

### REAL TIME HYDROGEN MEASUREMENT FOR THE GREEN HYDROGEN ECONOMY

Measuring hydrogen with H2scan inline analyzers in the power to gas industry helps:

- Provide meaningful real time information
- Improve overall hydrogen usage to reduce costs
- Eliminate errors from slow or indirect analyzers
- Ensure process optimization

Hydrogen is an increasingly important component of dedicated efforts around the world to de-carbonise the energy sector. There is growing pressure to produce so-called “green hydrogen”, that is, hydrogen from renewable energy sources vs. from natural gas-based steam methane reforming. One common method is to use wind turbines and other renewable methods to power electrolyzers, which can produce large amounts of hydrogen cleanly. This hydrogen can then either be stored safely or injected into existing natural gas pipelines for transport to end users.

It is obviously imperative that the entire value chain is monitored continuously for safety. That includes maintaining proper electrolyzer performance, as well as avoiding potentially explosive leaks. In addition, measuring the amount of hydrogen present in natural gas is critical for utility companies, pipeline and transport customers, and of course the end customer, since hydrogen affects the BTU value of the natural gas. Knowing hydrogen levels in real time allows operators to make continuous adjustments that optimize hydrogen usage and ensure safe operation.

H2scan In-line analyzers can be installed in many locations:

- On either side of the electrolyzer
- At mixing stations or injection points
- Along the natural gas pipeline
- At customer sites just upstream of burners



Historically, hydrogen has been measured either using a thermal conductivity device (TCD) or a gas chromatograph. The shortcomings of these analyzers are well known: they tend to not work well with complex gas streams, may provide unreliable data in certain applications (often requiring a second

analyzer to verify the results), or are expensive and difficult to use correctly. The delayed response time, complexity and maintenance requirements, and cost (both upfront and ongoing) can make the gas chromatograph an unappealing option.

Using an H2scan inline process monitor combines the value and measurement speed of a TCD with the accuracy of a GC. By having the hydrogen measurement available in real time, processes throughout the entire hydrogen economy value chain can be tightly controlled for process optimization to maximize profitability.

H2scan’s **HY-OPTIMA™ 2700-series** hydrogen specific analyzers measure hydrogen in complex gas streams. The H2scan solid state, non-consumable sensor technology provides real-time continuous hydrogen concentration data with no cross-sensitivity to any other gases in the stream, including CO and H<sub>2</sub>S. No reference or carrier gas systems are required to reliably and accurately report real-time hydrogen measurements with fast response times. For more info please visit [www.h2scan.com](http://www.h2scan.com).