Prevent the spoiling of your harvest – the ecological and effective way!

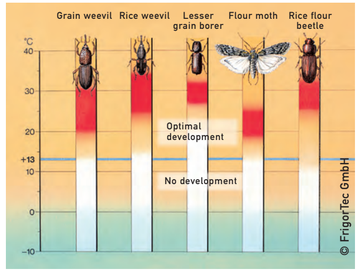
Spontaneous heating of the grain often causes great damage. Systematic hygiene regulations and the call for natural treatment of the produce grain without chemical substances are standards that must be attained. We have the solution for all these demands: GRANIFRIGOR™.

The GRANIFRIGOR™ cooling device is immediately used to cool down grain after the harvest and independent of the weather conditions. This effective method prevents the spoiling of freshly harvested grains, which spontaneously heats up because of its cellular respiration.
Carbon dioxide, water and heat are released by this 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).

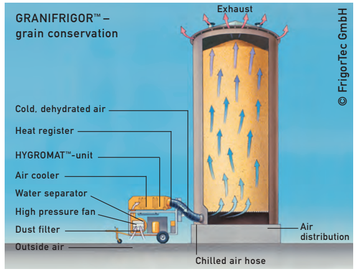
Since we know how grain "functions", the GRANIFRIGOR™ operates according to two successful principles:

1. Prompt cooling to below +15 °C once the grain has been stored: This puts insects into diapause so they don't multiply (see illustration below). In addition the development of mildew is effectively prevented, respiration losses are minimised, and drying expenditures are also reduced by the drying effect of cooling.
2. No ventilation with unconditioned ambient air: Grain is hygroscopic. This means that depending on the temperature an equilibrium develops between the moisture content of the grain and the relative humidity of the ambient air. Moisture is absorbed if dry grain is exposed to the humid air. The grain begins to spoil. That's why aeration with fans is completely dependent on weather conditions. Furthermore, the ambient temperature during harvest time is usually much too high.

Mode of operation:
The fan of a GRANIFRIGOR™ grain cooler sucks in ambient air (see illustration below). This air is cooled by an air conditioner (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 cooled and dried air is blown into the air distribution of the warehouse or the silo system and is forced through the grain. Then the air is released outwards through the exhaust vents of the storage facility. The exhaust air carries the absorbed heat and moisture.



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.



The GRANIFRIGOR™ process was developed by FrigorTec GmbH (formerly product devision of Axima and Sulzer Escher Wyss) in co-operation with the University of Düsseldorf and the Bundesforschungsanstalt für Getreide (Federal Grain Research Institute) in Detmold and has been manufactured since 1963.

We pass on only what we have produced by our own hands – Made in Germany.

At our headquarters in Amtzell, Germany all products made by FrigorTec GmbH are developed, constructed and produced. Every device passes a quality inspection with test runs before delivery. We sell the FrigorTec solutions in over 84 countries through our worldwide distribution network.

SERVICE (24/7)

Our service keeps the units maintained and ensures the spare parts supply - worldwide.
service@frigortec.com

Grain cooling GRANIFRIGOR™
Crane air conditioning CRANEFRIGOR™
Standard cooling STANDARDFRIGOR
FrigorTec SERVICES
Insect heat treatment DEBUGGER
Hay dryer AGRIFRIGOR™

Distributor:

FRIGOR TEC
Cooling to the point

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GRANIFRIGOR™ – ecological grain conservation

www.frigortec.com

FRIGOR TEC

Cooling to the point










GRANIFRIGOR™	GC 40 Europe	GC 60 / 80 Europe Tropic	GC 140 Europe	GC 180 Europe	GC 220 / 240 Europe Subtropic Tropic	GC 310 / 320 Europe Subtropic Tropic	GC 450 Desert	GC 460 / 500 Europe Subtropic Tropic	GC 560 Tropic	GC 650 / 700 Europe Tropic Desert	GC 1000 Tropic Desert
Cooling performance in 24 hours [1) 2)] [t/day]	30 – 65	55 – 120	140 – 220	170 – 280	220 – 370	310 – 520	340 – 560	460 – 750	560 – 900	600 – 1.100	900 – 1.500
Chilled air fan											
Volume flow [m^3 / h] [3)]	2.400	4.600	7.700	10.800	12.500	18.000	25.000	25.000	26.000	27.500	52.000
Pressure [Pa] maximum [5)]	3.200	3.400	4.700	6.000 / 8.000 [8)]	6.000 / 8.000 [8)]	6.000 / 8.000 [8)]	6.000	6.000	6.000	6.000	4.000
Refrigerating capacity compressor [kW] [6) 7)]	11	20 25	32	43	63 82 105	82 106 160	165	133 174 225	270	175 320 320	470
Electrical data [9)]											
Output (average) [kW]	4.2	9	16	19	28 30 35	34 37 53	75	65 69 78	85	71 95 105	140
Max. current consumption [A]	18	32 27	56	63	96 100 92	120 120 118	215	200 200 186	214	235 250 250	400
Electrical connection [4)] [A]	32	32	63	63	100	125	250	200	250	250	400
Connections											
Ø Connection cold air hose [mm]	300	300	300	400	400	600 600 600	600	600 600 600	600	600	800
Condensation water drain average [l / h]	6	15	25	30	35 - 40	45 - 65	100	65 - 100	120	150	250
Ø Condensation water drain hose [inch]	$^3/_4$	$^3/_4$	$^3/_4$	$^3/_4$	$^3/_4$	$^3/_4$	$^3/_4$	$^3/_4$	$^3/_4$	$^3/_4$	$1\,^1/_2$
Dimensions [L x W x H in mm] / **weight** [kg]											
chassis with tyres	3.450 x 1.350 x 1.750 / 600	3.570 x 1.320 x 1.750 / 700	3.620 x 1.330 x 2.265 / 950	3.800 x 1.650 x 2.280 / 1.150	3.300 x 1.550 x 2.450 / 1.650	3.710 x 1.810 x 2.550 / 2.000	3.950 x 2.130 x 2.900 / 3.000	3.950 x 2.130 x 2.900 / 3.000	3.950 x 2.130 x 2.900 / 3.200	4.400 x 2.130 x 2.900 /3.950	5.800 x 2.130 x 2.900 / 5.200
with swivelling casters	2.050 x 950 x 1.570 / 550	2.230 x 990 x 1.700 / 650	2.520 x 1.130 x 2.085 / 860	2.680 x 1.320 x 2.150 / 1.060	2.950 x 1.550 x 2.250 / 1.500	3.370 x 1.810 x 2.410 / 1.900	3.740 x 2.130 x 2.690 / 2.750	3.740 x 2.130 x 2.690 / 2.750	3.740 x 2.130 x 2.690 / 2.950	4.200 x 2130 x 2.690 / 3.600	5.100 x 2.130 x 2.690 / 4.900

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.

GRANIVENT™:

The GRANIVENT™ is ideal for immediate aeration when the harvest is stored. The subsequent cooling by a GRANIFRIGOR™ ensures that the grain is protected from insects and moulds.

- Suitable for tower silos and flat storage
- Hygrostat and thermostat for safe aeration
- Robust and sound-proof

GRANIFRIGOR™ – advantages:

- Low power consumption
- Fully automatic control Siemens S7 (DDC)
- State-of-the-art refrigeration technology
- Guaranteed dry, cool air
- Easy operation
- Silent
- 24/7/365 service
- Many additional options available
- Suitable for high outside temperatures
- Remote control with a smartphone or tablet via an app for Android or iOS App
- Remote control with a PC or notebook (Windows) App
- Large filters
- Robust industrial construction
- Quality inspection with test run at factory

FrigorTec GmbH is certified according to DIN EN ISO 9001 : 2015.
FrigorTec GmbH is member of:

- Society for the Support of the German Milling School Braunschweig e.V., München / Germany
- Rationalisation Curatorship for Agriculture, Rendsburg / Germany
- School of vocational education in Agribusiness Burg Warberg e.V., Warberg / Germany
- ALB, Stuttgart / Germany
- AGF, Detmold / Germany
- BVA, Berlin / Germany

TÜV acceptance testing at factory.
An additional test at the installation site is usually not required for the operation of the GRANIFRIGOR™.