

Temperature monitoring systems for solid bulk storages

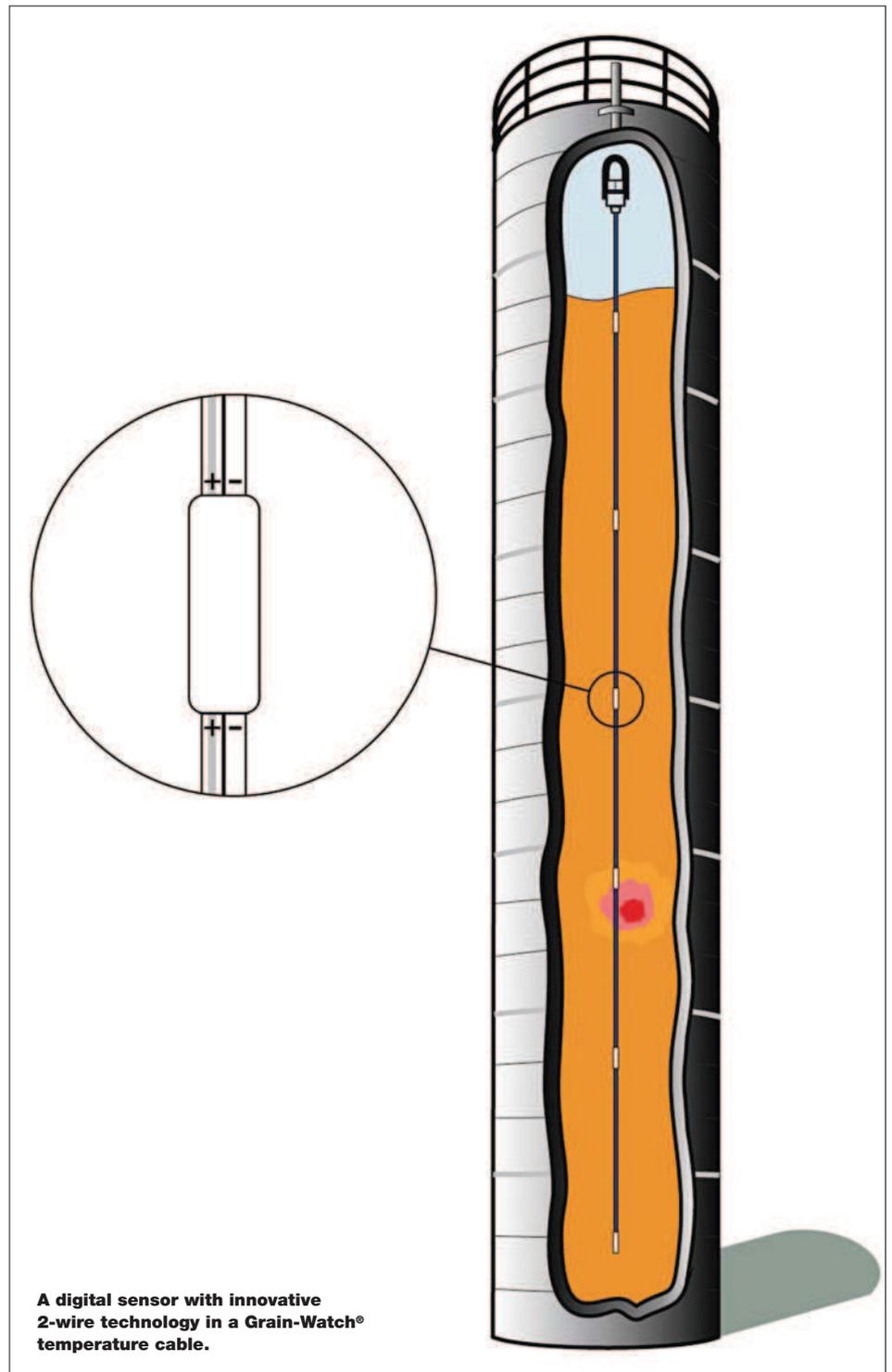
- **Digital – simple construction**
- **Modular – easily expandable**
- **Intrinsically safe – just in case...**

AB LIROS ELECTRONIC with its headquarters in Malmö, Sweden, is a manufacturer of electrical systems for industry and agriculture with over 45 years of experience.

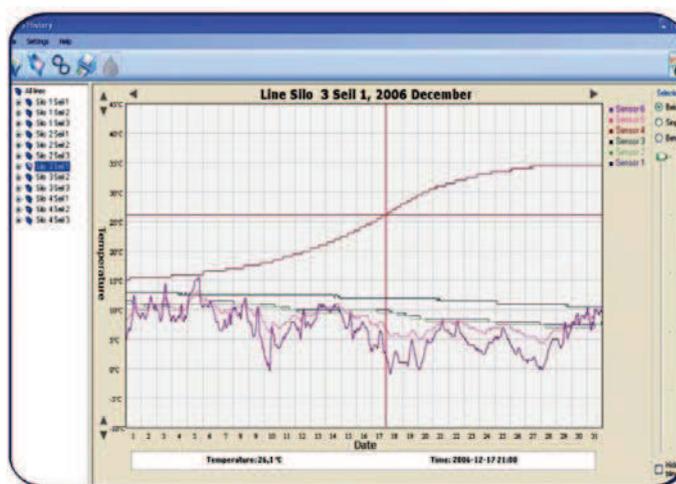
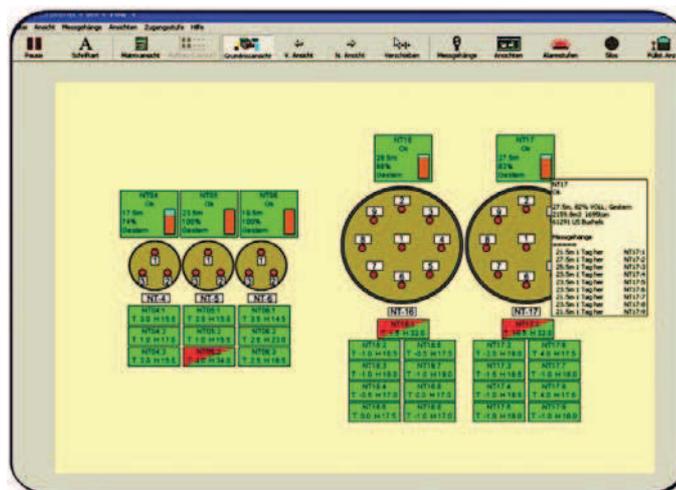
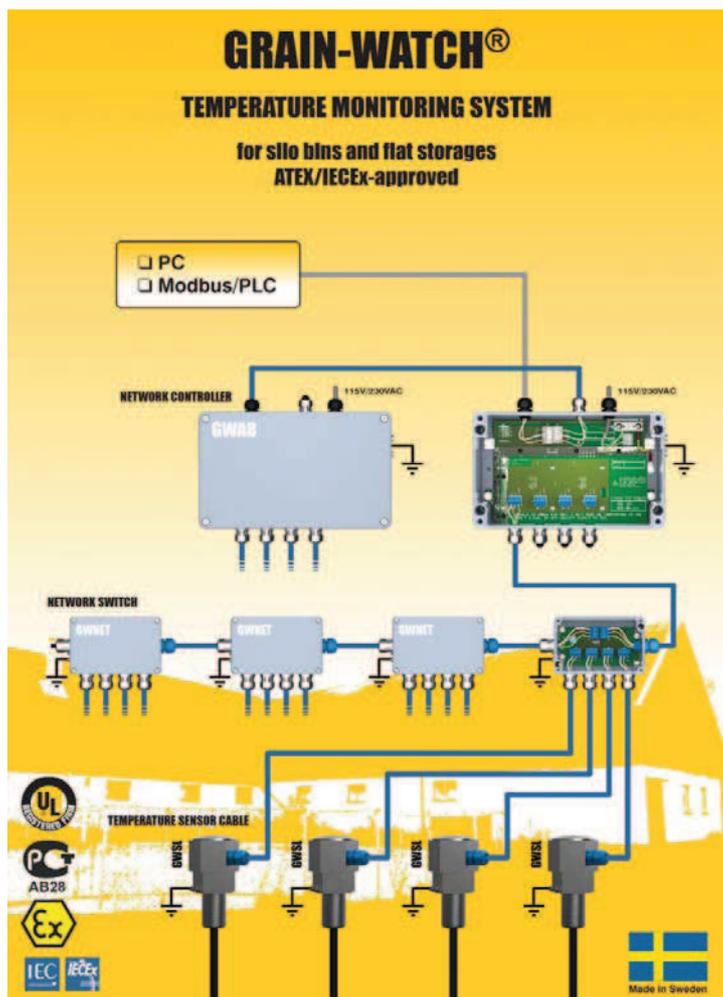
One of AB LIROS ELECTRONIC's main product lines with focus on the agricultural sector is the digital Grain-Watch® system. For over 20 years, the Grain-Watch® system has been used to monitor temperatures in grain silos and storages worldwide. With the ever-growing demand for greater and safer storage capacity and sustainable energy, the Grain-Watch® system has found new uses in the feed and biomass industry as well, for example in feed mills and biomass pellet storages. From small-scale farmers using a hand-held monitoring solution to massive feed mills and grain storages with computerized monitoring – more and more producers and bulk handlers are discovering the advantages of the fully digital Grain-Watch® system.

Digital

The Grain-Watch® Temperature Monitoring System from LIROS is fully digital from the onset. Using a digital RS-bus from the very beginning facilitates installation and saves components such as signal amplifiers and analogue to digital signal converters, and eliminates costs for maintenance and calibration. There is no sensor drift. Both the Grain-Watch® temperature cables and spears use high-grade digital sensors integrated in an innovative 2-wire technology. Standard sensor spacing is 2m or 3m. This not only makes installation easier, it also allows for the steel conduit temperature cables to be incredibly thin. Temperature cables up to 35m length have an outer cable diameter of only 9,8mm, significantly reducing downward drag on the roof during filling and emptying. And



A digital sensor with innovative 2-wire technology in a Grain-Watch® temperature cable.



since the Grain-Watch® temperature cables and spears do not need to be programmed with an individual ID, they are fully interchangeable.

Modular

From small grain silo plants to big storages, the Grain-Watch® system is always modular. Since all spears and temperature cables use the same innovative technology, an existing Grain-Watch® system is easily upgradeable from hand-held to customized computer monitoring and expandable to include more storage bins. When an enterprise grows, the Grain-Watch® system simply grows along with it. All that is needed to connect the components is a shielded 2- wire or 3-wire cable.

In a computer monitored system, up to 4 temperature cables or spears are connected to a Network Switch type GWNET11 via a shielded 2-wire. The Network Switch addresses the individual temperature cables or spears. 4 Network Switches can be daisy-chained with a shielded 3-wire before being connected to the Network Controller type GWAB11. The Network Controller type GWAB11 has 4 terminals for up to 4 daisy chained Network Switches each (=64 temperature cables or spears) and acts as the digital

hub in the Grain-Watch® system. The GWAB11 receives the monitoring commands from the PC and relays the temperature values back to the PC at high speeds. The GWAB11 is also the only Grain-Watch® component requiring mains power in the hazardous zones. The Grain-Watch® PC-Software is always customer specific and features around-the-clock, real-time monitoring, adjustable warning- and alarm levels for individual temperature cables, storage bins or groups of storage bins. The temperatures are automatically stored in a log file and can be printed out in table form or viewed and printed out in highly detailed temperature graphs.

Intrinsically safe

ATEX-safety is standard for us. The Grain-Watch® System is intrinsically safe – just in case. Accidents can happen, but the unspeakable may not. To ensure operational safety in hazardous environments, the Network Controller type GWAB11 is an associated apparatus to intrinsically safe circuits and limits currents flowing to the Network Switches and temperature cables.

System safety is becoming an increasingly relevant issue worldwide. To meet with the strict demands of both

Above left: A schematic view of the Grain-Watch® system. From top to bottom: Network Controller type GWAB11, Network Switch type GWNET11, temperature cables type GWSL1100.

Top: The Grain-Watch® PC-Software: customer specific, real-time temperature monitoring around the clock.

Above: A highly detailed monthly temperature graph (TMS History function).

domestic and international customers and exporters, the Grain-Watch® system is ATEX-, IECEx-, and GOST-R approved.

News

LIROS is putting finishing touches to a new generation of temperature spears, the GWTL-R. Made from powerful composites, the GWTL-R is adequately rigid, yet flexible enough to be rolled up and stowed away instantly. The small diameter (8mm) and high-end, low-friction PTFE(Teflon) finish allow it to penetrate many meters of stored commodity with ease. The ergonomically shaped handle will house connectors for daisy-chaining and monitoring, with a variety of monitoring options available.

The GWTL-R uses the same innovative 2-wire technology with digital sensors, so it will be compatible with all other Grain-Watch® equipment. GWTL-R will be available in lengths up to 12m.