### **TELEDYNE** GAS AND FLAME DETECTION Everywhereyoulook<sup>™</sup>



# Empowering safety during your hydrogen transition



Flame detectors Using optical systems capable of "seeing" a hydrogen flame



Portable gas detectors

Single gas and multiple channel equipment and docking stations for daily calibration

Portable GS700 gas leak detector Ideal for eliminating fugitive leaks in methane-based hydrogen production systems and distribution (PPM, LEL and Volume detection ranges)



GDCloud™ Digitalisation for efficient security

and compliance. Location tracking, preventative and condition-based maintenance, intelligent alarm prioritisation, data recording and selective data transfer with leading cyber-security protocols





### Controllers and systems

Wired or wireless networks of gas and flame detection equipment to enable integrated site safety strategies



### Application Engineering, technical support, installation, maintenance and rental

Expert engineers, service contracts and rental of portable and transportable equipment for end-toend solutions



### Fixed gas detectors

With a range of sensors for hydrogen and other toxic or flammable gases associated with hydrogen production, distribution and utilisation

### You focus on your Hydrogen Transition, we focus on your safety.

Comprehensive range of gas and flame detection equipment and services for use throughout the hydrogen value chain

Appropriate technology for hydrogen utilisation applications such as burners, mobility, steel making and fuels processing Systems and equipment for gases related to the production of hydrogen, such as carbon monoxide, oxygen and methane

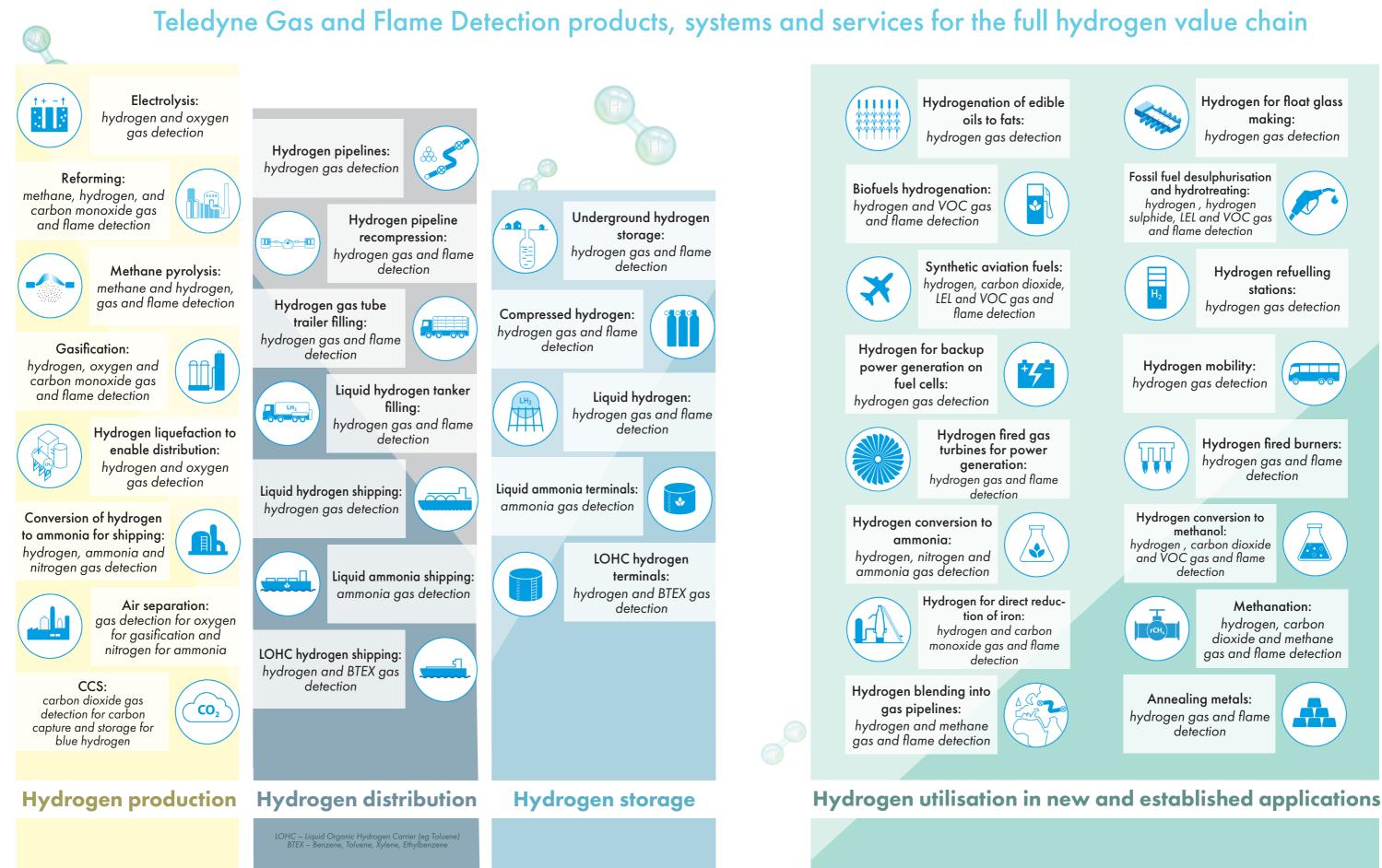
Hydrogen gas and flame detection equipment can be integrated into existing compatible gas & flame detection systems Gas and flame detection equipment and systems for hydrogen derivatives such as ammonia, methanol and synthetic methane

Hydrogen gas and flame detection equipment that could potentially be integrated into SIL2 or SIL3 systems

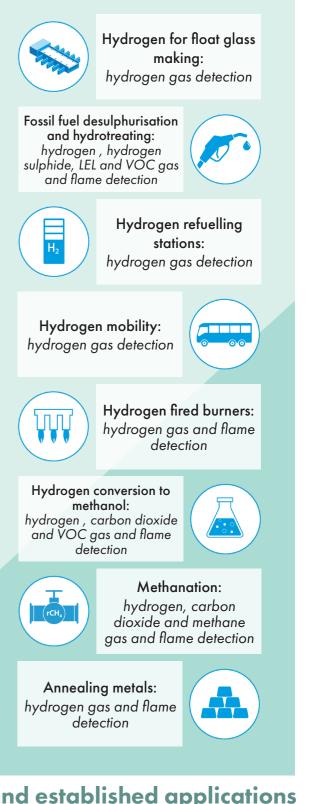




## For a Safe Transition to Hydrogen







Illustrations par sbh4 GmbH

## $H_2$

## Such an (extra) ordinary Gas

### Is hydrogen gas and flame detection only required during hydrogen production?

Gas and flame detection is required when hydrogen is produced, stored, transported and used. Different equipment and systems are recommended for various applications but safety is a prioritythroughoutthe whole length of the hydrogen value chain.

## What kind of gas detection sensors are suitable for hydrogen?

Teledyne Gas and Flame Detection uses a range of catalytic and electrochemical sensors in their hydrogen gas detection equipment. For maximum safety, it is recommended to use two different technologies to detect any type of gas, and the same applies to hydrogen.

## Will our current LEL flammable gas detection equipment work with hydrogen?

Hydrogen is a flammable gas and can be detected by some LEL sensors. However, not all flammable gas detection systems can detect hydrogen reliably. Consult an expert if there is any change of operating conditions, such as beginning to use hydrogen.

### You focus on your Hydrogen Transition, we focus on your safety

Enabling a safe and efficient energy transition Teledyne Gas and Flame Detection stands for the safety of your people and security for your assets.



## Can my existing natural gas flame detection system work with hydrogen?

Many flame detection systems for use in hydrocarbon processing are configured to "see" combustion products such as water, soot or carbon dioxide. Pure hydrogen burns to form only water so special flame detection equipment must be used with hydrogen.

## Are there government subsidies for purchasing hydrogen gas and flame detection equipment?

Subsidies exist for many hydrogen projects, but we are not aware of any special subsidies for implementing gas and flame detection equipment. However international standards and guidance notes require the use of appropriate gas detection systems so they should be budgeted for in hydrogen projects.

## Do we need to purchase toxic gas detectors for hydrogen?

Hydrogen is not toxic. However, many thermo-chemical processes that make hydrogen generate syngas, or producer gas, which contains carbon monoxide (CO), which is toxic. In these cases, the use of CO detectors is recommended. H<sub>2</sub> toxic gax detector could be applied, depending the range of detection & alarms levels needed.

### Are the fumes from hydrogen combustion toxic?

Pure hydrogen burns to form water, which is not toxic. However, many hydrogen-related applications burn syngas or producer gas which contains CO. Gas detection should consider CO in addition to hydrogen in these cases.

### New equipment installations, transformation of existing processes and upstream feedstocks.

There will be many roads to the hydrogen economy. Decarbonisation of hydrogen production with carbon capture and storage for existing applications of hydrogen such as refined product desulphurisation will be a priority. New applications for hydrogen in aviation, shipping, mobility, heating, power generation and iron and steel making will also pull for new equipment for hydrogen production, distribution and utilisation. Conversion of hydrogen to methanol or ammonia for long distance shipping will also be required. Many of the new processes will also require upstream feedstock production, for example gasification to make hydrogen from coal or biomass needs oxygen and ammonia production needs nitrogen.

Whatever the production technology, whatever the distribution and storage mode, whether it is decarbonisation of existing processes or investment in new assets, Teledyne Gas and Flame Detection is ready to support the safe and efficient development of the hydrogen economy and other related decarbonisation technologies.

For more information, contact us!

gasandflamedetection@teledyne.com www.TeledyneGFD.com

Copyright © 2023 Teledyne Technologies. GF-30462D-EN All rights reserved.