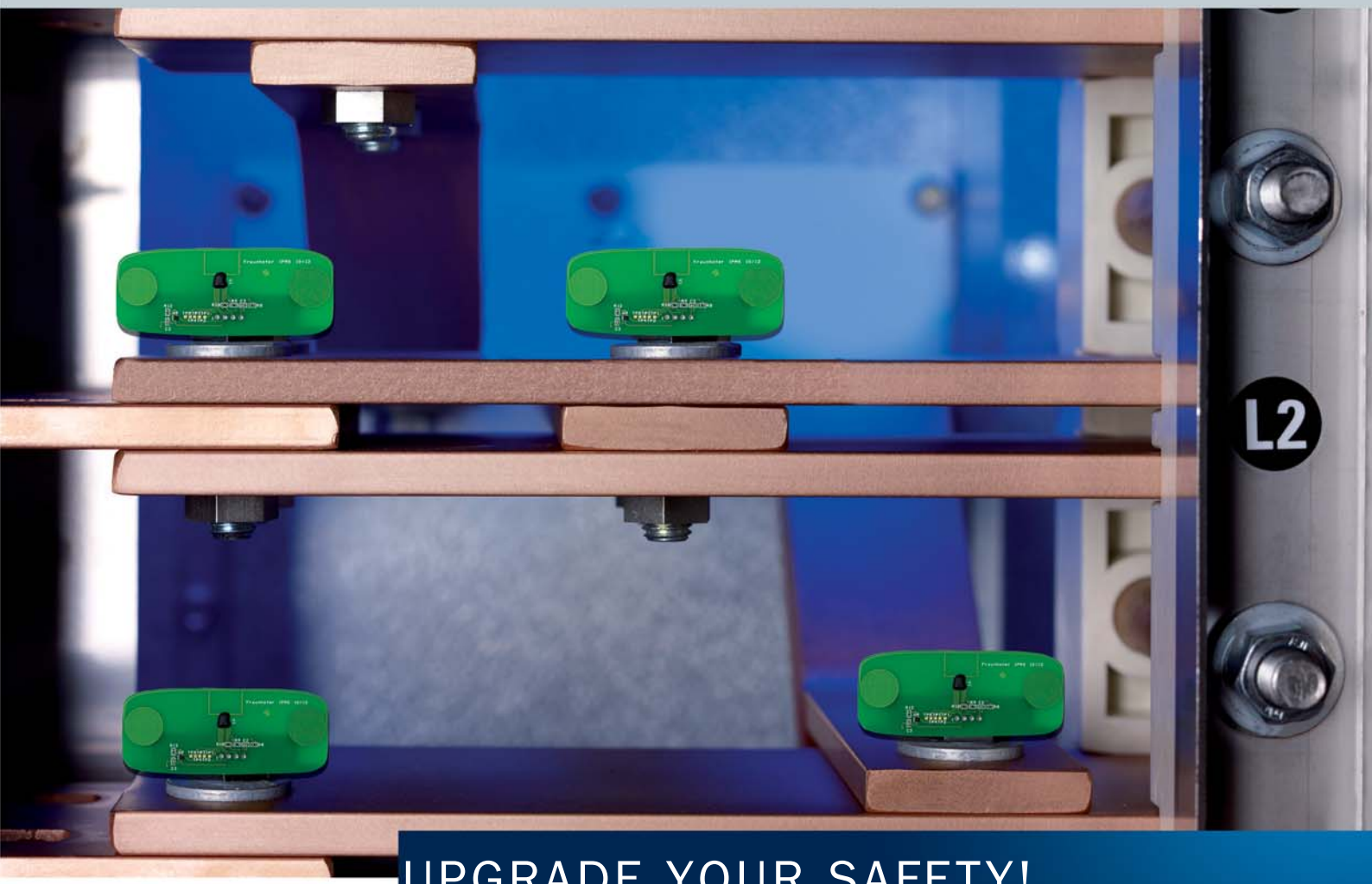
TOR

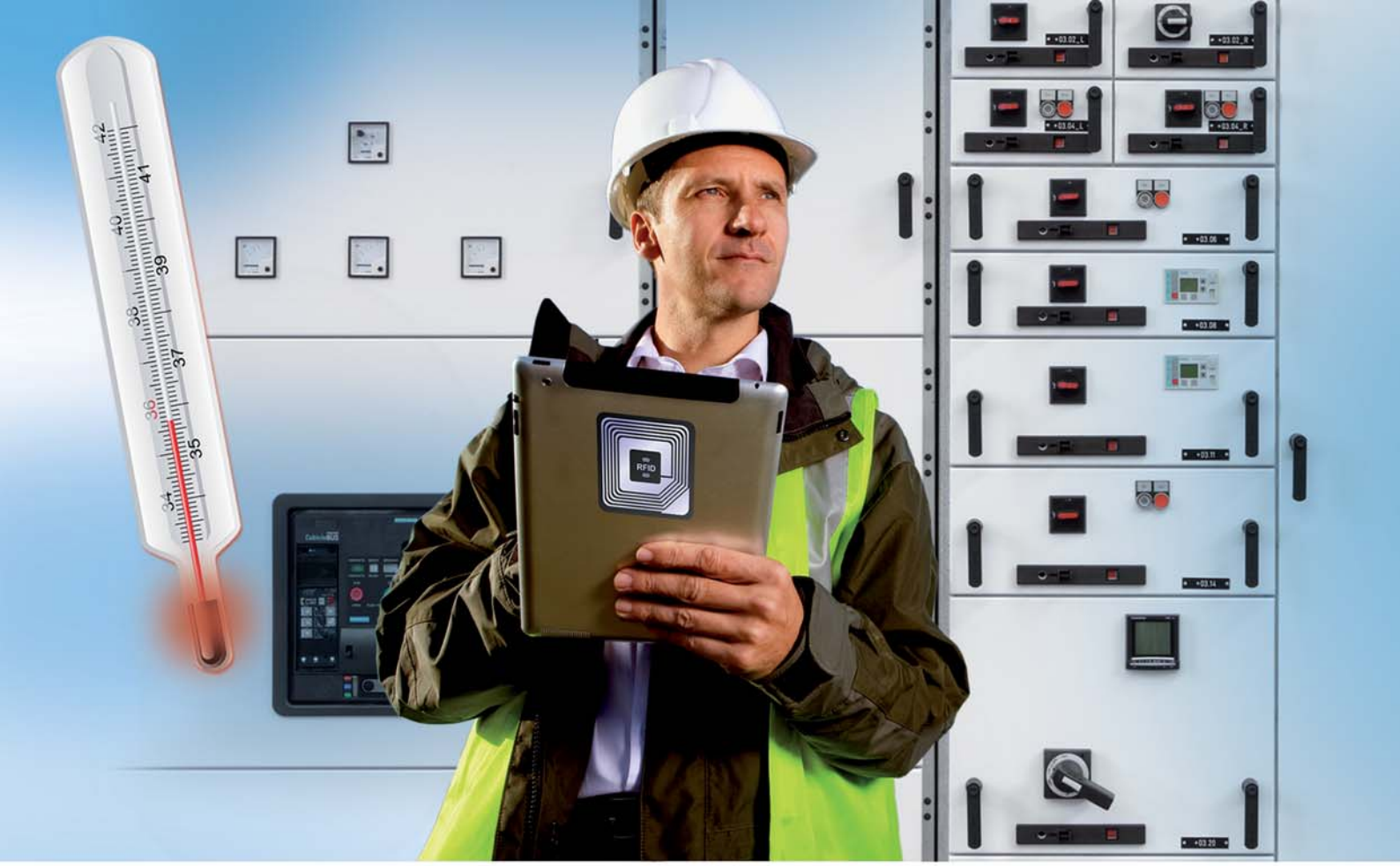
THERMO OBSERVATION RFID



UPGRADE YOUR SAFETY!

TOR - the ultimate monitoring of switchgear: permanent and transparent.

KÖHL
SOLUTIONS WITH POWER



THERMO OBSERVATION RFID

The detector for heat stress in switchgear systems

As a technological leader for system security in energy distribution systems, KÖHL guarantees new and innovative solutions which ensure personal and system protection. Its latest invention to improve safety is **TOR**. The innovative “Thermo Observation RFID“ monitors and visualises the load condition of power distribution caused by “heat stress“.

Fraunhofer IPMS

TOR has been successfully developed in cooperation with the Institute Fraunhofer IPMS. It is designed as a TAG and equipped with an integrated high-performance chip as well as an appropriate reader and DiPol antenna.

In UHF areas, **TOR** sends accurate information in regarding thermal energy and potential error sources occurring within the system. This information can then be conveniently forwarded as a sample value or a telegram via IEC 61850 protocol. In addition, information can be retrieved with the help of the KÖHL App by using a cell phone/tablet, for example.
Furthermore, it facilitates maintenance measures, is designed to be retrofitted and essentially represents the most advanced solution for energy efficiency.

Transparency even in pressure and moisture
Due to its integrated sensor units the KÖHL RFID TAG can detect pressure leaks in the future development stage, e.g. in GIS medium-voltage systems as well as damp conditions in case of unusually aggressive environmental effects. This ensures absolute monitoring of power distribution switchgear assemblies.

TOR Diagnostics in detail

TOR uses RFID to monitor the switchgear through all its life cycles. The permanent and transparent temperature monitoring at the critical connection points of the switchgear provides decisive maintenance advantages:

High degree of personal and plant safety

TOR detects the weakpoints in energy-intensive low and high-voltage systems and therefore prevents pending worst case scenarios with arcing events.

Energy cost reduction

The continuous monitoring avoids heat losses of the power distribution system and reduces these in line with the future Energy Efficiency Directive. The plant aging process is reduced as the copper and metal screw connections have no opportunity to perform divergently.

Permanently high availability

TOR supplies precise status data about the plant in all its life phases and therefore ensures its permanently high availability. Thanks to the direct evaluation of the plant state and the deduced energy efficiency measures, maintenance and servicing are simplified.

Economical lead

Compared to thermographic ad-hoc recording, **TOR** provides exact, valid measured data through precise long-term monitoring. This provides support in choosing energy-optimal production methods with the corresponding machines and plants.

Permanent monitoring

TOR enables contactless and continuous temperature monitoring of the primary current connections in switchgears.

Warning message

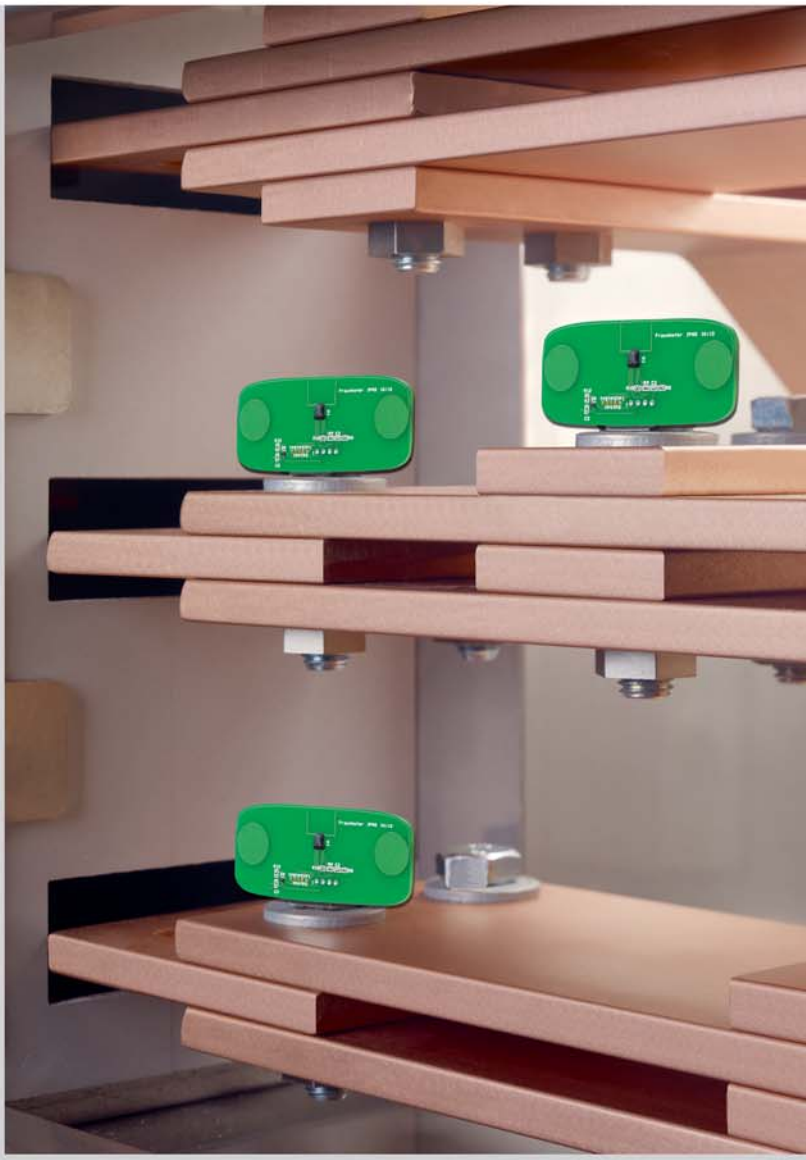
TOR warns if the freely configurable maximum temperature values are exceeded with regard to limit over-temperatures.

Diagnostics

TOR improves the energy efficiency of the switchgear through permanent monitoring of the load states in the switchgear's hotspots (tested power management to ISO 50001).

Documentation

TOR records the temperature values over many years. Merging this important temperature data and other parameters results into improved transparency. Trends can be analysed precisely.



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Additional information

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4-2013-TOR-500-GB