



## Welcome to the April 2023 issue of the H2scan Digest

### In this issue we present:

- H2scan CEO Dave Meyers Discusses Hydrogen Sensing in *Global Hydrogen Review*
- Leon White Explains the Price of Online Transformer Data in *Transformer Technology*
- Energy Central Podcast with Bill Whitehead and Leon White of H2scan
- Hydrogen Tomorrow News
- Upcoming Tradeshows and Conferences

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## H2scan CEO Dave Meyers Discusses Hydrogen Sensing in the *Global Hydrogen Review*

The *Global Hydrogen Review* recently published an article in which Dave Meyers, CEO of H2scan, discusses the importance of hydrogen sensing for industry and the emerging hydrogen economy. Along with fundamental information such as what hydrogen sensing is and what its industry demands are, Meyers also explains why it is so critical to the hydrogen economy and delves into the future of hydrogen sensors. Read the cover story article [here](#) on page 48.

# GETTING A SENSE OF HYDROGEN

COVER STORY

David Meyers, H2scan, USA, discusses the importance of hydrogen sensing within the emerging hydrogen economy.



**A**ccording to Forbes, the hydrogen economy will soon be ready for takeoff given the strong global investment and desire to make hydrogen a leading sustainable source of energy. Hydrogen sensing will play a critical role in making this goal a reality. This article will provide insights into the use and impact of hydrogen sensors, both in current applications as well as within the emerging hydrogen economy.

**What is a hydrogen sensor?**

Hydrogen is the lightest and most abundant element in the universe, and one would think that developing a device to measure its concentration in a gas or liquid would be simple. Unfortunately, this is not the case. It took many years of research and development – from the early days when canaries were used to detect explosive gases in mines. The first sensor of the modern age was developed in 1926 by

Dr. Oliver Johnson of Standard Oil Co. His design measured the heat created by the presence of combustible gases in air. This thermal conductivity technology is still used today, along with a range of new gas sensor technologies that have been developed over the last 100 years. Each of these technologies (e.g. gas chromatography, catalytic bead, laser gas analysis, solid state, etc.) were developed to address unmet gas sensing needs, and there are many lessons to consider when applying these technologies to hydrogen sensing.

**What to consider when selecting a hydrogen sensor for industrial applications?**

Industrial sensing applications generally have challenging performance and operational requirements that must be met over a range of environmental and other conditions. Care must be taken to ensure that the selected sensor

and underlying technology works for the intended use. For example:

- Sensor performance may seem like a straightforward specification, but the devil is in the details. For example, a specified measurement accuracy of 0.2% could be the maximum error, or it could be the one sigma error, or it could only be valid at room temperature and one atmosphere of pressure. Also, the quoted accuracy specification may only be met after calibration for a specified period before drifting out of specification.
- If other gases are present in the stream being measured, they could impact sensor accuracy. For example, carbon monoxide (CO) in a hydrogen stream can corrupt the hydrogen measurement when using certain gas sensing technologies. One must understand the gas stream make-up and consider using a hydrogen-specific sensor to avoid cross-gas sensitivities.

- From a total cost of ownership perspective, sensors should be selected to maximize or avoid calibration, maintenance and service if possible. Some hydrogen sensor technologies have consumables, such as calibration gases, that must be periodically replaced. Also common is the need for sensor calibration to maintain long term accuracy. One should understand the calibration interval and the associated costs, especially for remote or hazardous locations, or whether the system needs to be shut down for this maintenance. Beyond the upfront cost of the sensor and its installation/connectivity, one should consider the total cost – including the cost of training operation support professionals.
- If the sensor is not reliable, sending a service team to an oil platform or remote pipeline location takes a great deal of time, effort and expense. Sensor technologies requiring numerous mechanical parts and components, such as gas

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## Leon White Explains the Price of Online Transformer Data in *Transformer Technology Magazine*

Many utilities are frustrated because they spend more time installing, commissioning, and maintaining their multi-gas monitors than they spend actually fixing problems with their transformers. Users are starting to understand that utilizing low-cost, reliable single-gas sensors that last 10+ years makes more sense than trying to equip every large transformer with a high-end monitoring solution.

Learn about the cost of online monitoring below by reading expert Leon White's recent

Transformer Technology article titled, "Online Transformer Data Comes at a Price." You can find it [here](#).

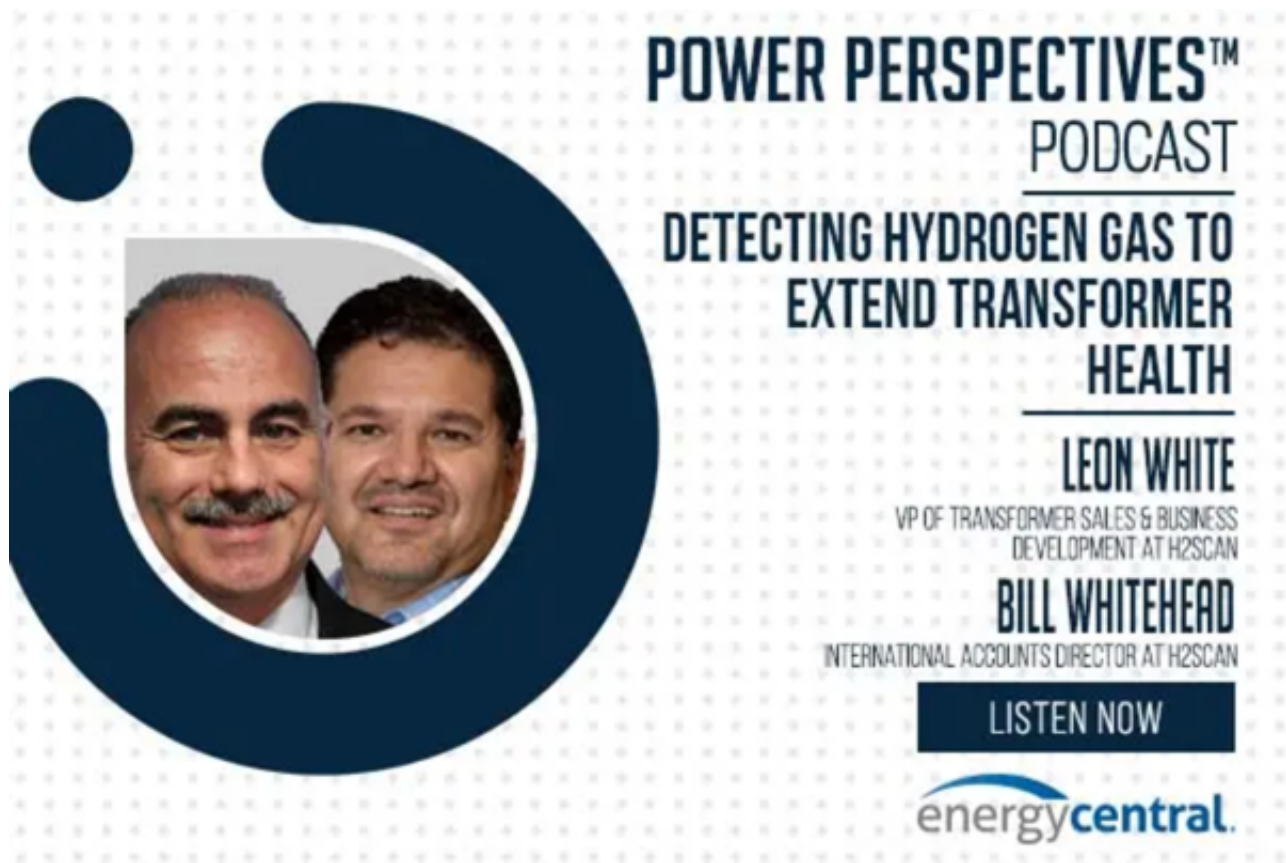


## New Podcast: 'Detecting Hydrogen Gas to Extend Transformer Health'

Hydrogen has become a buzzword in the energy sector recently, but many in the utility sector may not have realized how critical hydrogen gas has been for the power grid for decades. Rather than being a matter of producing hydrogen as an energy source, the key use case has been monitoring the generation of byproduct hydrogen gas by power transformers and using that as a way to monitor health and status of these critical grid assets.

In today's environment of supply chain challenges for major grid equipment and a renewed focus on the safety and security of utility assets, staying on top of the sensors needed to detect hydrogen gas has become more important than ever before. And that's why this podcast episode's conversation with two of H2scan's key leaders is so timely. Leon White, VP of Transformer Sales & Business Development, and Bill Whitehead, International Accounts Director, join the episode to provide education on this critical topic to those for whom it's flown under the radar and to advance the conversation to the latest and greatest capabilities of hydrogen sensors for transformers moving forward.

Listen in as Bill and Leon share what you need to know, teasing out the first in a three-part series highlighting this essential technology. You can listen to the podcast [here](#).



**POWER PERSPECTIVES™**  
**PODCAST**

**DETECTING HYDROGEN GAS TO  
EXTEND TRANSFORMER  
HEALTH**

**LEON WHITE**  
VP OF TRANSFORMER SALES & BUSINESS  
DEVELOPMENT AT H2SCAN

**BILL WHITEHEAD**  
INTERNATIONAL ACCOUNTS DIRECTOR AT H2SCAN

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## Hydrogen Tomorrow News

[Push for carbon-free hydrogen accelerates in US: Several new projects around U.S.](#)

hydrogen have already been announced, but many more are anticipated once detailed IRS rules are finalized, which is expected during the second half of 2023.

Japan to invest \$113bn in hydrogen economy by 2040: Japan plans to increase its use of hydrogen from 2 million tons a year to 12 million by 2040, The Japan Times reports.

Essar's Vertex Hydrogen project chosen to help build UK's hydrogen economy: Essar, an Indian multinational conglomerate, has welcomed the announcement made by the Department for Energy Security and Net Zero (DESNZ) regarding the selection of its Vertex Hydrogen project for one of the two hydrogen plants to help build the UK's hydrogen economy.

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## Upcoming Tradeshows and Conferences

### Analyzer Technology Conference

This conference and exposition focuses on analysis and measurement in the chemical processing industries. In the tradition of similar technical conferences, this event will highlight relevant, new technical papers. The show runs from April 17– 21, 2023 and takes place at the Galveston Island Convention Center. Learn more [here](#).

Planning to attend? Email us for a meeting at booth 609: [marketing@h2scan.com](mailto:marketing@h2scan.com)!



### World Hydrogen 2023

The leading global platform for hydrogen business returns to the iconic Rotterdam Ahoy in 2023. Following the huge success of 2022 – including a sell-out summit – World Hydrogen 2023 will be doubling in size to keep up with surging demand, enabling twice as many

companies to showcase, collaborate and do deals to advance the global hydrogen economy. The conference runs from May 9-11 and takes place in Rotterdam Ahoy, Netherlands. Learn more [here](#).

Planning to attend? Email us for a meeting at booth A48: [marketing@h2scan.com](mailto:marketing@h2scan.com)!



### Battcon 2023

Now in its 25th year, Battcon is a high-energy mix of industry specific presentations, panels, seminars and workshops, plus a trade show. It is a forum where those in the data center, telecom and utility industries can learn from and network with industry experts. Battcon will take place on May 9-12 this year and H2scan will be present as a gold sponsor.

Register [here](#).

Planning to attend? Email us for a meeting at [marketing@h2scan.com](mailto:marketing@h2scan.com)!



### World Hydrogen North America

World Hydrogen North America 2023 will bring together over 500 hydrogen professionals across the USA, Canada and the rest of the world. Hydrogen development is set to explode across the region with new projects being announced continuously. Join us in Houston May 15-17 to discover solutions, identify opportunities and debate how to capitalize on this evolving market. Learn more [here](#).

Planning to attend? Email us for a meeting at booth 3: [marketing@h2scan.com](mailto:marketing@h2scan.com)!



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