



FUTURE PHOTONICS
**HARNESSING
THE POWER OF
DAS TO REDUCE
ENVIRONMENTAL
IMPACTS**

PhD Luis E. Ynoquio Herrera,
Research and Development Chief
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As the demand for renewable and non-renewable energy is growing worldwide, with demand predicted to significantly grow in the next decades, the problem of pipeline leak detection and maintenance is becoming significantly more relevant. Today, there are millions of pipeline structures all over the world, yet many of these infrastructure systems are aging and degrading. These assets, when not properly monitored, can be a risk to the public and environment.

Another big driving force is sustainability, which is pushing industries from all sectors to pivot their operation to achieve growth while minimizing their environmental impacts. Regulations are being tightened and scrutiny surrounding the oil and gas industry's environmental footprint has increased requiring the sector to install new data-driven monitoring systems to ensure compliance.

The accidental release of crude oil or petroleum products to the environment can cause a number of problems to both wildlife and human health. What may start

as a small leak brought on by corrosion, can end up spilling hundreds of thousands of liters of oil and its accompanying chemical lubricants into fields, rivers and aquifers at a high speed.

For instance, the US Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA), which monitors the safety of hazardous liquid pipelines in the United States, issued in 2019 a measure encouraging operators to make better use of all available data to understand pipeline safety threats and extends leak detection requirements to all hazardous liquid pipelines.



Accurately detecting and locating leaks and minimizing accidentally product releases in both new and existing pipe networks has always been a priority for pipeline operators. Today, digitalization, the Internet of Things (IoT) and the 4.0 Industry are paving the way for new data-driven techniques that make leak detection more economic, reliable, accurate and simple to deploy. Advanced sensors such as Distributed Acoustic

Sensing (DAS) are a highly effective and economic means of detecting the presence and location of leaks in real-time.

By combining artificial Intelligence with edge computing **Future Photonics** offers a disruptive solution that enables pipeline operators to efficiently monitor their pipe networks 24/7/365 without false alarms. This system plays a vital role in ensuring leaks are detected at an early stage preventing environmental and financial damage to pipeline operators. The DAS system is a cost-effective sensor that works by using already installed optical communication fibers as sensors. It is the ideal solution for monitoring assets in real-time preventing leaks.

References: <https://www.phmsa.dot.gov/regulations>