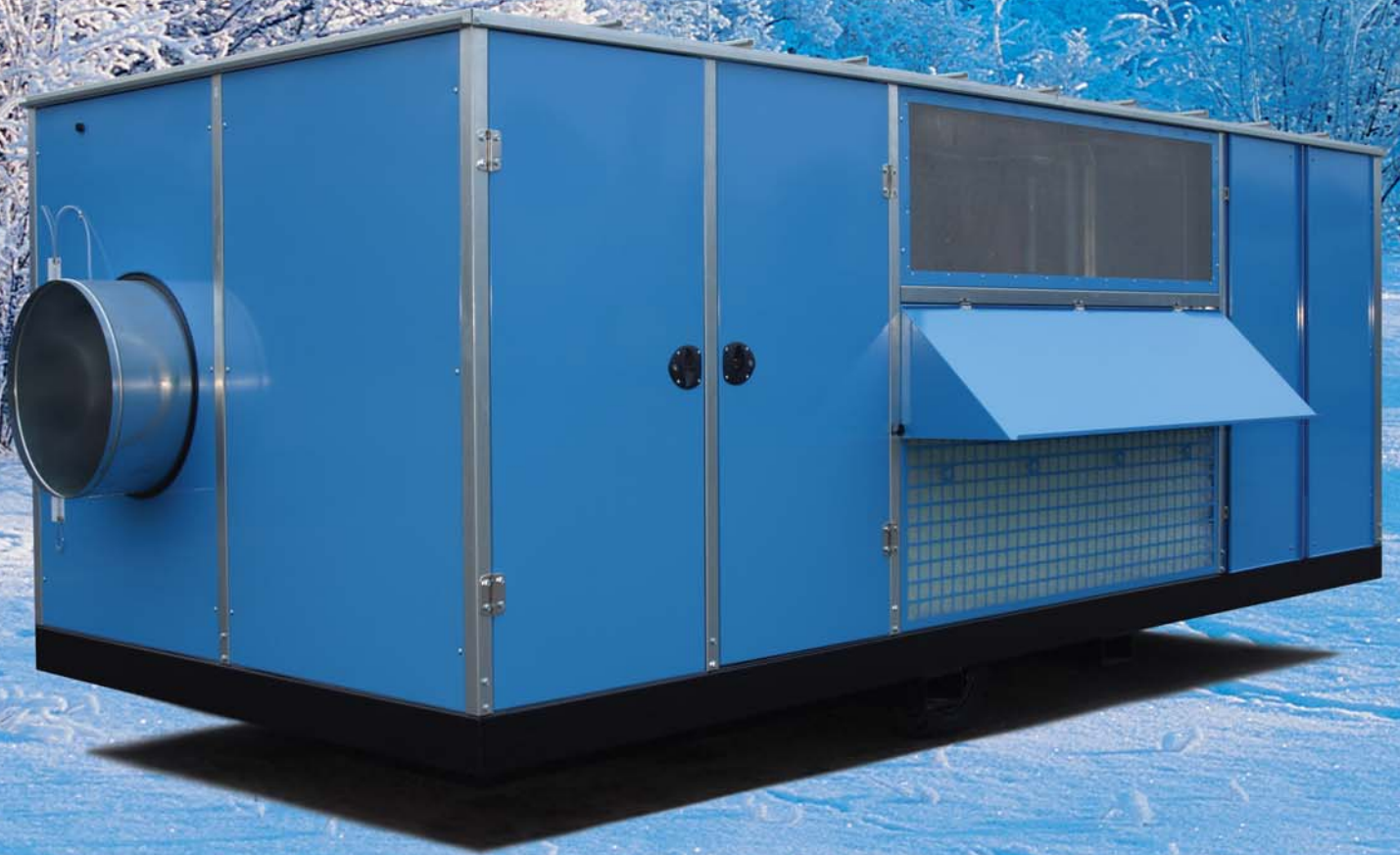


# Grain Cooler

Saves grain and money



# TREAT YOUR GRAIN AS FOOD

## COOLING - The most natural way of preserving grain

The most important factor when storing grain is the temperature!

With a TORNUM Grain Cooler it is always, regardless of ambient conditions, possible to cool the grain to safe storage temperatures!

This is how the TORNUM Grain Cooler works:

The cooled air is distributed in the silo or flat storage through a duct system placed at the bottom of the grain storage.

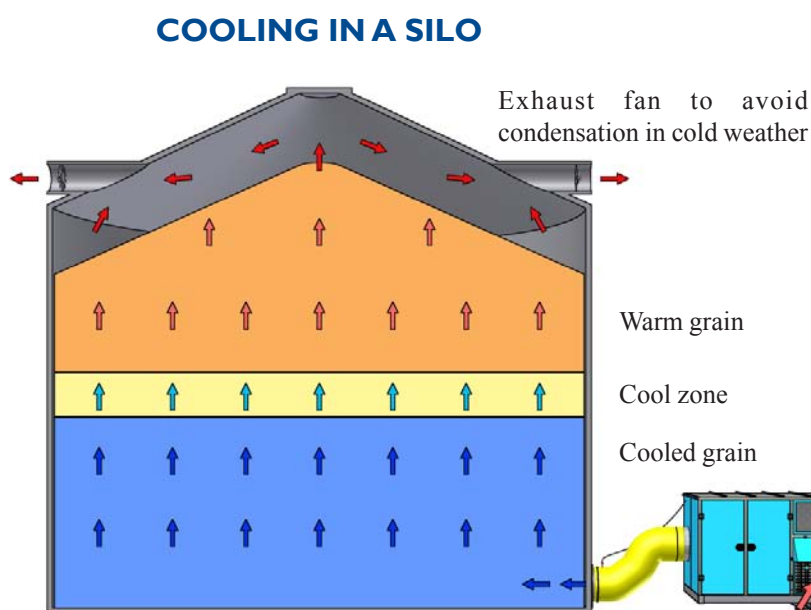
When the cooled air meets the warm grain a cool zone is created. This cool zone moves up through the grain pile until it reaches the top.

Initially the cooled air meets the warm grain. Energy is lost and a temperature decline has begun. At the same time the moisture content of the cooled air increases and a certain amount of drying takes place. The drying effect depends on the moisture content of the grain, but is in the size of 0.5 - 0.75% for every 10°C (18°F) temperature reduction.

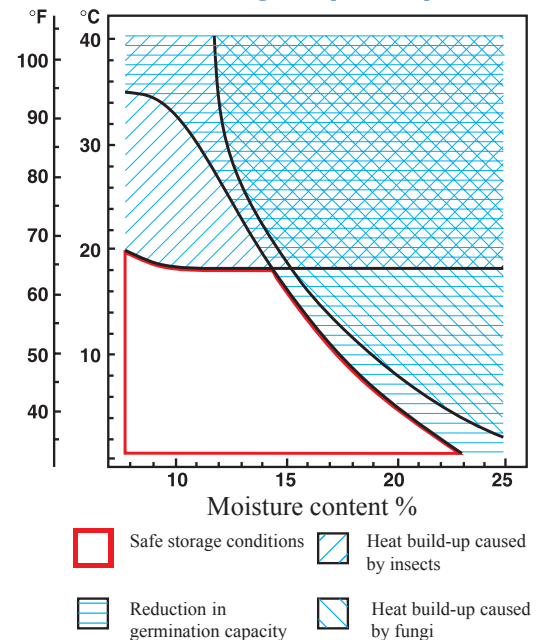
When the top level of the grain has reached a temperature that is 2 - 3°C (3.5 - 5.5°F) above the temperature blown into the grain, the cooling process is deemed to be over.

The Grain Cooler works fully automatically and is operated through a PLC system using a patented software. All the operator has to do is select the type of grain to be chilled (11 different grains plus manual operation), temperature and moisture content of the grain. Having this information the Grain Cooler will maintain a constant temperature and relative humidity of the cooled air that is in equilibrium with the moisture content of the grain throughout the cooling process - regardless of ambient conditions.

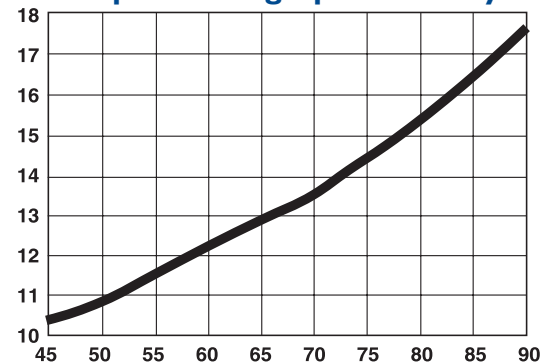
Many types of dry and wet granular products can be chilled using the Grain Cooler.



**Moisture content - Temperature - Storage capability**



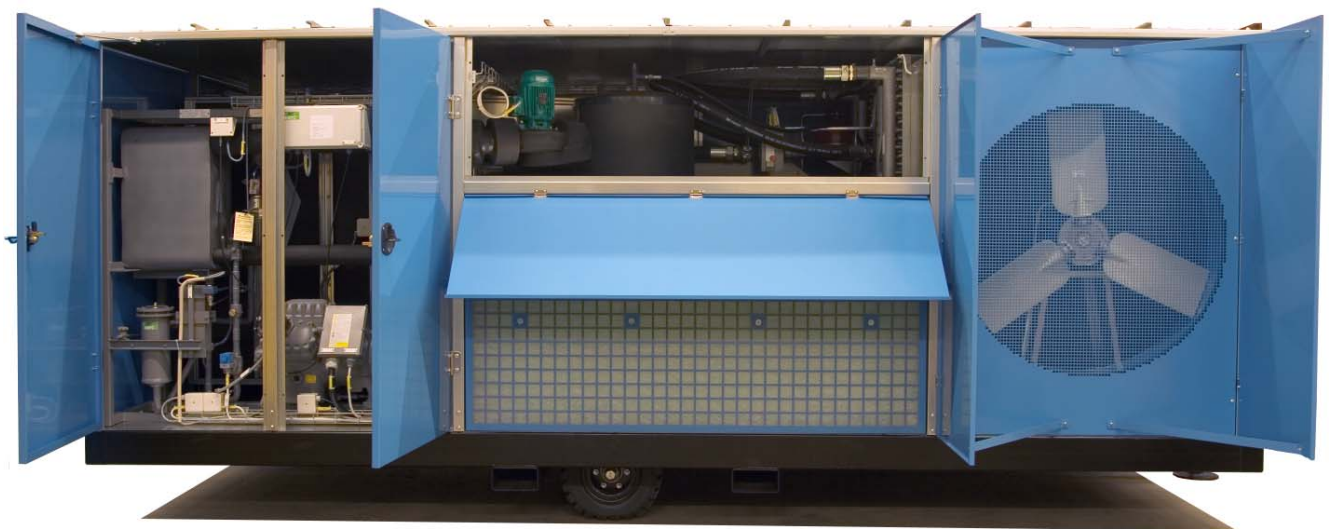
**Equilibrium graph for Paddy**



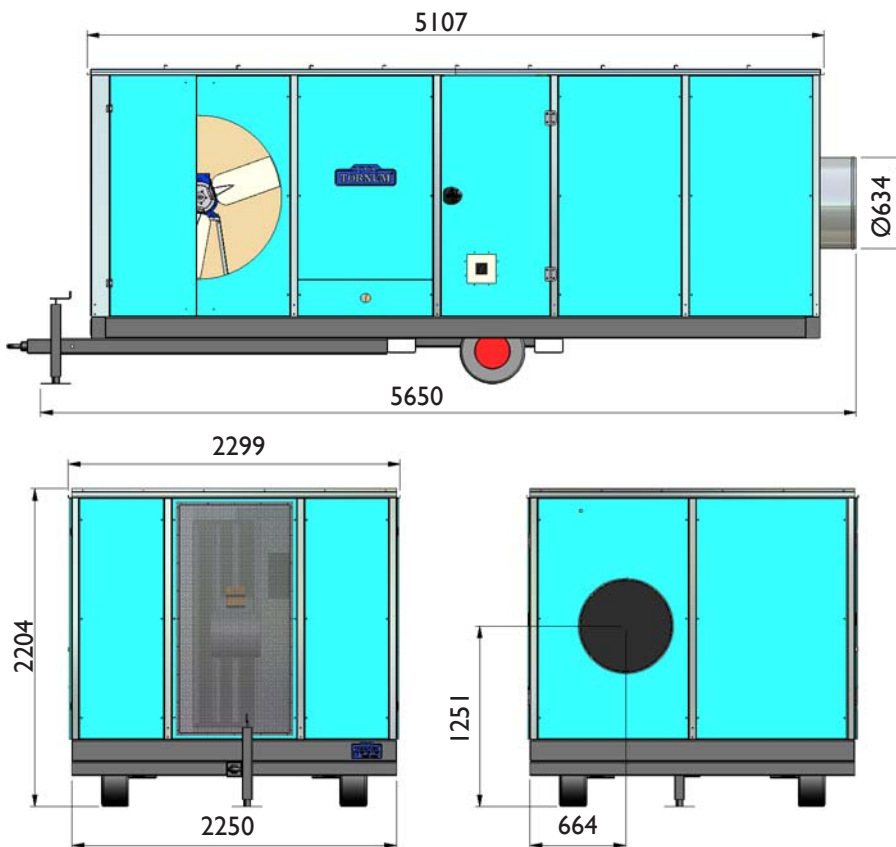
Please note that every grain has its own Equilibrium. Above example shows Paddy Rice.

# CAPACITY AND DATA

MODEL	80	100	120
<b>Cooling capacity</b> Cooling capacity is depending on several conditions. Stated capacities are valid for tropical respectively favourable ambient conditions. Contact your dealer for a computer calculation for your conditions.	120-550 ton/day  (4,800-22,300 bushels/day)	150-550 ton/day  (6,100-22,300 bushels/day)	169-550 ton/day  (6,850-22,300 bushels/day)
<b>Fan capacity at a static air resistance of:</b>  100mm WG 3.94 inches WG  200mm WG 7.87 inches WG  300mm WG 11.81 inches WG	50 Hz and 60 Hz  17,500 m <sup>3</sup> /h 10,300 cfm	50 Hz and 60 Hz  17,500 m <sup>3</sup> /h 10,300 cfm	50 Hz and 60 Hz  17,500 m <sup>3</sup> /h 10,300 cfm
Nominal compressor cooling capacity at: +30°C/86°F condensing temp 0°C/32°F evaporating temp	50 Hz 86 kW, 293,400 btu/hr	50 Hz 104 kW, 354,900 btu/hr 60Hz 102 kW, 348,000 btu/hr	50 Hz 126 kW, 430,000 btu/hr 60Hz 122 kW, 416,300 btu/hr
<b>MOTOR DATA</b>  Nominal input effect  Maximal input effekt	50 Hz and 60 Hz  60 kW  64 kW	50 Hz and 60 Hz  64 kW  68 kW	50 Hz and 60 Hz  69 kW  73 kW
<b>MINIMUM MAIN FUSE</b>  380 V	50 Hz  150 A	50 Hz  160 A	50 Hz  170 A
Maximum transportation speed	5 km/h, 3,1 mph	5 km/h, 3,1 mph	5 km/h, 3,1 mph



# DIMENSIONS



## ACCESSORIES

### Standard:

External temperatur sensor  
Flexible hose

### Optional:

Silencer

Size	Weight	
	kg	lbs
80	4200	9260
100	4500	9920
120	4800	10580

## STORAGE TEMPERATURE

Longest recommended storage period related to different moisture contents and temperatures. The data stated in the table are based on results obtained from research and experience from more than thirty years of practise using the cooling technology. Even though storage periods have been greatly exceeded in some cases, the data shown in the table are to be considered as guidelines only. The necessary re-cooling is to be determined as a result of monitoring the temperature on a regular basis. Re-cooling is to take place should the temperature increase by 3 - 5°C (5 - 9°F).

Moisture content %	Seed grain		Bread grain		Feed grain	
	Storage temp °C/°F	Maximum storage period	Storage temp °C/°F	Maximum storage period	Storage temp °C/°F	Maximum storage period
12-15	9-12°C 48-54°F	Unlimited storage	10-12°C 50-54°F	Unlimited storage	10-12°C 50-54°F	Unlimited storage
15-16	8-10°C 46-50°F	12-18 months	9-10°C 48-50°F	Unlimited storage	9-10°C 48-50°F	Unlimited storage
16-18	5-7°C 41-45°F	4-6 months	8-10°C 46-50°F	5-10 months	8-10°C 46-50°F	6-13 months
18-20	5°C 41°F	2-3 months	8-10°C 46-50°F	2-7 months	8-10°C 46-50°F	3-9 months
20-22	5°C 41°F	1 month	6-8°C 43-46°F	1-4 months	6-8°C 43-46°F	1-5 months

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