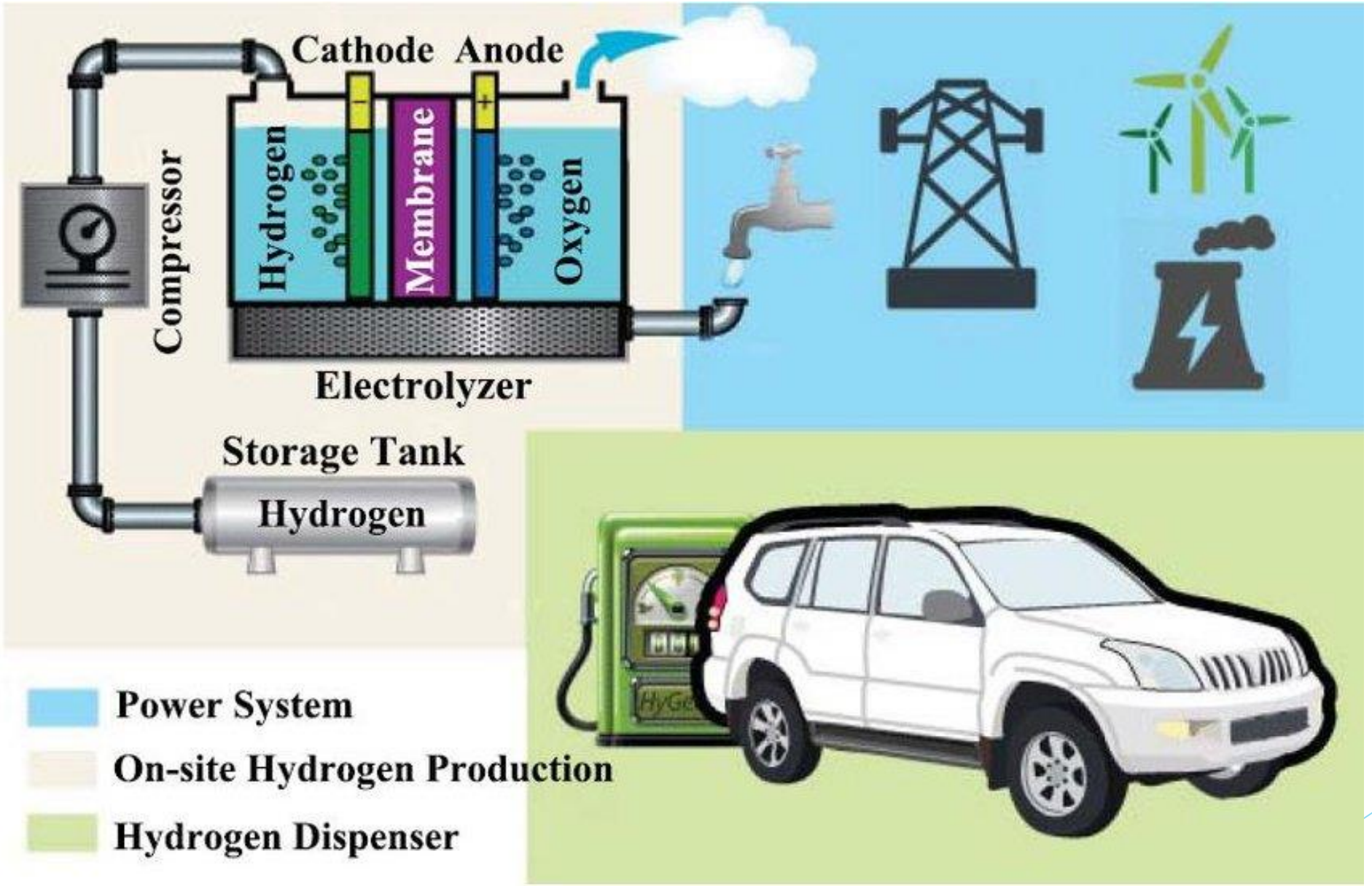
Hydrogen Dispensing Equipment & OD290

Requirements for the qualification of IECEx Certification Bodies and Test Laboratories

Ajay Maira 2022-09-05

TESTING & CERTIFICATION



Credit: Researchgate.net

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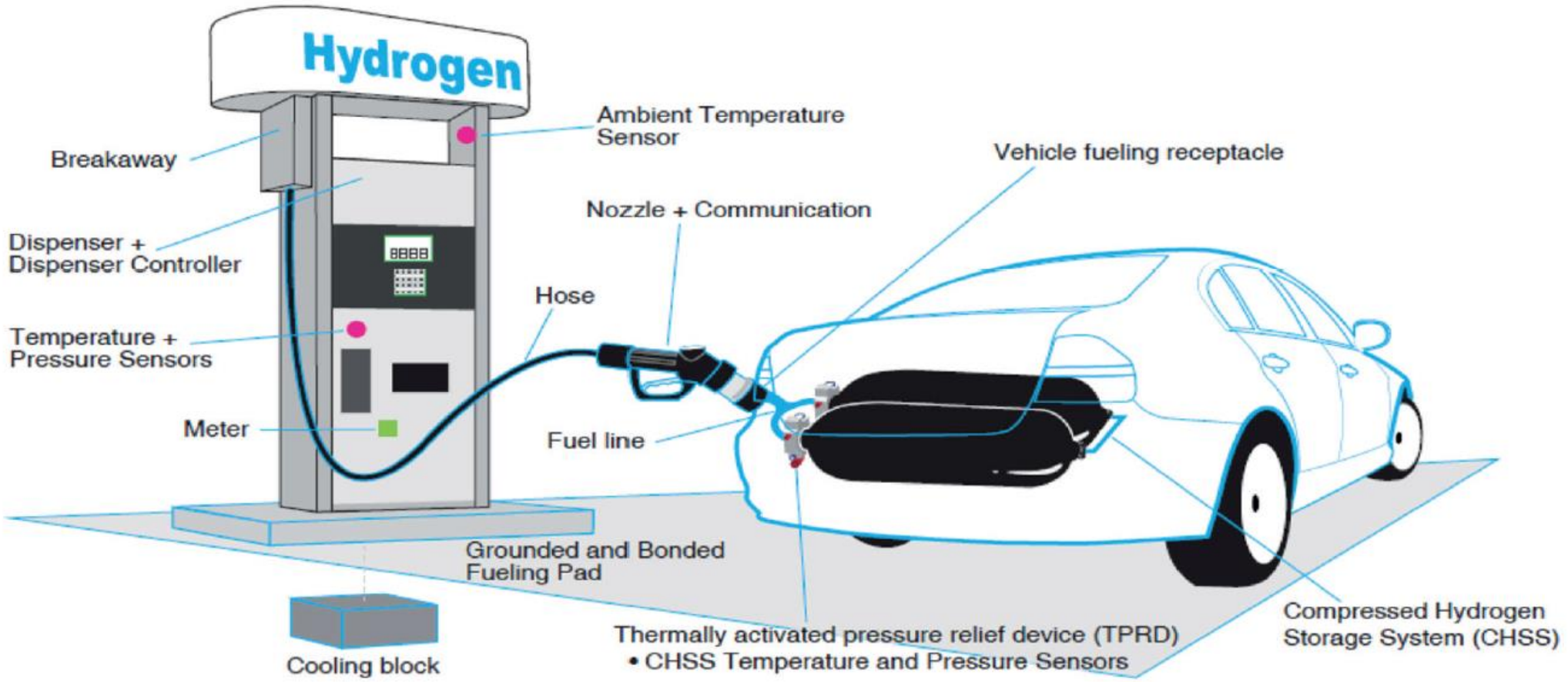

Credit: ISO/DIS 19880-2

Standards to be applied

- OD 290 – Guide to the Certification of Hydrogen Fuel Dispensing Equipment, Components and Systems
- (Approaches to be used for the issuing IECEx Certificates covering gaseous hydrogen fuel dispensing equipment)
- ISO TC 197 standards in conjunction with the IEC TC 31 standards
- IEC 60079-46 Explosive atmospheres – Part 46: Equipment assemblies
- ISO/TR 15916 Basic considerations for the safety of hydrogen systems
- ISO 19880 – 1 Gaseous hydrogen — Fuelling stations – General Requirements
- ISO/DIS 19880-2 for Dispensers
- ISO 19880-3 for valves
- ISO 19880-5 for hoses
- ISO 17268 for nozzles

- IECEx Technical Capability Document (TCD)

The significant risk is due to:

- Hydrogen is a Group IIC gas – extremely easy to ignite, very large pressure wave at high velocity, so great significance in avoiding the small source of sparking, electrostatic.
- Hydrogen has a very large range of concentration in air where it is explosive (4% to 76%)
- The pressures being used are very high (of the order of 100 Mpa) so strength requirements of vessels, pipes, joints are significant.
- Hydrogen embrittlement causes rapid fatigue of normal metallic materials.
- Hydrogen permeation
- Hydrogen causes heating when pressure drops during fuelling

Role of Manufacturer

- Manufacture of Dispenser Assembly
- Manufacture of Dispenser parts: Nozzle, Hose, Chiller, Flowmeters, Check Valves, Excess Flow Valves, Flow Control Valves, Manual Valves, Shut off Valves, Pressure Safety Valves, Hose Breakaway device, Ex Electronics Head, Payment terminal
- Manufacture of Hydrogen

The manufacturer applies the technical Standards and uses their design, production, quality systems to achieve the product

Role of IECEx TL & CB

- Testing and Certification of manufacture of Dispenser Assembly
- Testing and Certification of manufacture of Dispenser parts: Nozzle, Hose, Chiller, Ex enclosure, Flowmeters, Valves, Solenoids, Electronics Head, Payment terminal etc
- Testing and Certification of manufacture of Hydrogen

The ExTL uses the technical Standards to test and assess the product samples (Standards need to be included in their scope)

In practice it is expected that manufacturer would provide test reports and certificates issued by independent testing laboratories accredited under ISO/IEC 17025 by ILAC Members

The IECEx CB uses ISO 80079-34 and the Ex Certification system to certify the product

Role of IECEx Assessor

- Assessment of IECEx TL & CB that tests and certifies of Dispenser Assembly
- Assessment of IECEx TL & CB that tests and certifies Dispenser parts: Nozzle, Hose, Chiller, Ex enclosure, Flowmeters, Valves, Solenoids, Electronics Head, Payment terminal
- Assessment of IECEx TL & CB that tests and certifies the manufacture of Hydrogen

The Assessor uses the IECEx system Rules, Operational Documents, IECEx forms to prepare assessment reports to allow for Technical Standards in the scope of the IECEx TL & CB. These reports are submitted to the IECEx secretariat for the necessary steps.

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