
- Prevention of mould growth
- Minimisation of respiration losses
- Reduction of drying costs

### Mode of operation

The fan of a GRANIFRIGOR grain cooler sucks in ambient air. This air is cooled by an evaporator to the desired temperature.

The following HYGROMAT unit warms the cold air again automatically. This lowers the relative humidity and adapts to the conditions of the grain. No moistening can occur, which would be damaging.

This cold, dry air is forced through the grain via the air distribution system of the warehouse or the silo system. The absorbed heat and moisture are released into the environment via exhaust air vents of the storage facility.

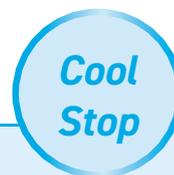
Once the desired storage temperature has been reached, the grain cooler can be used for another silo. Once cooled, grain stays cold for a long time.



Climate-specific types  
Europe - Nordic  
Subtropic - Tropic - Desert



Fully automatic control  
Siemens S7



Automatic switch-off  
Cool Stop, wireless



Humidity control  
HYGROMAT

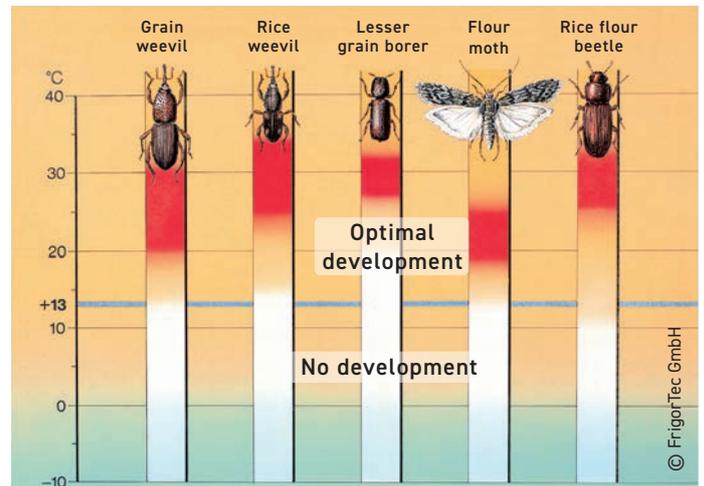
# HIGHLIGHTS GRANIFRIGOR™



## GRANIFRIGOR - An investment in the future

Our contribution to a sustainable future: thanks to our many years of expertise in the development of refrigeration technology, we are able to design GRANIFRIGOR grain coolers to be particularly environmentally friendly. Despite their high cooling capacity, our **green**-models therefore boast an extremely low global warming potential value (GWP).

- **green**-models with a low GWP value
- Low power consumption
- Fully automatic control Siemens S7
- State-of-the-art refrigeration technology
- Premium components from renowned manufacturers
- Large, durable filters
- Silent
- Easy operation: manually or fully automatic
- Remote control with a smartphone or tablet via an app for Android or iOS
- Remote control with a PC or notebook (Windows)
- Quality inspection with test run at factory
- 24/7/365 emergency telephone service
- Training on site



Insects that are dangerous to grain can develop at a temperature starting at +15 °C. GRANIFRIGOR cools the grain to below +15 °C and thereby ensures optimal freshness and quality of the harvest.



Remote control  
Android, iOS, Windows



### The importance of the GWP value

The global warming potential value (GWP) is particularly important for refrigerants. This value describes the impact a substance will have on atmospheric warming over a period of time compared to carbon dioxide (CO<sub>2</sub>). The lower the GWP value of a device, the lower its impact on global warming.

# GRANIFRIGOR™

## Models



GRANIFRIGOR™	GC 45 Europe <i>green</i>	GC 70 / 90 Europe <i>green</i> / Tropic <i>green</i>	GC 145 Europe <i>green</i>	GC 190 Europe <i>green</i>	GC 220 / 250 Europe <i>green</i> / Subtropic <i>green</i> / Tropic <i>green</i>
<b>Cooling performance in 24 hours</b> <sup>1)2)</sup> [to/day]	30 – 65	65 – 130	140 – 220	180 – 300	220 – 370
<b>Chilled air fan</b> Volume flow [m <sup>3</sup> / h] <sup>3)</sup>	2,400	4,600	9,000	10,800	12,500
Pressure [Pa] maximum <sup>5)</sup>	3,200	3,400	6,000	6,000 / 8,000 <sup>8)</sup>	6,000 / 8,000 <sup>8)</sup>
<b>Refrigeration capacity compressor [kW]</b> <sup>6) 7)</sup>	11	22 28	35	46	63 82 105
<b>Electrical data</b> <sup>9)</sup> Output (average) [kW]	4.5	10	16	20	28 30 35
Maximum current consumption [A]	18	32 27	55	63	96 100 92
Electrical connection <sup>4)</sup> [A]	32	32	63	63	100
<b>Dimensions [mm]</b> chassis with tyres [LxWxH]	3,450 x 1,350 x 1,750	3,800 x 1,450 x 1,900	3,930 x 1,730 x 2,160	3,930 x 1,730 x 2,160	3,300 x 1,550 x 2,450
with swivelling casters [LxWxH]	2,050 x 950 x 1,570	2,550 x 1,200 x 1,750	2,840 x 1,460 x 2,040	2,840 x 1,460 x 2,040	2,950 x 1,550 x 2,250
Ø connection cold air hose	300	300	400	400	400
<b>Weight</b> chassis with tyres [kg]	600	750	1,200	1,250	1,650
with swivelling casters [kg]	550	700	1,100	1,160	1,500

## GRANIVENT™

- Perfect for immediate aeration after harvesting
- Suitable for tower silos and flat storages
- Hygrostat and thermostat for safe aeration
- Robust and sound-proofed
- Subsequent cooling with GRANIFRIGOR protects grains from insects and fungi



All specifications are valid for 400 V-3 Ph-50 Hz

1) Cooling of air to 10 °C

2) At an average ambient temperature (daily median) of 20 °C, an average relative air humidity (ambient air) of 52%, and an average grain moisture of 16% and a counterpressure of 1000 Pa

3) At 1000 Pa counterpressure

4) acc. CEE

5) Higher pressures are available upon request

6) Europe version at an evaporation temperature of 0 °C and a condensation temperature of 30 °C

7) Subtropic/Tropic/Desert versions at an evaporation temperature of 10°C and a condensation temperature of 40 °C

8) HP version (high pressure)

9) HYGROMAT is included as a standard feature

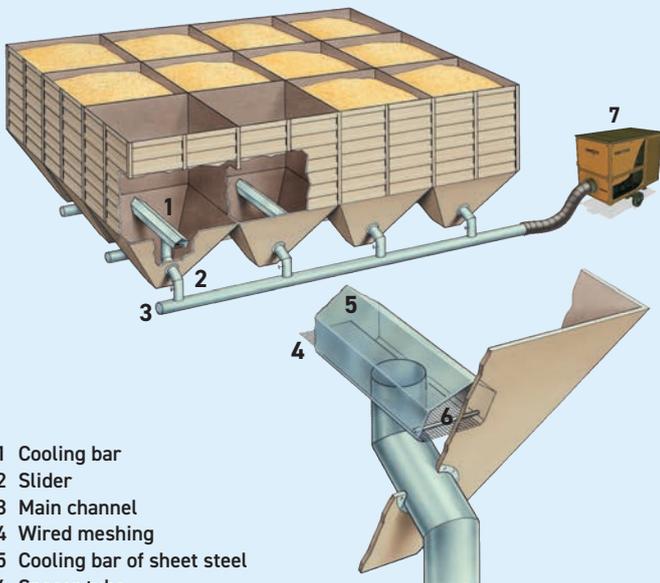
Subject to technical change.



GC 310 / 330 Europe Subtropic Tropic green green	GC 450 Desert green	GC 460 / 500 Europe Subtropic Tropic green green	GC 560 Tropic	GC 650 / 700 Europe Tropic Desert green green green	GC 1000 Tropic Desert green green
310 – 520	340 – 560	460 – 750	560 – 900	600 – 1,100	900 – 1,500
18,000 6,000 / 8,000 <sup>8)</sup>	25,000 6,000	25,000 6,000	26,000 6,000	27,500 6,000	52,000 4,000
79 102 160	165	125 162 225	270	175 320 320	470
36 39 53	75	65 69 78	85	71 95 105	140
120 120 118	215	200 200 186	214	235	400
125	250	200	250	250	400
3,710 x 1,810 x 2,550 3,370 x 1,810 x 2,410	3,950 x 2,130 x 2,900 3,740 x 2,130 x 2,690	3,950 x 2,130 x 2,900 3,740 x 2,130 x 2,690	3,950 x 2,130 x 2,900 3,740 x 2,130 x 2,690	4,400 x 2,130 x 2,900 4,200 x 2,130 x 2,690	5,800 x 2,130 x 2,900 5,100 x 2,130 x 2,690
600	600	600	600	600	800
2,000 1,900	3,000 2,750	3,000 2,750	3,200 2,950	3,950 3,600	5,200 4,900

## Grain Cooling for various types of warehouses

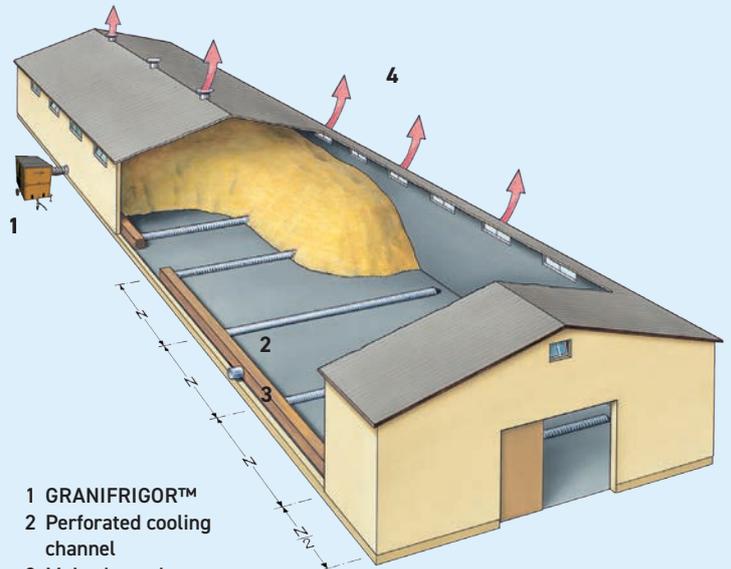
Example: Honeycomb silo system



- 1 Cooling bar
- 2 Slider
- 3 Main channel
- 4 Wired meshing
- 5 Cooling bar of sheet steel
- 6 Spacer tube
- 7 GRANIFRIGOR™

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Example: Warehouse storage facility



- 1 GRANIFRIGOR™
- 2 Perforated cooling channel
- 3 Main channel
- 4 Exhaust air

N = normal spacing ≤ height of bulk produce

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**Service  
availability**



**Service locations  
worldwide**



**Equipment for  
special applications**



**Customer  
training**

## FrigorTec After Sales Service

*„Solving problems quickly and professionally“*, that is the aim of our after sales service team. With our comprehensive range of services, original parts and efficient processes, we leave nothing to chance, ensuring your equipment runs smoothly – so you can focus on your core business!

### Our services include:

- Maintenance services
- On-site assembly
- Commissioning
- Supply of spare parts
- Repairs with original parts
- Leak tests in accordance with EU regulations
- Online shop [www.frigortec-shop.com](http://www.frigortec-shop.com)
- 24/7/365 emergency phone service - worldwide

### Smart Service

If your FrigorTec unit is equipped with an optional modem, we can remotely analyse your equipment once you have granted us temporary access.

### Your advantages:

- Quick fault localisation
- Remote assistance
- Timely updates
- Analysis of system condition and efficiency

### Online information portal

For each of our units, we create a device-specific information page. To access this information online, scan the QR code located on the unit. This ensures you have all the essential information at your fingertips - without the need for archiving and always in the most up-to-date version.

### The available information includes:

- Operating instructions
- Electrical diagrams
- Device certificates
- Test reports
- Specific spare parts lists

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