

COMPACT HYDROGEN SENSOR SYSTEM FOR NATURAL GAS NETWORKS

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INL showcases a compact and integrated sensor system for real-time measurement and characterisation of hydrogen (H₂) in natural gas networks. The solution combines miniaturised sensors with a fully integrated module for gas handling and data acquisition within a sealed enclosure, enabling reliable operation in industrial environments.

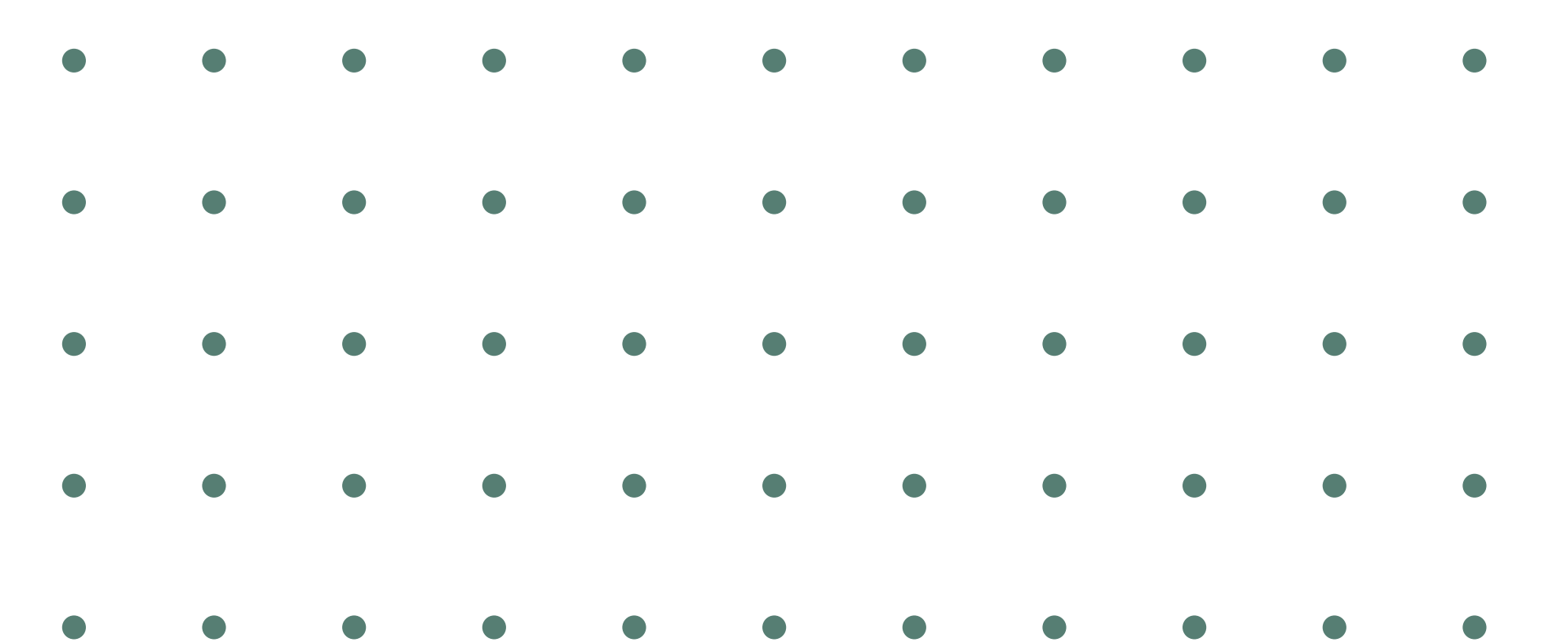
The system enables autonomous, continuous monitoring of hydrogen concentrations in real-world conditions, with seamless data integration into industrial platforms. Its small form factor allows direct deployment in existing infrastructure, supporting the safe and efficient operation of hydrogen-enriched gas networks.

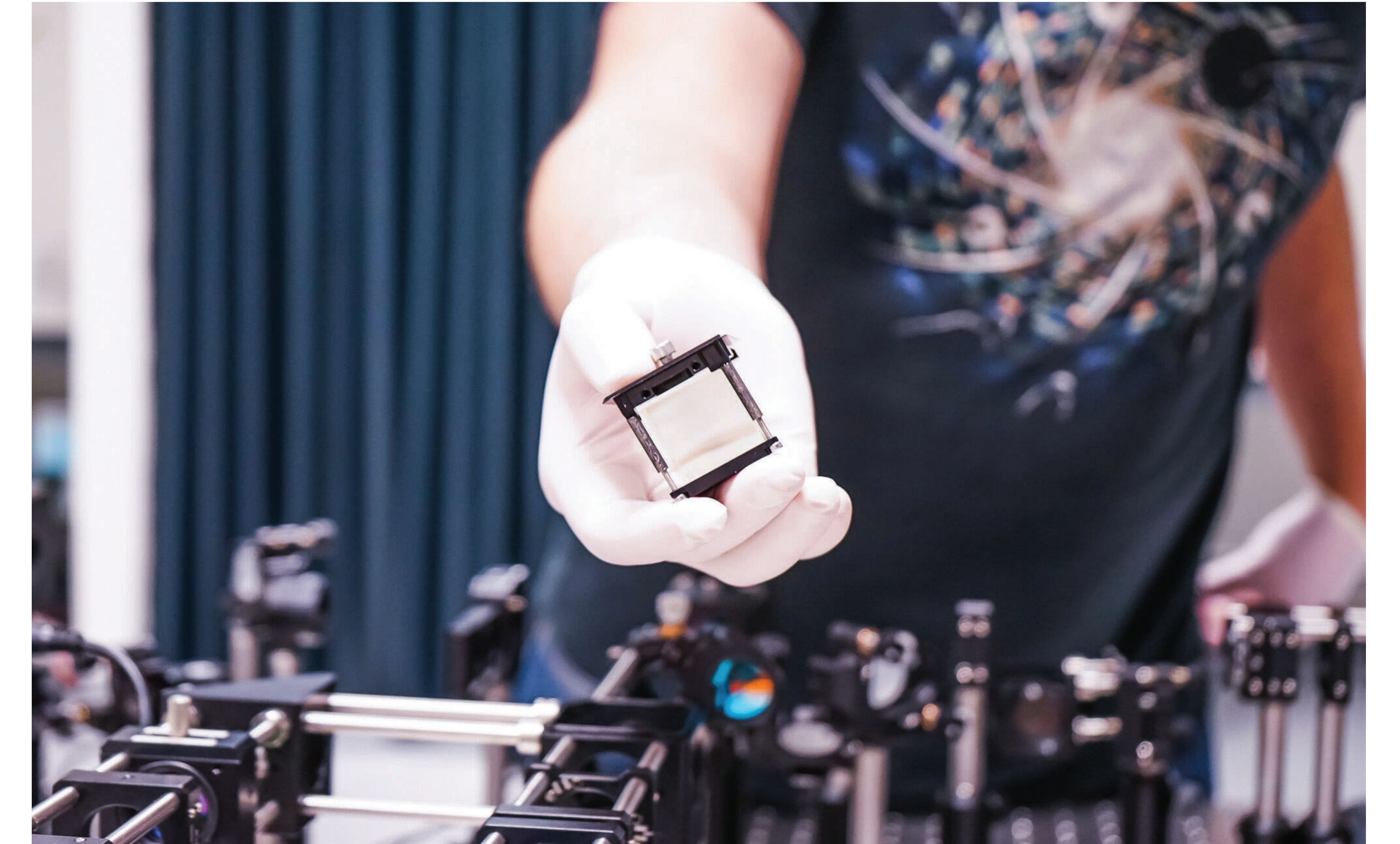
+ Suggested applications

- Pipeline integration:** suitable for direct installation in natural gas network pipelines
- Continuous industrial monitoring:** designed for uninterrupted operation in gas supply lines (e.g. industrial burners at COLEP)
- Validation and safety:** tested alongside commercial sensors and calibrated gas cylinders (validated at CATIM), with appropriate exhaust systems for gas analysis

+ Features

- Ultra-compact design:** small form factor enabling direct integration into existing industrial infrastructures
- Wide measurement range:** reliable detection of hydrogen concentrations from 5% to 100%
- Scalable and cost-effective:** based on standard semiconductor thin-film technology, enabling mass production and reduced maintenance needs
- Seamless data integration:** Modbus RTU interface ensures compatibility with industrial monitoring platforms





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