



HyTra

mobile Hydrogen Infrastructure



Hydrogen – a possible energy carrier for the traffic of tomorrow

Hydrogen is seen as a possible energy carrier for the traffic of tomorrow.

Its potential of a virtually pollution free reaction in fuel cells or in conventional internal combustion engines as well as the possibility of CO₂ neutral production using regenerative energy form the basis for a forward-looking and sustainable mobility concept.

Worldwide, a multitude of studies into hydrogen use for mobile applications can be registered. Included tests require a safe and affordable supply of hydrogen on site.

HyTra – a mobile hydrogen production, storage and fuelling unit

HyTra was developed as an affordable and highly flexible alternative to stationary hydrogen production facilities. Operation is fully automatic at adequate locations without supervision by personnel. A relocation to a different production site is possible without great effort.

HyTra has been developed in coordination with the TÜV Industrie Service GmbH (TÜV SÜD Group), disposes of all necessary approvals and certificates and features high safety and reliability. Operation by instructed personnel is simple. Handling errors do not lead to dangerous operating conditions.

Fraunhofer Institute for Transportation and Infrastructure Systems IVI

Director (acting)
Dr.-Ing. Matthias Klingner

Zeunerstr. 38
01069 Dresden

Dr.-Ing. Thoralf Knotz
Phone: +49 (0) 351 / 46 40-628
E-mail: thoralf.knotz@ivi.fraunhofer.de

Dipl.-Ing. Konstantin Jonas
Phone: +49 (0) 351 / 46 40-817
E-mail: konstantin.jonas@ivi.fraunhofer.de

Fax: +49 (0) 351 / 46 40-803
Website: www.ivi.fraunhofer.de



Figure 1:
Mobile
Hydrogen
Infrastructure

Technical Data

- Trailer with twin axis with a gross vehicle weight of 2.8 t and a total length of 5.9 m (can be transported with a van)
- Hydrogen production by PEM electrolysis
- Production rate 1 Nm³/h high-purity hydrogen (5.0)
- Storage of 600 l hydrogen with a pressure of 200 bar / 2 900 psi
- Fueling of external hydrogen tanks without additional aggregates (pressure equalisation)
- No environment hazardous by-products
- Power supply 400 V / 3-ph / 63 A
- Water connection (drinking water quality) with a minimum pressure of 1.5 bar / 22 psi (water consumption 0.9 l/h)
- Automatic shut-down in case of hazardous operating status
- Information on irregularities via GSM

Cooperation

Trailer:
John Fahrzeugbau GmbH (D)

Elektrolyzer:
Proton Energy Systems, Inc. (USA)

H₂ Tank:
Wystrach GmbH (D)

Equipment:
GreenField (CH)
CHRIST AG (CH)
Sempa Systems GmbH (D)
WEH GmbH (D)

Application

The HyTra can be used for the production and storage of hydrogen for test vehicles. Equipped with a more capable electrolyzer HyTra can be utilized for local production and storage of hydrogen within a regular vehicle fleet management.

Competence

The Competence of the Fraunhofer Institute for Transportation and Infrastructure Systems comprises the development of small size mobile units for the production and storage of hydrogen.



Figure 2:
Storage of Hydrogen



Figure 3:
Filling Process of a Test Vehicle