

Foro Chileno-Alemán H2V:

Tecnologías alemanas para el
desarrollo de la economía del
Hidrogeno Verde

Charlas técnicas + reuniones B2B con empresas alemanas



Deutsch-Chilene
Industrie- und Handelskammer
Cámara Chileno-Alemana
de Comercio e Industria



MITTELSTAND
GLOBAL
ENERGY SOLUTIONS
MADE IN GERMANY

Supported by:
Federal Ministry
for Economic Affairs
and Climate Action
on the basis of a decision
by the German Bundestag

Colaboran:



Patrocinan:



Hydrogen Filling Standard Developments H35, H70MF and H70HDD

*Andreas Willfort, General Manager and Chief
Executive Officer*

WEH Technologies

An overview of current H35 and H70 filling nozzles and operator interface hardware, not limited to J2600 filling protocols, will be discussed. An outlook into future high flow H2 fueling and dispensing requirements, and limitations based on WEH's DOE funded developments for High Flow High Pressure H2 dispensing will be highlighted.

Fuel Cell Assembly Vehicles



Fueling station



Hydrogen
Product information

Impressions H₂ refuelling



WEH – Your hydrogen refuelling specialist

- ▶ More than 20 years of experience with hydrogen refuelling
- ▶ Development, construction and manufacturing of products for hydrogen refuelling
- ▶ Wide range of refuelling components for car / bus / truck refuelling
- ▶ Highest flexibility in designing prototypes
- ▶ Reliable partner for the automotive industry (serial production of hydrogen vehicles)

National and international projects awards

- ▶ **Supplier for CUTE** (Clean Urban Transport for Europe – EC-funded project, supported by the 5th Frame Programme of the EC) Successor Programme: HyFLEET
- ▶ **NRW-Project:** Project partner for development of 700 bar technology for vehicles and portable fuel cell systems funded by NRW, Germany
- ▶ **StorHy-Project:** Task leader WP4 StorHy project funded by the EC – development of hydrogen components 700 bar
- ▶ **High Flow High Pressure DOE Project:** Develop 700 bar 10 kg/min system



References - Receptacles for H₂ FC cars and buses



Daimler
EVOBUS CITARO



Ford Focus



IRISBUS



Nissan



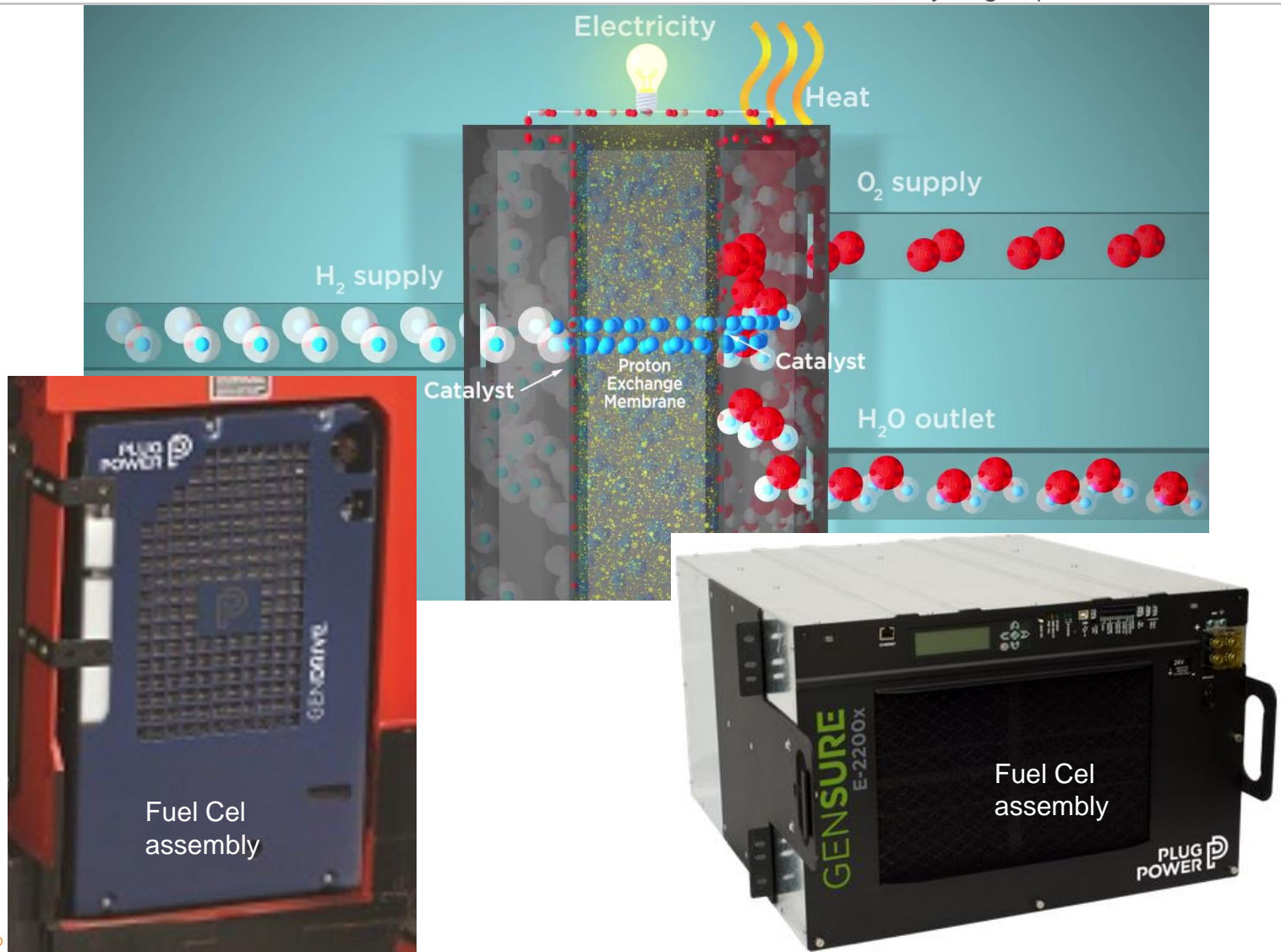
Honda



NEOMAN (MAN)

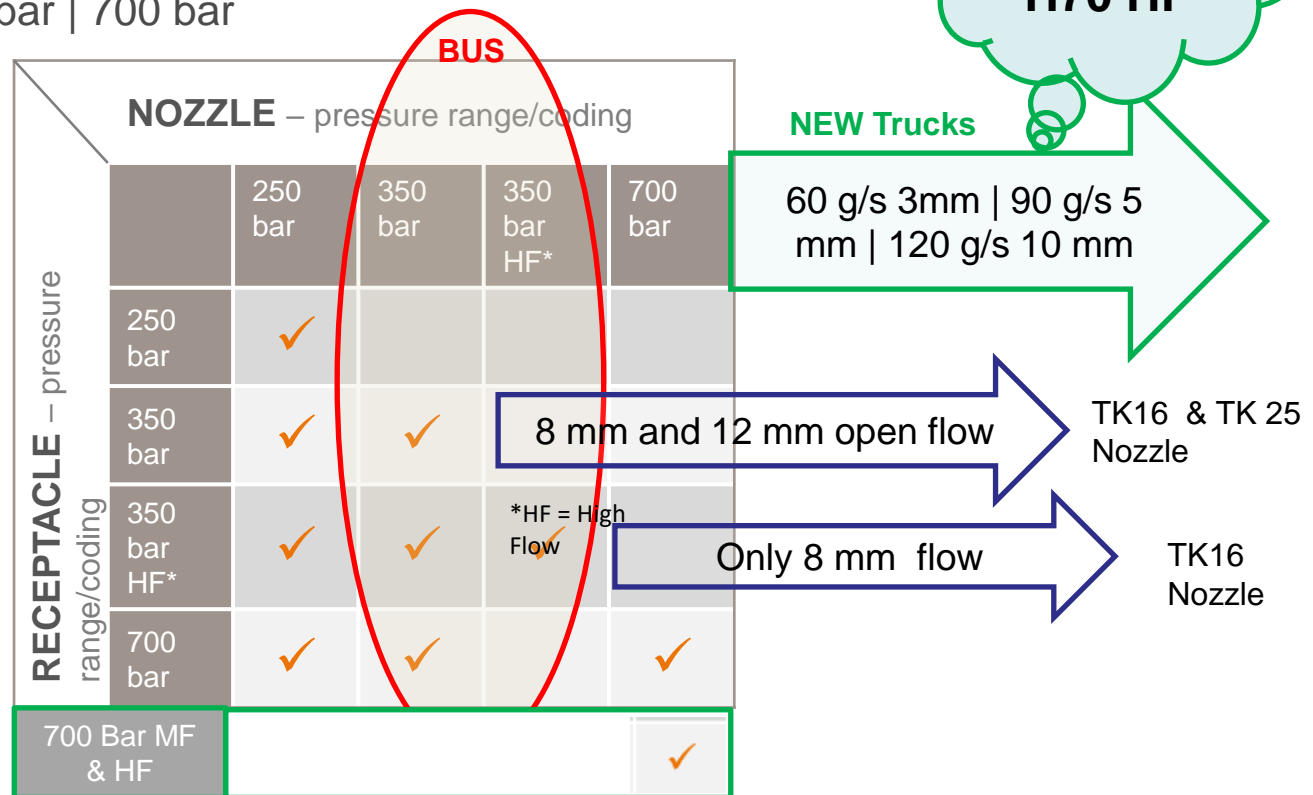
Hydrogen Function and Energy Source

Hydrogen | Product information



Hydrogen coding for pressure range and gas type

- ▶ Diameter coding – different to other alternative energy sources (e.g. natural gas)
- ▶ Length coding – different when other connection pressures: 250 bar | 350 bar | 700 bar



Pistol-grip fuelling nozzle TK17 H₂

- ▶ For H₂ fast filling of cars at self-service fuelling stations
 - ➔ available for 350 bar or 700 bar
 - ➔ with or without data interface
- ▶ Nominal bore DN: 4 mm
- ▶ Temperature range: -40°C up to +85°C (-40°F up to +185°F)
- ▶ Sealing material: Hydrogen compatible
- ▶ Design: With plastic thermal protection and hand grip with magnet. Without gas recirculation
- ▶ Compatible with WEH[®] TN1 H₂ receptacle profile

Approvals

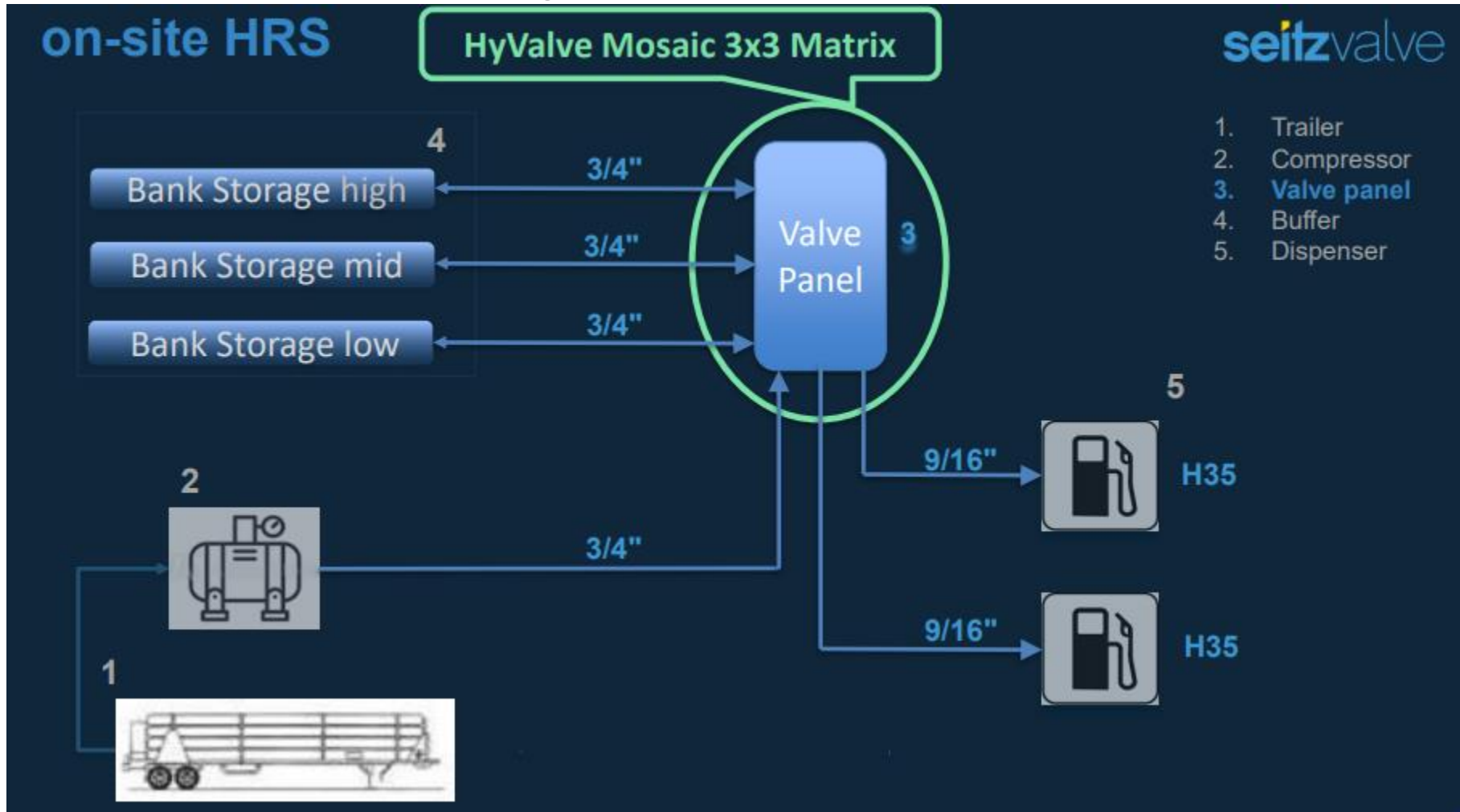
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|------------------------------|------------------|
| All TK17 H ₂ : | ▶ PED 2014/68/EU |
| | ▶ SAE J2600:2002 |
| TK17 H ₂ 700 bar: | ▶ SAE TIR J2799 |
| TK17 H ₂ with IR: | ▶ SAE J2601 |



H2 Storage & Cascading with Seitz Valves

Hydrogen | [Product information](#)

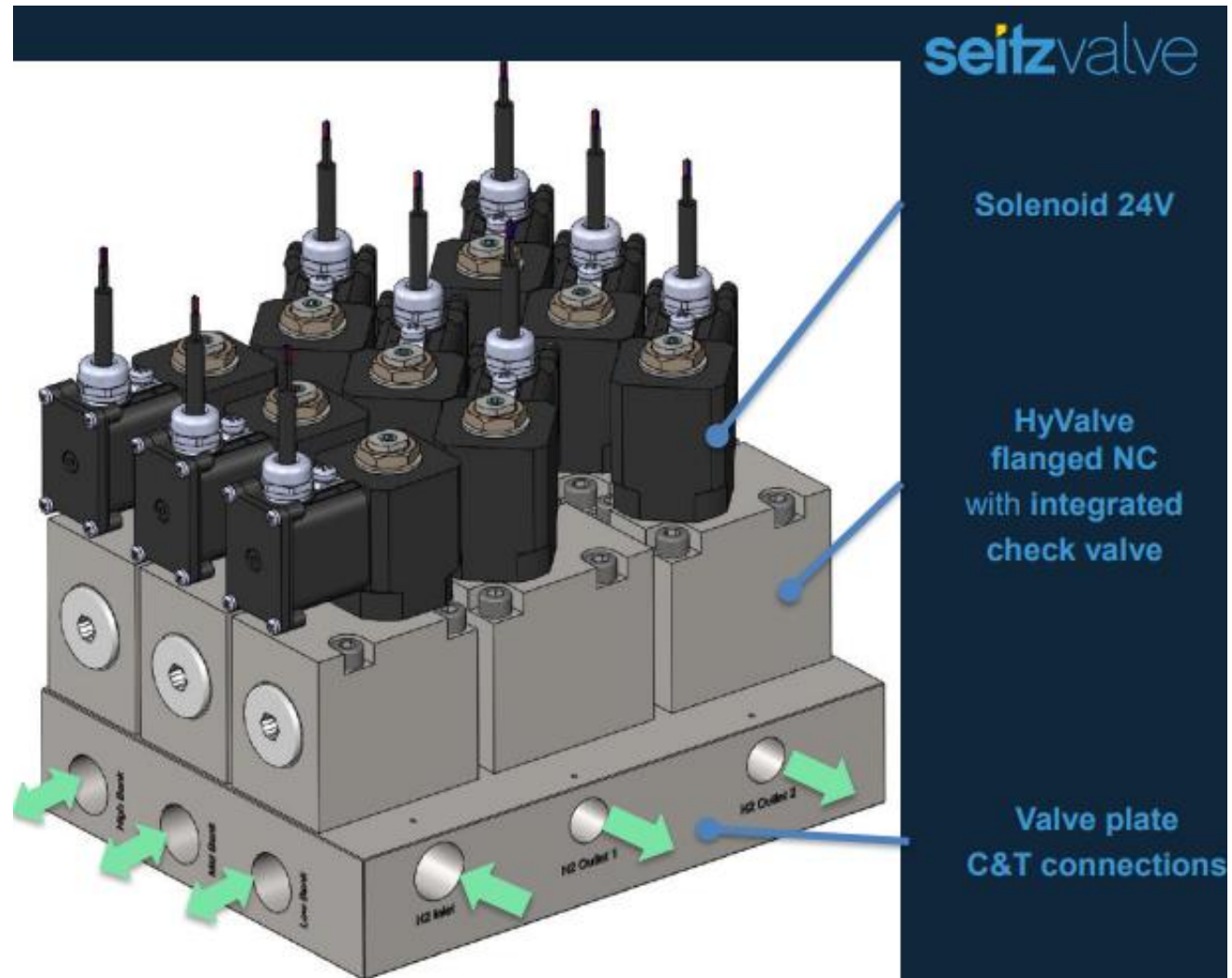
Seitz is WEH Technologies Partner for H2 solutions



H2 optimized cascade filling

Hydrogen | [Product information](#)

Seitz is WEH Technologies Partner for H2 solutions

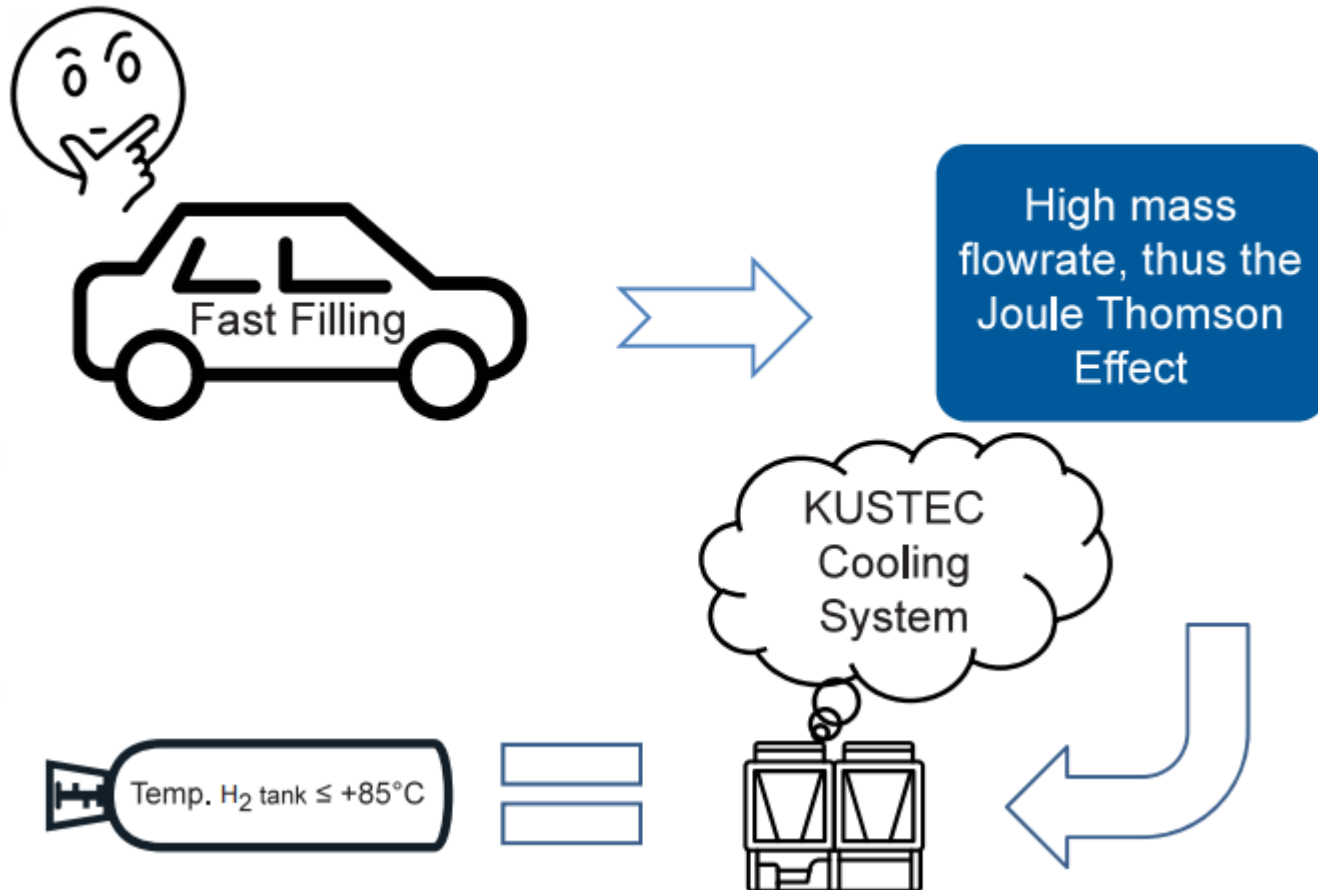


H2 optimized fill by Chilling to -40 Deg C

Hydrogen | [Product information](#)

Kustec is WEH Technologies Partner for H2 solutions

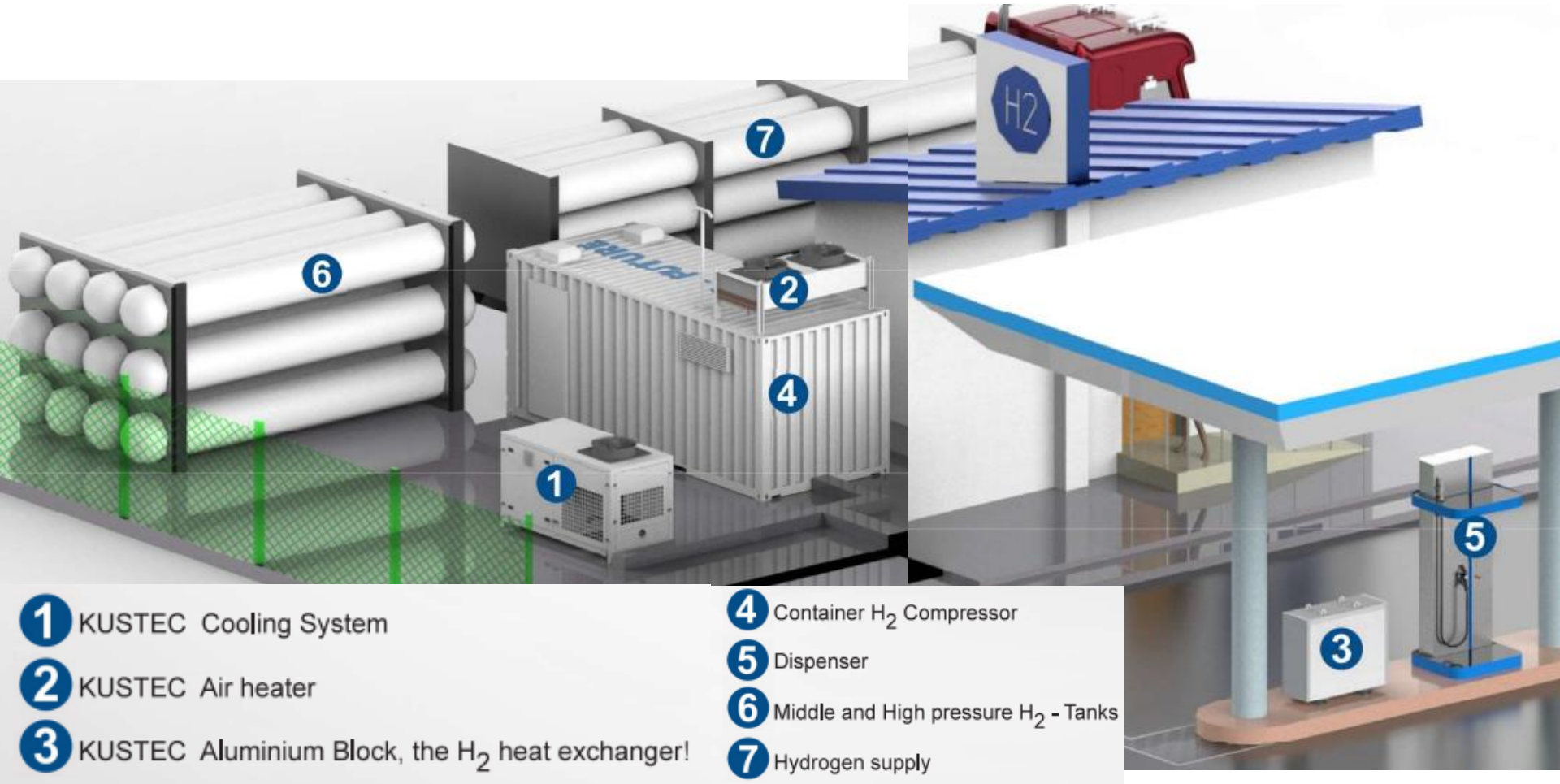
Why H₂ Cooling?!



H2 optimized fill by Chilling to -40 Deg C

Hydrogen | [Product information](#)

Kustec is WEH Technologies Partner for H2 solutions



Pistol-grip fuelling nozzle TK17 | TK20 H70 H₂



H₂ Receptacle for vehicles

- ▶ Receptacle for refuelling of cars, buses and trucks with hydrogen
 - ➔ Available for 250 bar, 350 bar or 700 bar
- ▶ Nominal bore DN: 3 – 12 mm, depending on design
- ▶ Temperature range: -40°C up to +85°C
- ▶ Material: Corrosion resistant
- ▶ Sealing material: Hydrogen compatible
- ▶ Design: with protection cap, with or without integrated particle filter and integrated check valve

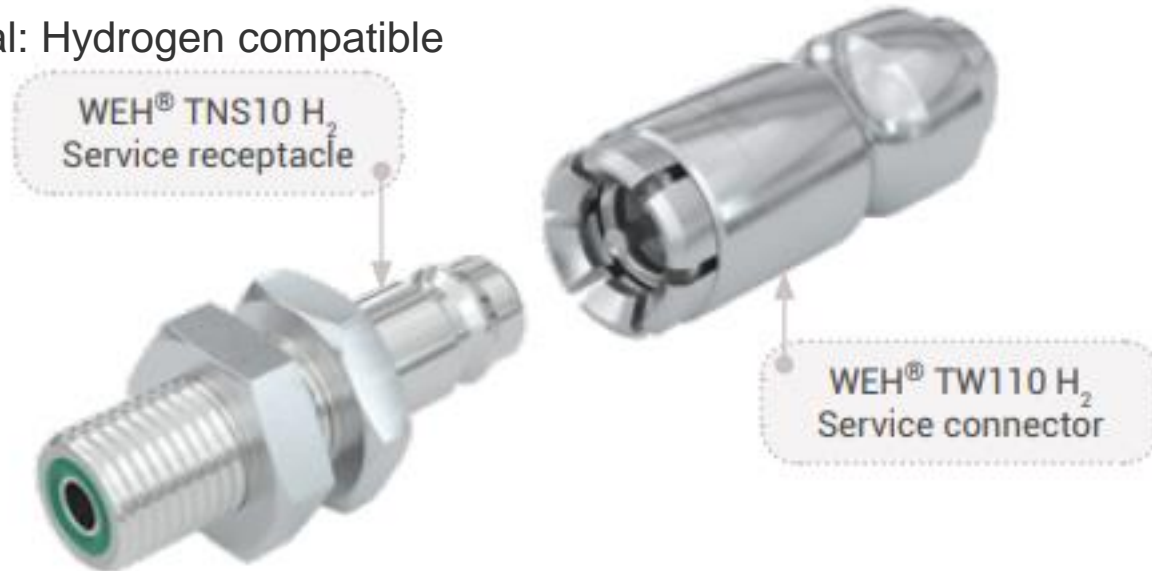


Approvals

- All TN1 H₂: ▶ SAE J2600:2002
- TN1 H₂ 70 MPa: ▶ e1 00 0010 (Regulation [EC] No. 79/2009)
 - ▶ SAE TIR J2799
- TN1 H₂: ▶ e1 00 0010 (Regulation [EC] No. 79/2009)
 - ▶ PED 2014/68/EU
- TN1 H₂ HF: ▶ e1 00 0003 (Regulation [EC] No. 79/2009)
- TN5 H₂: ▶ PED 2014/68/EU

Service and Defueling - SAFETY

- ▶ Service nozzle for discharging of hydrogen fuel tanks at the low pressure side of the vehicle
 - pressure max 16 bar
 - ➔ With check valve (schrader type concept)
- ▶ Nominal bore DN: 3 mm
- ▶ Temperature range: -40°C up to +85°C
- ▶ Material: Corrosion resistant
- ▶ Sealing material: Hydrogen compatible



TS55 assembly for IR Communication

Hydrogen | [Product information](#)



High flow, High pressure Nozzle & Dispenser development

TODAY CARS 1 KG/MIN



TOMORROW TRUCKS 10 KG/MIN

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