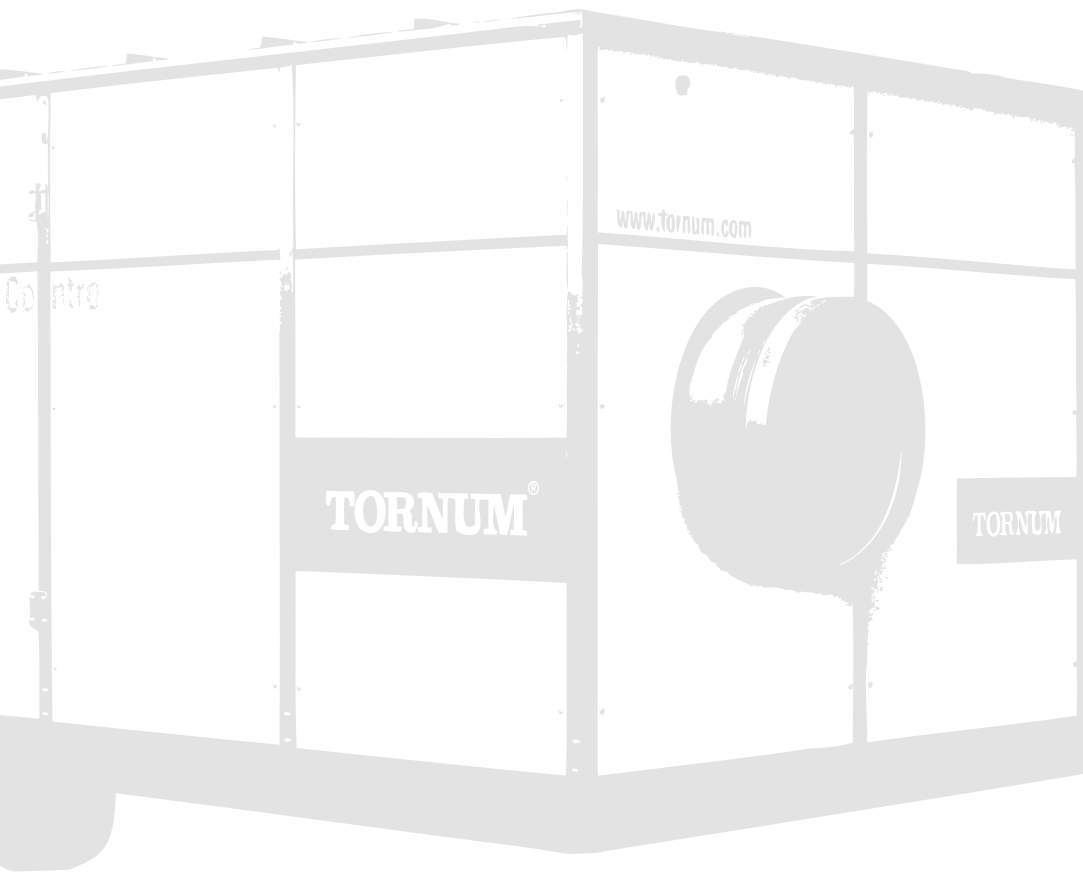


Grain Cooler



**SOLUTIONS FOR
THE WORLD'S
MOST IMPORTANT
BUSINESS**



**Optimizes grain
quality control
Eliminates the need
for insecticides
Always safe storage
conditions**



TORNUM[®]

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Tornum Grain Cooler

– ECO-FRIENDLY, ECONOMICAL AND PRACTICAL

SIMPLY STATED, GRAIN IS our food. By using a Tornum Grain Cooler, you can make sure it is treated the way it deserves. Grain is also a living material and has to be handled accordingly. A Tornum Grain Cooler accomplishes what nature cannot always provide – a safe storage temperature regardless of the ambient conditions.

Controlling the temperature in your grain storage is the natural way of preserving the grain and optimizing its quality. Our truly eco-friendly system uses 80 percent less refrigerant compared to traditional systems. Among the many advantages of using a Tornum Grain Cooler you will find:

- **ELIMINATES THE NEED FOR INSECTICIDES**
- **COOLING ADDS TO DRYING EFFECT**
– EVERY 10 °C/18 °F OF TEMPERATURE REDUCTION EQUALS UP TO 0.75 PERCENT DRYING
- **ALWAYS SAFE STORAGE CONDITIONS**
- **LOW COST OF OPERATION**



Heat – grain’s mortal enemy

AS GRAIN BREATHES, it loses both weight and value. Mould, fungi and insects can develop quickly if the grain is not stored under the correct conditions.

With a Tornum Grain Cooler you control both the temperature and the relative humidity of the cooled air, regardless of ambient conditions – eliminating the need for toxic chemicals to protect your grain from insect damage.

ECO-FRIENDLY REFRIGERATION

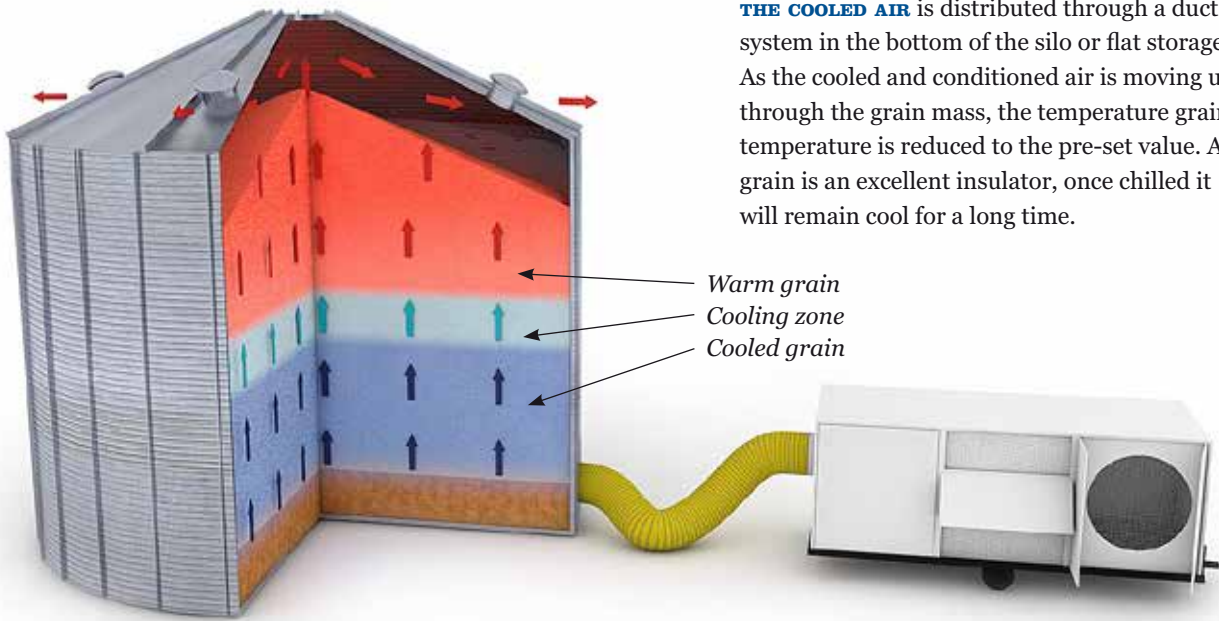
The refrigerant system used in our Grain Cooler is a state-of-the-art indirect cooling system that uses 80 percent less refrigerant compared to traditional systems. This is achieved by cooling water which is pumped through a cooling coil, which in turn cools the air flowing through.

As grain is hygroscopic, the relative humidity of the cooled air must be controlled prior to entering into the grain mass. That is why the cooled air also passes through a re-heating coil, to balance the humidity levels to the grain being chilled. This requires no added energy, since excess heat from the refrigeration system is used for this process.

The cooling process is fully automatic and controlled through a PLC system which is programmed to handle 11 different types of grain, including manual settings.

Cooling in a silo

THE COOLED AIR is distributed through a duct system in the bottom of the silo or flat storage. As the cooled and conditioned air is moving up through the grain mass, the temperature grain temperature is reduced to the pre-set value. As grain is an excellent insulator, once chilled it will remain cool for a long time.



Warm grain
Cooling zone
Cooled grain



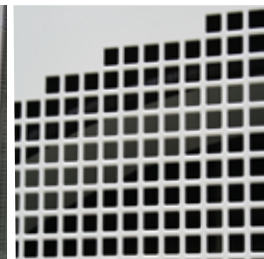
Air intake for the two condensing coils.

Adjustable draw bar with parking support.

Intake filter with foldable rain hood.

Well protected condensing fans.

Ø 630 mm air outlet.



Cooling compressor with automatic capacity regulation and heat exchanger. Refrigerant: 14–16 kg R407C depending on the size of the cooler. An additional electric re-heating coil is standard equipment.



Complete electrical cabinet with user-friendly Mitsubishi PLC system, programmed to handle 11 different types of grain, including manual operation.



Kanalsystem™

THE ORIGINAL DUAL FUNCTION AERATION AND UNLOADING SYSTEM – A PERFECT COMPANION

CONTROLLING THE TEMPERATURE in stored grain is of utmost importance. To achieve this, in addition to your grain cooler, you need a well-designed, high quality aeration system. Efficient high capacity unloading is yet another big issue when storing grain in any type of

grain storage. The patented Tornum Kanalsystem™ solution comes with a unique dual function – high quality aeration and high unloading capacity, using air only, with no moving parts!



Technical data

MODEL	80	100	120
Cooling capacity Cooling capacity depends on several conditions. Capacities stated are valid for tropical and favourable ambient conditions respectively, and are to be seen as guidelines only. For capacity figures based on actual conditions, please contact your Tornum representative.	120,000-550,000 kg/day 4,800-22,300 bushels/day	150,000-550,000 kg/day 6,100-22,300 bushels/day	169,000-550,000 kg/day 6,850-22,300 bushels/day
Fan capacity at a static air resistance of: 100 mm (3.9 inches) WG 200 mm (7.8 inches) WG 300 mm (11.8 inches) WG	50 Hz 17,500 m ³ /h 10,300 cfm 16,250 m ³ /h 9,560 cfm 15,000 m ³ /h 8,830 cfm	50/60 Hz 20,000 m ³ /h 11,770 cfm 19,500 m ³ /h 14,480 cfm 18,200 m ³ /h 10,710 cfm	50/60 Hz 20,000 m ³ /h 11,770 cfm 19,500 m ³ /h 14,480 cfm 18,200 m ³ /h 10,710 cfm
Nominal compressor cooling capacity at +30 °C/86 °F condensing temperature, 0° C/32 °F evaporating temperature	50 Hz, 86 kW 293,400 btu/h	50 Hz, 104 kW 354,900 btu/h 60 HZ, 102 kW 348,000 btu/h	50 Hz, 126 kW 430,000 btu/h 60 HZ, 122 kW 416,300 btu/h
Power Nominal input power Maximum input power Minimum main fuse, 400 V	50 Hz, 56 kW 50 Hz, 60 kW 50 Hz, 125 A	50/60 Hz, 61 kW 50/60 Hz, 74 kW 50 Hz, 145 A	50/60 Hz, 67 kW 50/60 Hz, 81 kW 50 Hz, 160 A
Weight (kg/lbs)	4,200/9,260	4,600/10,140	4,900/10,800
Maximum transportation speed (km/h / mph)	5/3	5/3	5/3

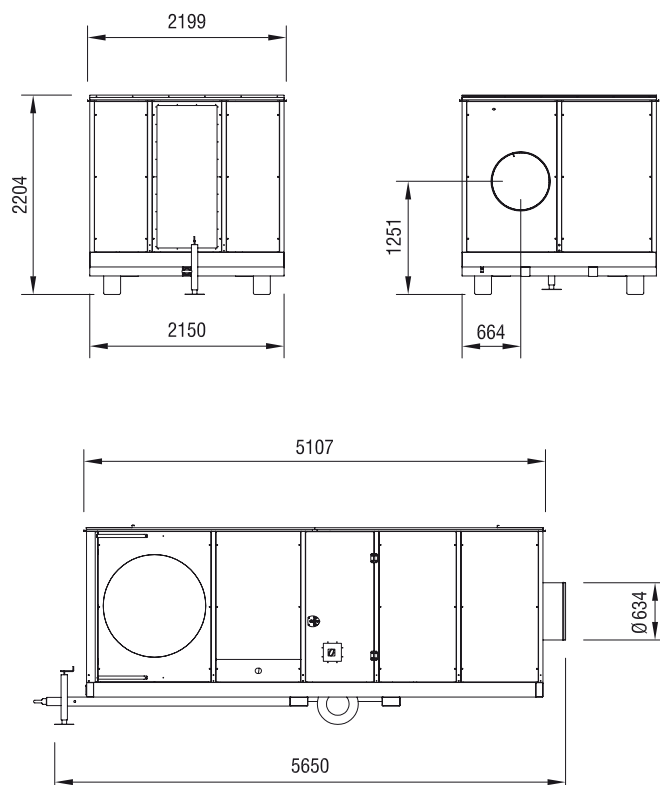
A compact, mobile solution

TORNUM GRAIN COOLERS are fully computerized and ready for immediate use once connected to the main power supply. They are fully mobile and come with an external temperature sensor and a 5 metre flexible hose for connection to the silo or flat storage.

As an option, the cooler can be equipped for operation through a centralised computer system. Depending on the temperature cables used, automatic start and stop of the cooler according to set temperature levels is possible.

The Tornum Grain Cooler is designed to be shipped in a 20 ft standard container.

Dimensions in millimetres.



Your Global Partner



YOUR TORNUM REPRESENTATIVE:

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