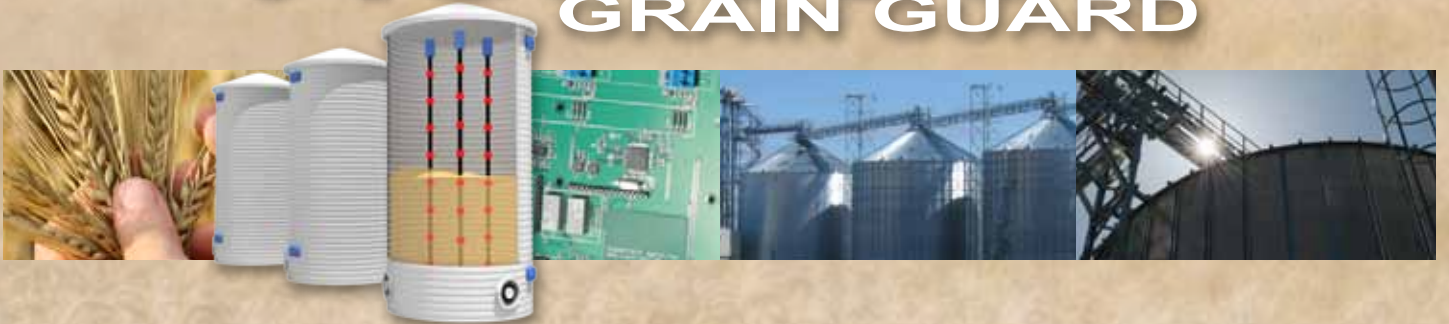


AGROLOG

GRAIN GUARD



TEMPERATURE MONITORING SYSTEMS

**GRAIN QUALITY MANAGEMENT
FOR GRAIN SILOS AND BULK STORAGE**



Super Tech
Agro line

www.SupertechAgroline.com

GRAIN GUARD

Grain is the most important source of human food and animal feed. The growth of the world population, growth in meat consumption and increase in production of bio-fuel will in the future lead to a shortage of grain and price increases. Maintaining high grain quality and reducing post-harvest spoilage of grain are therefore of great importance.

Grain Quality Management is a way to maintain high grain quality and prevent spoilage, loss of value. As cool storage extends grain storage life, it is essential to measure and monitor the grain temperature. In addition cool storage also reduces germination loss, improves baking quality and protects against infestation.

We are pleased to introduce our Temperature Monitoring Systems and we will show, in this brochure, how these systems add value to stored crops.

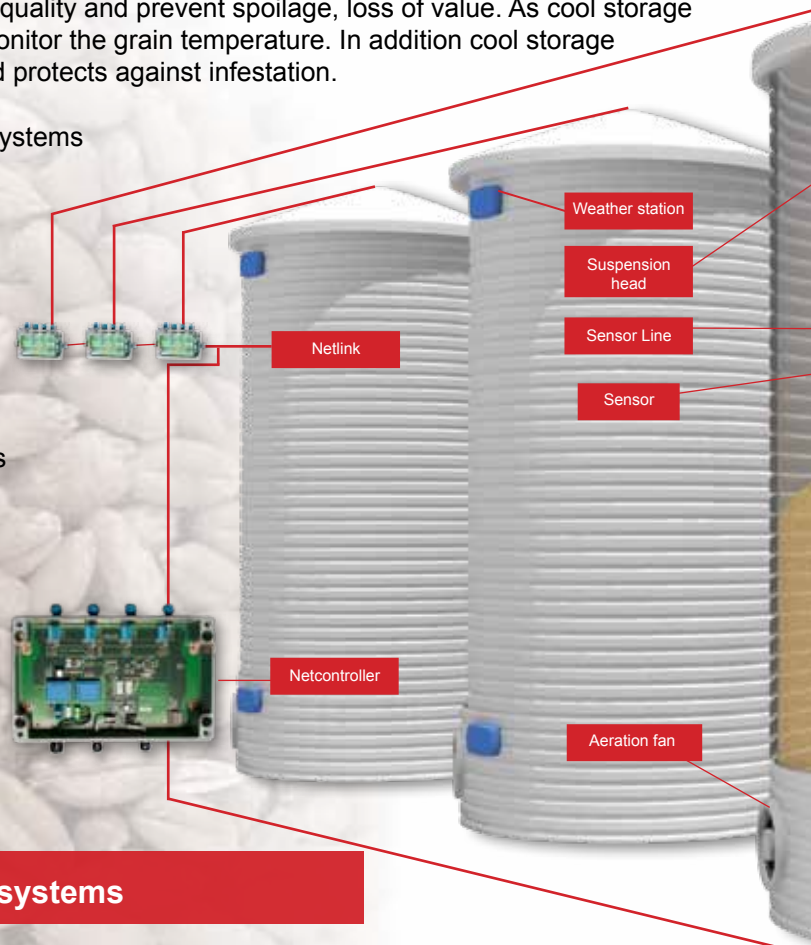
Supertech Agroline offers two types of temperature measuring and monitoring systems:

- The TMS5000 PC monitoring system
- The TMS2500 portable hand terminal system

Both systems consists of:

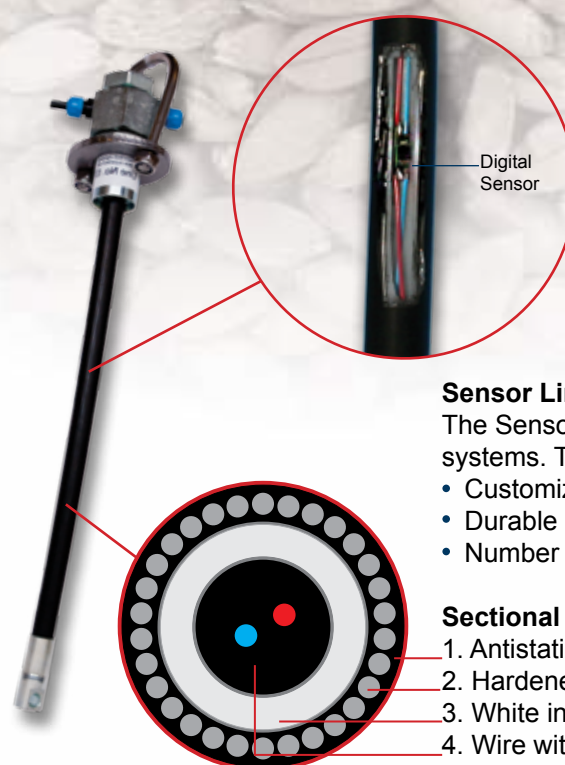
- Sensor Lines or Sensor Probes with temperature sensors
- A temperature read-out device
- A communication system

The two systems are compatible with each other so the user can start with the TMS2500 Hand Terminal-based system and later upgrade to a fully automated TMS5000 PC-based system.

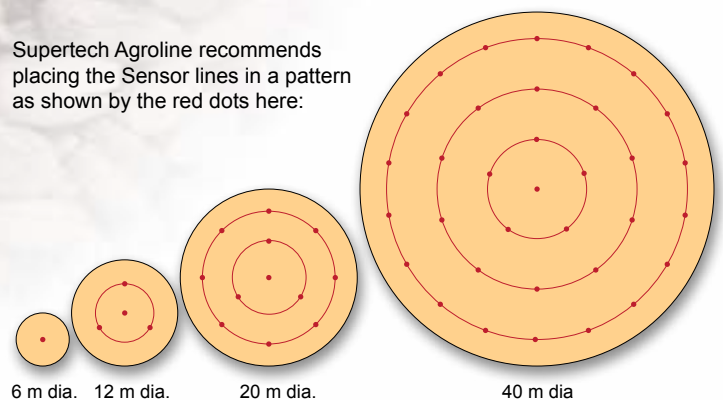


SENSOR LINES available with both systems

All Temperature Monitoring Systems are customized to fulfill the requirements of the specific plant. A well placed grid of sensors, placed in the silo, along with frequent logging and tracking are the most important elements of a complete monitoring program. This will enable the user to notice small changes in the temperature and take action before spoilage occurs.



Supertech Agroline recommends placing the Sensor lines in a pattern as shown by the red dots here:



Sensor Lines

The Sensor Lines are key elements of both the TMS2500 and the TMS5000 systems. The key functions/benefits are:

- Customized Sensor Lines from 1 to 60 meters in length.
- Durable antistatic construction for high loads and certified for ATEX Zone 20/21/22.
- Number of sensors on request, standard distance is every 2 or 3 meters.

Sectional drawing of Sensor Line:

1. Antistatic outer sheath
2. Hardened steel wires
3. White inner tube
4. Wire with digital sensors

TMS2500

Agrolog TMS2500 is a professional portable hand terminal-based Temperature Monitoring System. With this system it is possible to connect all the temperature sensors into a digital network with a single point of access.

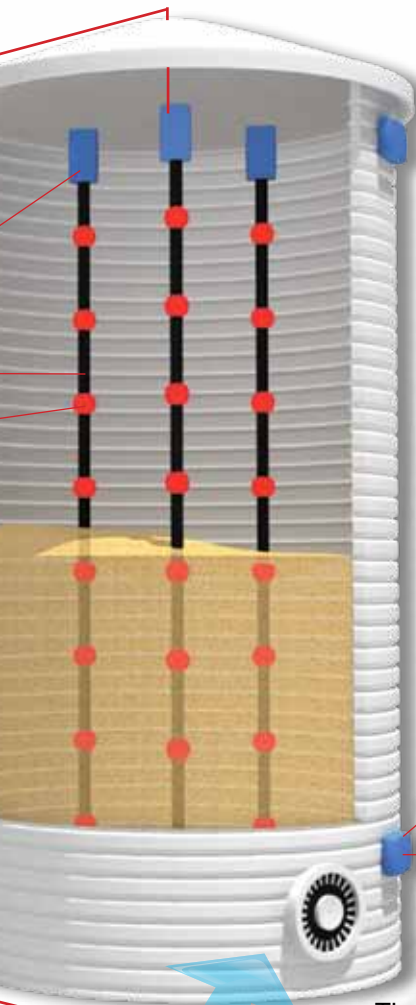
The portable Agrolog TMS2500 hand terminal is a compact unit with a memory function and USB PC-interface.

Simply connect the hand terminal to the connection point and start measuring and logging.

All temperatures from each silo and each sensor will be stored in the system's memory and can be seen in the portable hand terminal display.

Alternatively the data can be transferred into the Agrolog PC2500 software. Here temperature diagrams and tables are generated to enable temperature trends to be analysed over time.

AGROLOG TEMPERATURE MONITORING SYSTEM



Connecting point
to TMS2500

Safety Barrier



TMS5000

The Agrolog TMS5000 is a professional, fully automated Temperature Monitoring System with all the temperature sensors connected into a digital network and connected to a PC using the Agrolog PC5000 Grain Guard Software or another similar management system like SCADA or PLC. Not only can this system effectively measure and monitor the temperature of crops in grain silos, it also reacts to temperature changes by activating fans to keep the crop climate at the optimum level. The Agrolog TMS5000 is made up of a series of Sensor Lines and temperature sensors, in each storage unit, connected into a digital network with a single point of access and linked to a PC using the Agrolog PC5000 Grain Guard Software. Also wireless data transfer and internet access is possible. This system offers a number of features to ensure the high safety of crops whilst in storage.

AERATION CONTROL

Connecting to
PC-software
TMS5000

Plant Layout

Plant layout uses colour alarms to indicate actual temperature and temperature trend. Click on each silo to see the Matrix view for all sensor temperatures and temperature trends.

Alarms

Set Points for absolute temperature alarm and trend temperature alarm can be adjusted for single silos or groups of silos. Local and external alarms can be enabled.

Grain Level

To optimize control of the aeration and avoid false alarms, signals from temperature sensors above the grain level can be disabled.

Aeration Control

Automatic Aeration Control for activating or deactivating the fans. It uses parameter settings such as outdoor air humidity, outdoor air temperature, target temperature for the grain in the silo, time span etc.

Detailed Historical information

Statistics of all the temperature, all alarms. All data can be displayed as tables or curves for a silo, a sensor line or even a single sensor.



STORAGE QUALITY AND SAFETY

Grain is warm post-harvest. It is a good insulator and loses its heat very slowly. This warm temperature is ideal for insect breeding and biological activity which can damage the crop. Regular and corrective temperature monitoring of the grain is therefore very important

Why:

- Maintain high grain quality
- Minimize risk by storing
- Avoid loss of value
- Maximize benefit

How:

- Dry and cool the grain immediately
- Monitor the temperature regularly
- Use a permanent grid of sensors
- Keep permanent records

Risk Management

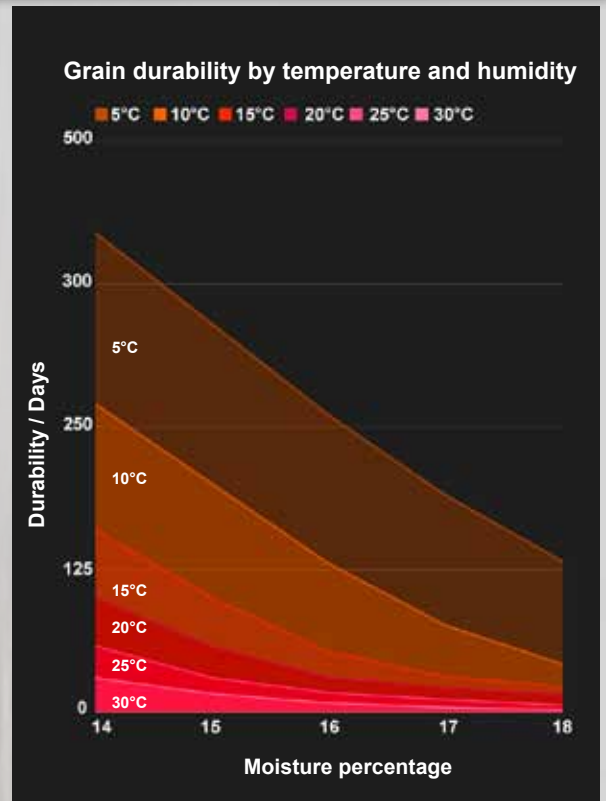
Grain is the most important source to food and animal feed. Grain is a living breathing crop that needs the same care and attention as it received in the field. To maintain a high quality of the grain prepare the storage to protect the grain from contamination. Dry and cool the grain and monitor the temperature regularly. Look for insects and mites as the temperature in the grain increases.

Fire and Explosion Management

Fires and explosions can occur in silos and bulk storages due to self-heating or ignition of combustible dust.

The Agrolog Temperature Monitoring Systems are examined and approved by TÜV for use in Potentially Explosive atmospheres.

To achieve the ATEX certification it is necessary to be ISO9001 certified. Our ATEX- and ISO9001 certification guarantees the safety of our products.



HIGH TECH QUALITY



Supertech Agroline specialises and sells high quality post-harvest equipment world-wide. We have our customers and their requirements in focus. This together with our unique specialized knowledge, gained through many years of hands-on experience gives an unmatched competitive advantage and a unique and reliable product range.

Our approvals for ISO9001 and ATEX are integrated parts of our in house Quality Management System.

A personal, quick and comprehensive service is central to our Company's vision. Rapid and professional service and assistance is available at all times, and in every stage of the process, whenever needed.



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We reserve the right to technical changes.