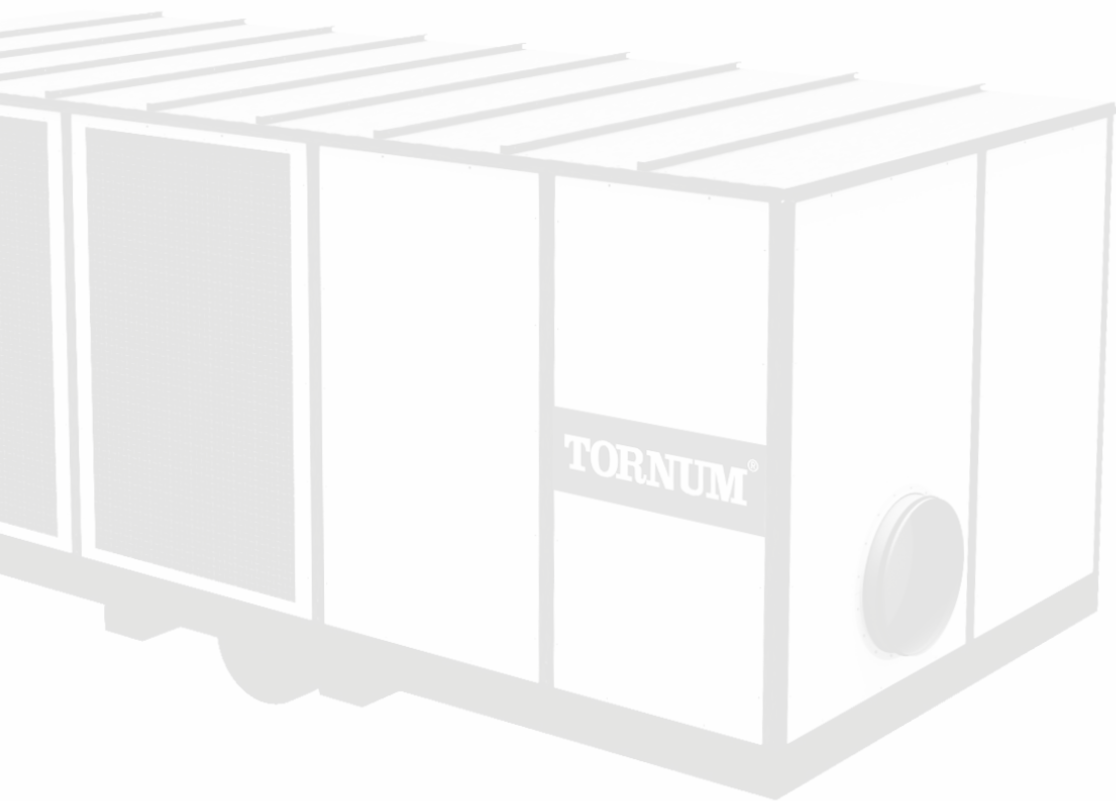
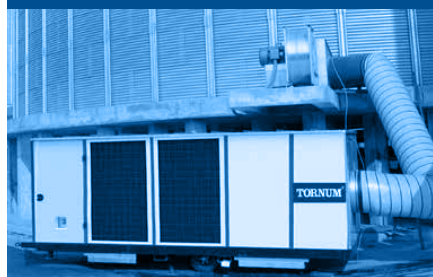


Tropical Grain Cooler TGC-H

Technical Information



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



**Optimizes grain
quality control**

**Always safe storage
conditions**

**Built for hot and
humid environments**



TORNUM[®]

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Tornum Grain Cooler TGC-H

– OPTIMIZING QUALITY CONTROL

The Tornum TGC-H tropical grain cooler has been developed with the latest technology, cooling stored grain to safe temperatures while maintaining quality and minimizing insect infestation. It is specially designed for challenging – hot and humid – ambient conditions.

The TGC-H offers optimum cooling efficiency for all grain types and levels of moisture content. The key is to control not only the temperature, but also the relative humidity of the air cooling the grain.

The machine's cooling system is based on an eco-friendly refrigerant, of which only a minimal amount is required, ensuring the lowest possible environmental impact.

The TGC-H can be monitored and controlled either locally or online as standard, with an informative, easy-to-comprehend web interface.



COOLER FUNCTIONS:

BENEFITS:

- Optimum properties in the cooled air
- Visual information on what is happening in the machine and in the grain storage
- User guidance
- Statistics for 5 months cooling and graphics showing the past 48 hours
- Management of the cooling recipes
- Information and alarm management via e-mail
- Computer-monitored cooling process
- Remote online connection
- Selectable user authorization levels
- Maximum capacity for different ambient conditions
- Automatically adjusts to ambient conditions

- Highest possible cooling capacity for any type of grain
- Provides status information on the cooling process – peace of mind for the operator
- Makes it possible to use all the machine's functions cost-effectively
- Provides information on recent status – peace of mind for the operator
- Simplicity for the user when changing grain type and safe, error-free setting; ability to cool any grain type
- Operator is informed of status and any required action without needing to be near the machine
- Full information on operation, faults and maintenance requirements
- Operator can monitor the cooling process remotely
- Governs which of the machine's settings the operator and administrator can access and adjust
- Can be used in any season, any climate
- Adapts cooling air properties to varying ambient conditions

TGC-H sizes and versions

- 925100 TGC-H Standard size 1: 400 V, 50Hz
- 925101 TGC-H Standard size 1: 460 V, 60Hz
- 925102 TGC-H Standard size 2: 400 V, 50Hz
- 925103 TGC-H Standard size 2: 460 V, 60Hz
- 925104 TGC-H Standard size 3: 400 V, 50Hz
- 925105 TGC-H Standard size 3: 460 V, 60Hz

Accessories

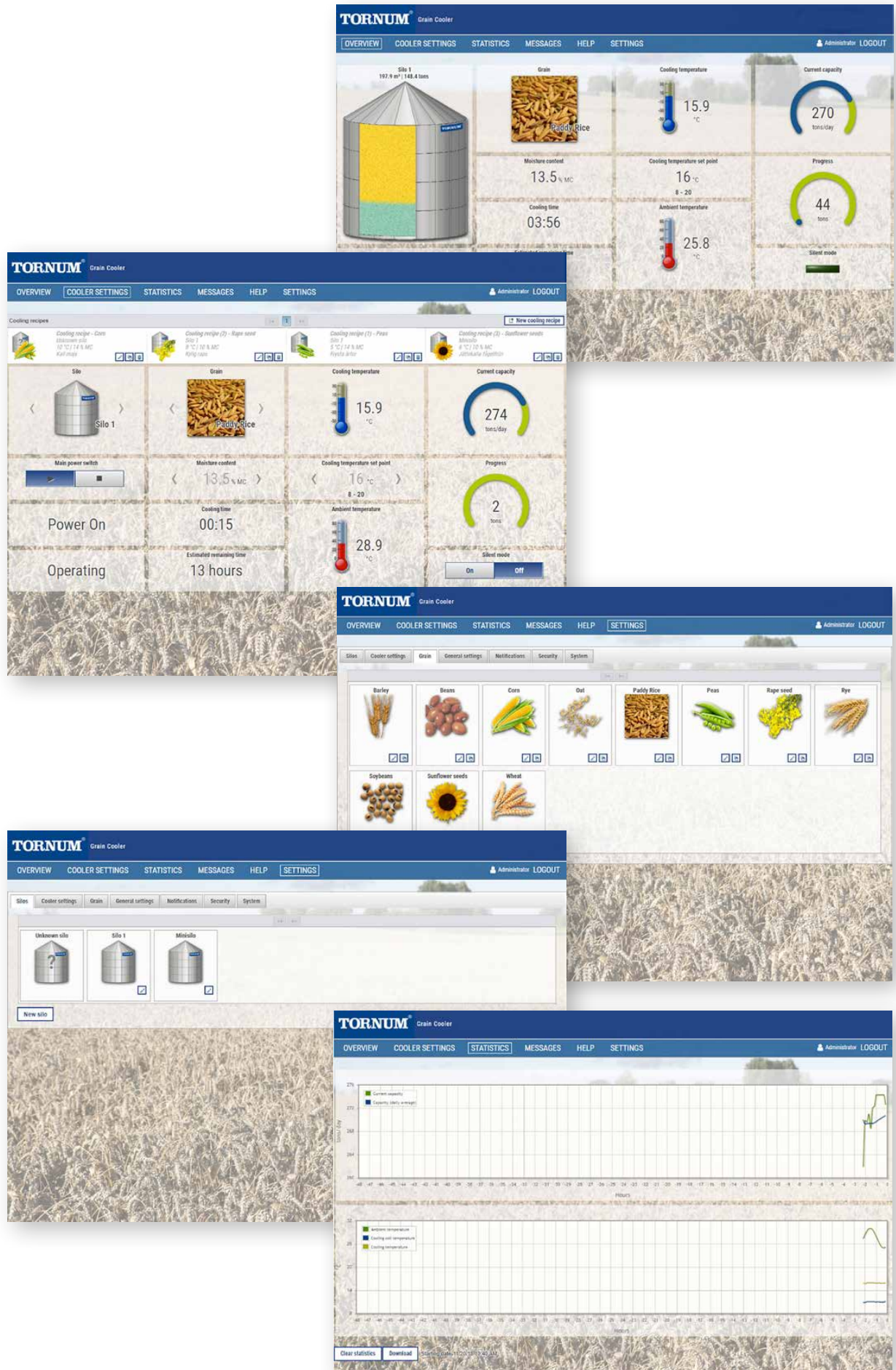
- Silencer
- Booster fan for large pressure drops (silos > 40 m)
- Surge suppression equipment

Turnkey delivery

We deliver a fully wired and tested machine – all you need on site is a power connection and air duct connection. An internet connection is required for remote control and support.



Touch control panel for easy overview



Requirements for using the TGC-H

TYPE AND SIZE OF STORAGE SPACE

Any type of storage space with a suitable aeration duct system.

POWER REQUIREMENTS

A stable, consistent power supply (nominal voltage \pm max. 10%). Please note: on-site power connection is not included.

- Size 1: 400V 50Hz 200 A, or 440V 60Hz
- Size 2: 400V 50Hz 250 A, or 440V 60Hz
- Size 3: 400V 50Hz 250 A, or 440V 60Hz

INTERNET ACCESS

The cooler location must have a good mobile connection to the internet, alternatively via Ethernet cable and TCP. No apps are needed, just a standard web browser such as Chrome or Firefox. Internet Explorer does not work well and is not recommended.

INPUT SIGNALS

- External transmitter for air temperature from the machine (included in delivery)
- External signal for stopping the machine (if this function is selected)
- External signal from temperature monitoring system in grain storage (optional)

OUTPUT SIGNALS

- Alarm signal, NC or NO (max. load 30 V, 100 mA)



TGC-H Grain Cooler delivery package:

- Mobile unit for easy connection to the grain storage
- Flexible air hose (5 m) connecting the machine to the grain storage
- A state-of-the-art cooling system with heat exchangers between the cooling system and the surrounding air, producing cooled air with a relative humidity in equilibrium with the product being cooled (adapted to the cooled product and its moisture content)
- A PC-based control system that assures the right temperature and relative humidity regardless of ambient conditions
- A powerful frequency-controlled axial fan which steers heat energy away from the process
- A high pressure frequency-controlled centrifugal fan steers the right amount of cooled air from the machine into the product being cooled
- A built-in touch screen terminal for setting the required temperature and operating parameters, including information about operating status (all this can also be done on-line)

OPTIONAL EXTERNAL CONTROL INTERFACES – NOT INCLUDED:

- PC connection to the internet using Ethernet or WiFi
- PAD connected to the internet via WiFi
- Mobile smartphone connected via the internet or WiFi

TGC-H internet communication

An internet connection and on-line communication for the TGC-H are completely different things: Firstly, customer connection of the TGC-H Cooler to the internet, and secondly, TGC-H communication on-line over the internet.

BENEFITS OF INTERNET CONNECTION AND ON-LINE COMMUNICATION:

- Software support
- Software updates and fault corrections
- Ability to send e-mails and to control and monitor the TGC-H remotely

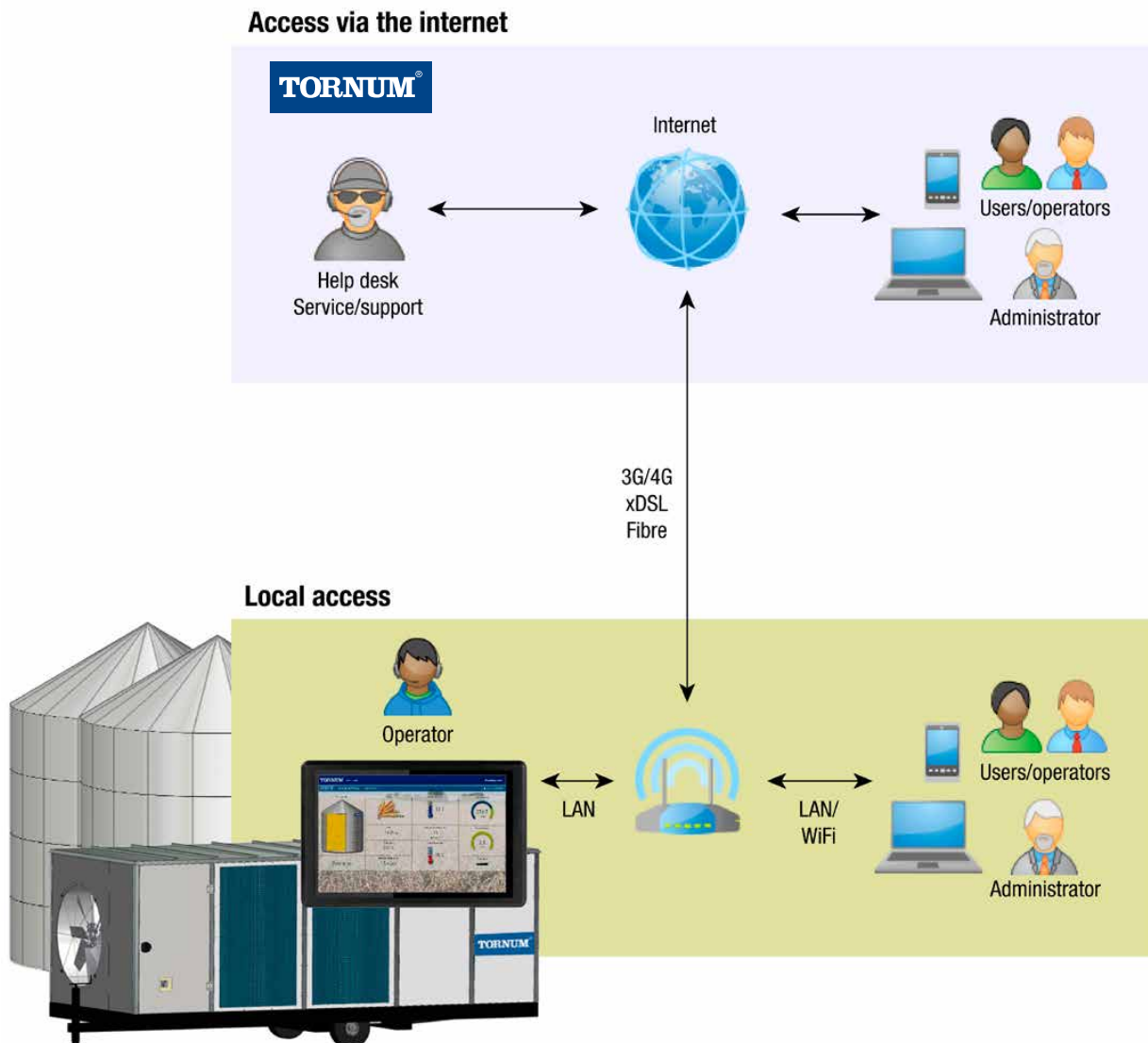
Maintaining online communication and supplying internet service providers with data for maintaining domain names and addresses involves a lot of work,

which is why we must charge an annual fee for these services. Failing to pay these fees means that on-line communication cannot be maintained. The machine will still function locally with direct connection to the TGC-H and via the terminal, but the benefits outlined above will be lost.

Your cost for the internet connection is beyond Tornum's control and will be determined by your local service provider.

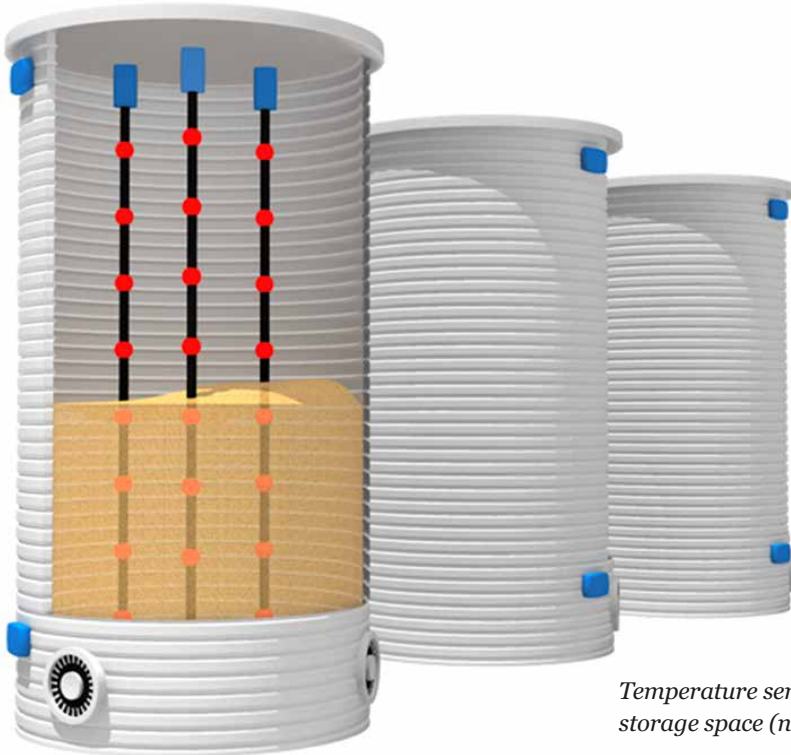
YOUR OPTIONS – ORDER NUMBERS:

- 1 year software support/updates (700300)
- 2 years software support/updates (700320)
- 5 years software support/updates (700350)
- No software support/updates (700360)



TGC-H optional extra functions

The following functions require an internet connection and connectivity for Tornum:



Temperature sensing cables installed in the grain storage space (not included in delivery).

TEMPERATURE MEASURING IN THE GRAIN STORAGE

The machine displays the cooling progress in the storage space using installed temperature cables (see image above), including estimated remaining cooling time. *Please note: temperature sensing cables must be provided and installed by the customer.*

LOG BOOK

In the log book, the operator or administrator can enter comments on the cooling process. These comments are displayed and saved. This is a useful function when several different operators use the machine. The log book enables the operator to check comments made earlier in the cooling process, such as the product's origin, where it was stored and cooled after drying.

AUTOMATIC LOG BOOK

This function automatically saves and displays all events when changing grain type or moisture content and temperature settings as well as start and stop times. This data is shown in the log book under the Statistics tab. The latest changes are also displayed on the terminal.

AUTOMATIC STATISTICS

This function automatically creates and sends an e-mail with collected data in an Excel file at regular intervals. This way, the administrator does not need to remember to save the information manually before it becomes outdated or gets deleted. These statistics can be useful for later analysis of the cooling season.

TORNUM Grain Cooler

OVERVIEW COOLER SETTINGS **LOGBOOK** STATISTICS MESSAGES HELP SETTINGS

Date	Silo	Grain	% MC	Temperature	Comment
1/15/19 6:57 PM	Silo 1	Paddy Rice	14% MC	8 °C	Cooling process ended
1/15/19 3:57 PM	Silo 1	Paddy Rice	14% MC	8 °C	Cooling temperature set point: 9.0 -> 8.0 °C
1/15/19 3:39 PM	Silo 1	Paddy Rice	14% MC	9 °C	Cooling process started
1/11/19 4:35 PM	Minisilo	Paddy Rice	14% MC	9 °C	Cooling process ended
1/11/19 3:21 PM	Minisilo	Paddy Rice	14% MC	9 °C	Cooling process started
1/10/19 3:13 PM	Minisilo	Paddy Rice	14% MC	9 °C	Cooling process ended
1/10/19 2:05 PM	Minisilo	Paddy Rice	14% MC	9 °C	Cooling process started
1/9/19 2:25 PM	Minisilo	Peas	14% MC	8 °C	Silent mode disabled
1/9/19 2:25 PM	Minisilo	Peas	14% MC	8 °C	Silent mode enabled
1/9/19 1:46 PM	Minisilo	Peas	14% MC	8 °C	Lunchrast
1/9/19 1:35 PM	Minisilo	Peas	14% MC	8 °C	Waiting for Godot... and waiting
1/9/19 1:34 PM	Minisilo	Peas	14% MC	8 °C	Prepared for cooling peas
1/9/19 1:33 PM	Unknown silo	Paddy Rice	14% MC	17 °C	Written on a different device
1/9/19 12:36 PM	Silo 1	Rape seed	10% MC	8 °C	Moisture content 14.0->10.0 % MC
1/9/19 12:36 PM	Silo 1	Rape seed	10% MC	8 °C	Cooling temperature set point 10.0->8.0 °C

📄 New logbook entry

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YOUR TORNUM REPRESENTATIVE:

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