



Fiber Optic Distributed Temperature DTS Monitoring for Oil & Gas

Our special approach
to your special needs

- Reliability
- Profit
- Value



Technology drives innovation



How to get more from available resources

Technology is the key driver in the quest for greater efficiency. In the oil and gas industry, there is keen interest and high demand for low-cost, reliable, and easily installable systems to enhance downhole production and recovery.

Trusted partner

Distributed Temperature Sensing Systems have shown great promise for helping the Oil & Gas industry meet the global demand for energy. LIOS Technology GmbH – a trusted partner to the Oil & Gas industry and a leading expert in fiber optic sensing technology – has unleashed the potential for this technology on a number of exciting oil well projects in the Far-East. Along with Integrated Intelligent Smart Well Service Company, the team has successfully developed downhole temperature sensing systems that meet the sector's unique requirements for performance, cost-effectiveness, and systems feasibility.

“Installation of LIOS DTS in the Darat Field in Brunei has proven to increase the value of the wells from our customer significantly because of early detection of faulty gas lift valves, resulting in quick repair and increased production.”

Lt Col (B) Mahmud Yakop (Founder & Managing Director, AMRTUR Corporation Sdn. Bhd)

Field-proven reliability

Oil reservoirs represent a harsh environment for sensitive electronic components. Equipment deployed downhole must be able to perform 100% reliably while withstanding heat, pressure, moisture, vibration, and corrosion. Breakdowns can cause unacceptable delays and lost output costing hundreds of thousands of dollars. LIOS Technology offers the most reliable and functional continuous downhole temperature sensing and logging system available for both simple and complex wells. Our module-based system and open standard protocols enable us to offer you customized solutions for your unique needs.

Features

- Impressive track record – more than 2000 successful fixed installations in more than 80 countries on all continents
- Dependable and field proven system design – no sensitive electronic components or power supply downhole, only the Fiber Optic cable acting as the sensor
- Rugged and durable semiconductor laser diode sensor. Fulfills Telcordia GR-468 quality standard with average product lifetime of 25+ years
- Patented OFDR technology (MM or SM) based on Raman effect delivers
- temperature readings accurate to within $\pm 0.06^\circ \text{C}$ ($\pm 0.1 \text{ F}$) and 0.5 m (1.5 ft) along the entire sensor length from distances up to 30 km (98425 ft) away
- Market leading calibration features like automated point calibration using 3 rd party temperature source, multi fiber segment calibration and double ended calibration operation mode
- Low-cost third-party optical pressure gauges can be added using the same fiber optic cable for even more detailed measurements
- The multichannel LIOS DTS unit can accommodate up to 8 independent
- fibers, enabling comprehensive surveillance and Real Time Field Management (RTFM) of multiple wells
- Entirely self-contained DTS unit transmits measurement data via cyber secure, TLS encrypted link to remote SCADA database systems. No on-site PC to power or hack into
- No need to visit well-site to collect data
- Entire DTS system is independently certified for quality by VdS [the German asset insurers association] and many other international certifying bodies



“LIOS has successfully taken its rugged and compact design from Fire Detection applications to the Oilfield. They have proven that the DTS systems are fully Cyber Secure and comply with all today’s security requirements for Intelligent Oilfields. They are way ahead of the others.”

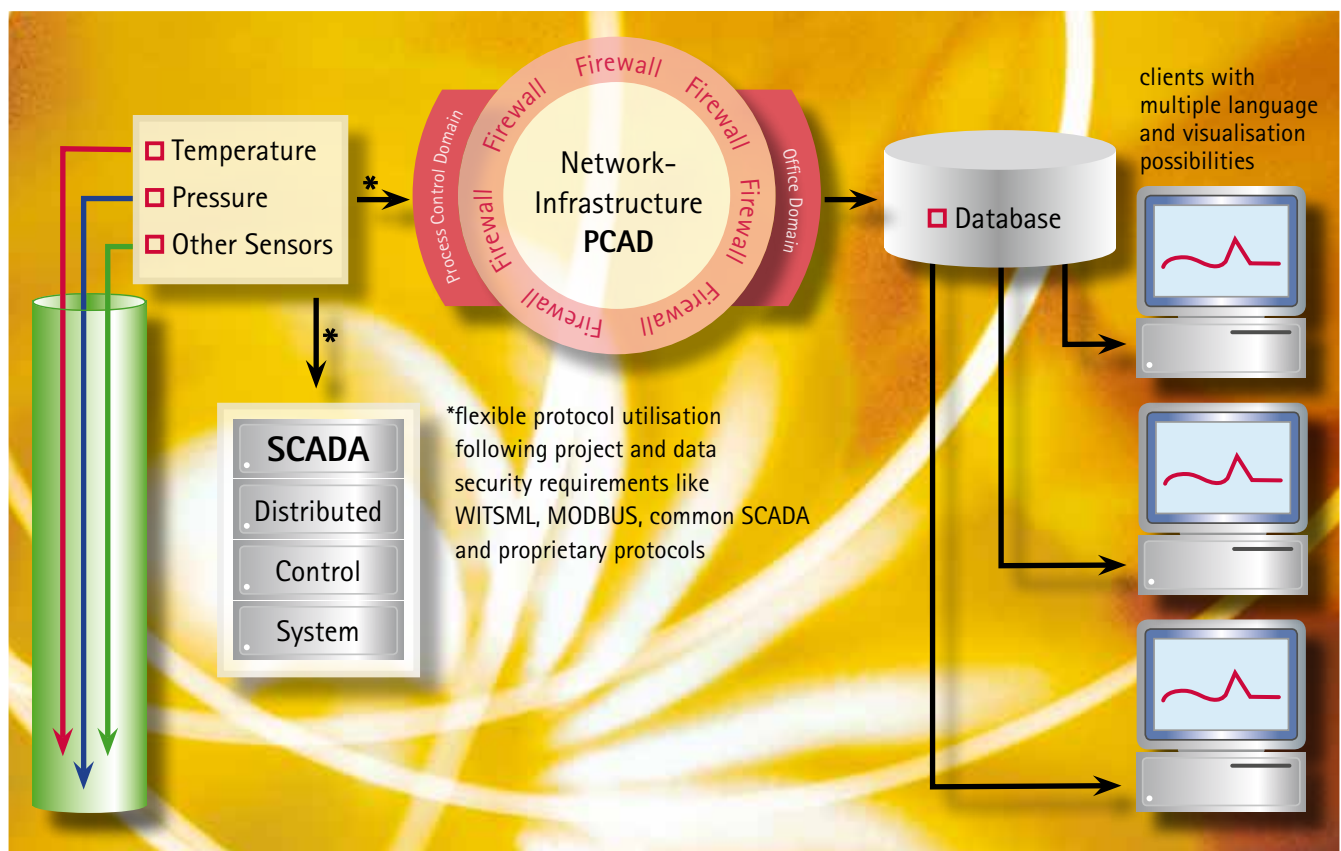
Roelof Klein, Capgemini (contracted by Shell Global-Solutions)

24/7 Data-to-Desk

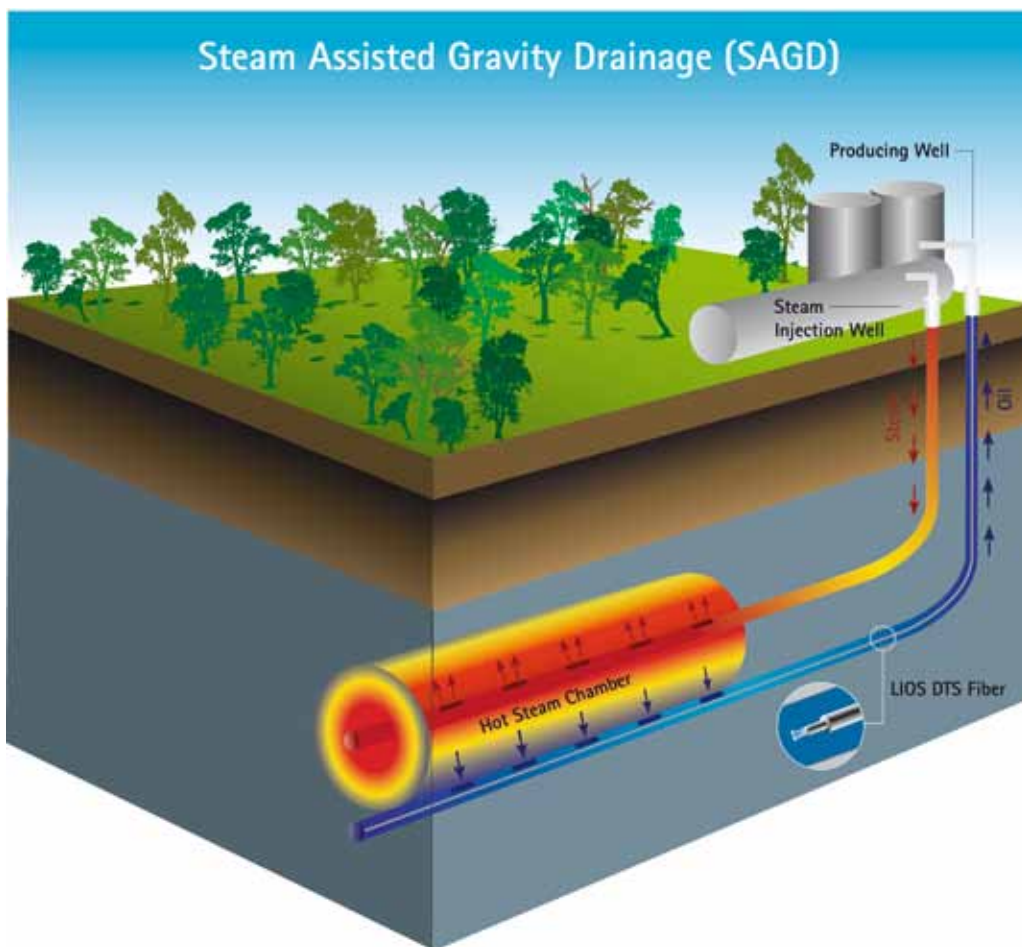
Easy to install and integrate

Here at LIOS Technology, our goal is to deliver optimal communication solutions to you. We supply your specialists with accurate and real-time information delivered to their desks round-the-clock so that critical decisions can be made immediately.

LIOS Technology can easily and economically interface its DTS temperature and pressure measurement system with your system to create a fully Data-to-Desk solution customized to your needs.



Maximize your ROI with DTS



Accurate, continual, and real-time temperature reading along the well path can give you valuable information about the condition of both the reservoir and downhole completion. This enables you to adjust parameters and schedule maintenance for maximum hydrocarbon production and minimize downtime.

Temperature readings allow you to:

- Enhance oil and gas recovery
- Increase production yields
- Track well production changes over time
- Reduce frequency of well interventions
- Improve reservoir management strategies
- Supply in-flow distribution along the reservoir
- Detect early water, steam (SAGD), or gas breakthrough and its location
- Observe steam flooding performance
- Verify and allocate cross flow
- Determine skin factor
- Check integrity of casing and completion
- Monitor and optimize gas lift valve operation
- Detect stuck or leaky valves, perforation inflow, porous insulation, wax deposits, hydrate precipitation, etc.

The art of well-managed execution

LIOS Technology GmbH is a dynamic and international operating company based in Cologne, Germany. Building on our innovations in fiber optic sensor engineering, our strategy of collaboration and cooperation with our customers in the Oil & Gas industry has enabled us to offer cost effective DTS systems of highest quality.

Our team stands ready to assist you with custom-made solutions for integrating our DTS systems into your existing data infrastructure and enabling you to visualize temperature fluctuations within your wells. With the experience of over 2000 installed DTS systems worldwide, we are committed to smooth and flawless project implementation.

Member of



Registered at



Certified according to ISO 9001 /
Edition 12/2008 and ISO 14001

Made in Germany



LIOS Downhole Monitoring

**Scan the QR code with your cell phone to learn more
about our intelligent downhole sensing solutions.**

LIOS Technology GmbH
Schanzenstrasse 39 / Building D9-D13
51063 Cologne, Germany
Phone +49 221 99887-0
Fax +49 221 99887-150

LIOS Technology Inc.
1400 Campus Drive West,
Morganville, New Jersey 07751, U.S.A.
Phone +1 732 970 8062
Fax +1 732 972 4410

E-Mail info@lios-tech.com | Site www.lios-tech.com | www.downhole-monitoring.com