

## Application report: Temperature monitoring of an ammonia plant

Industrial reactors usually have large, irregularly formed surfaces which need to be monitored for temperature or expansion. Point sensors are unsuitable due to the enormous quantities required for monitoring the complete surface followed by the associated installation and networking expenses. Fibre optic systems for distributed measurement can measure a large number of points along a glass fibre or fibre optic sensor cable and are ideally suited - e.g. when the sensor cable is laid on the surface in a spiral or meandering pattern - for the areas to be monitored.



*The fibre optic sensor cable (protected by a stainless steel tube) is fixed on the surface of the vessel with high temperature resistant magnets.*



### LIOS PRE.VENT DTS – The solution for temperature monitoring of surfaces

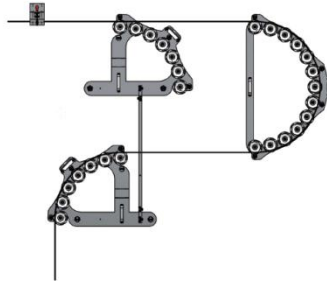
Distributed Temperature Sensing (DTS) of the LIOS PRE.VENT series monitors the temperature at thousands of measurement points on the surface of the vessels.

The glass fibre cable used as a linear sensor is mechanically protected in a thin stainless steel tube and designed to withstand permanent temperatures of up to 400°C. The sensor cable is fixed on the surface with heat-resistant magnets without damaging the vessels skin. With this measurement technology, there is no further need for hard-wired measuring components (e.g. thermocouples such as Pt100), making it immune to electromagnetic interference. Weather-related disadvantages such as humidity and UV radiation do not affect the system at any times.

This type of temperature monitoring can be used safely even in sensitive areas (e.g. EX zones).

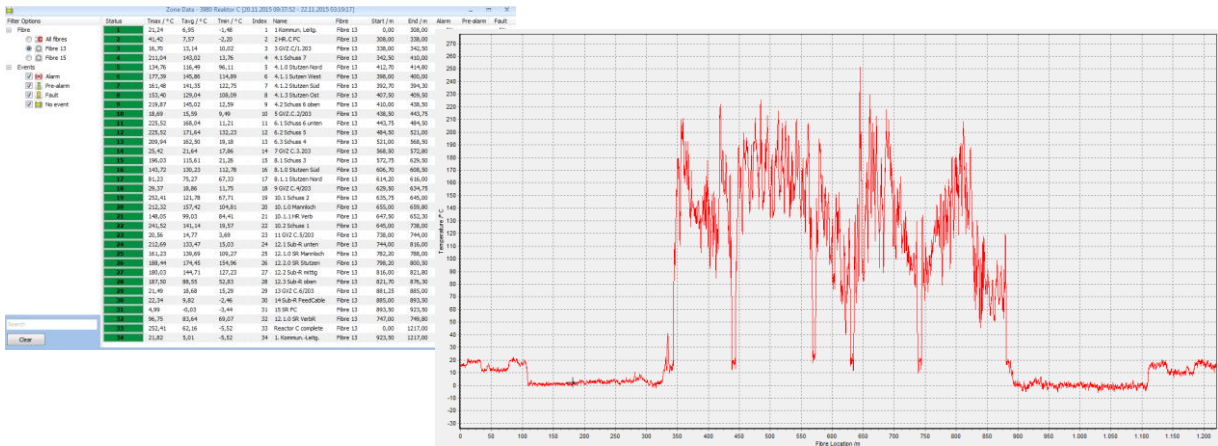
# Distributed Temperature Monitoring of Industrial Assets

The DTS interrogator unit has several independent fibre optic measurement channels. The loop configuration of the sensor cable enables the measurement of both ends for increased failure safety. Specially developed laying tools enable fast and defined installation of the sensor cable on the reactor surface.



*Special laying tools allow laying of the cable in defined distances and curves exactly according to plan.*

Precise localisation of temperature anomalies, caused by e.g. defects in the inner lining of a reactor, is ensured by real time processing via a zone configuration with up to 1,000 alarm zones per measurement channel. The alarm statuses are transmitted over a network to the process control system during measurement and allow the plant operator to have full status monitoring of his process plant.



*View of the visualised measurement results with division of the zones.*

## Technical data of PRE.VENT systems

Measurement range:	Up to 70km per channel
Measurement channels:	1 to 16
Spatial resolution:	≥ 0.5m
Temperature resolution:	0.1°C
Measurement range:	-170°C to +450°C

For further information

