ISO/TC 197
Hydrogen technologies

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Item 12.2 Plenary Presentation by Nikola

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Heavy Duty FCEV &
HD Fueling Standardization Needs

ISO TC197 Plenary

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Heavy-Duty Fuel Cell Electric Trucks: Increased Efficiency & Reduced Emission

- US DOE: Transportation is responsible for 27% of America's total carbon emissions, and medium- and heavy-duty trucks account for 23% of transportation's total carbon output.
- Class 8 Trucks haul 80% of goods in the United States and even though they only make up 4% of the vehicles on the road, they use about 28 billion gallons of fuel per year, accounting for around 22% of total transportation energy usage.
- US DOT predicts that freight volume in the United States will grow by 29 billion tons by 2040 — 45% increase
- US DOE, with industry input, is developing performance targets for HD Fuel Cell Trucks

HD H2 Fueling: Development Needs

- H70HF Hydrogen Fueling Protocol
  10+ minutes and NFPA leak checks (~12 min)
- H2 simulation + fueling lab testing needs
- New HD H70HF high flow nozzle, break-way and hose assembly
- Hydrogen vehicle H70HF receptacle
- New compressor for high flow 180g/s+
- New station cooling capacity for T40 H70HF
- Bi-directional communications?
- H35HF protocol expansion
- New high capacity H2 ASME station storage vessels @50MPa

Preliminary TC 197 NWIP Discussion / Intent

ISO Fueling Protocol Standard: First Vehicle Priority*

- Heavy Duty vehicles (e.g. 40 Metric Ton Trucks) with 80+kg storage
- Medium Duty Vehicles (e.g. Buses) with 30+kg storage

NWIP Preliminary Goal*

- Develop a fueling protocol standardization effort that aligns with H35HF (Medium/Heavy Duty) and H70HF (Heavy Duty) Nozzles

Lead Countries:

- US (Convener-Nikola) & Germany (Co-Convener-Shell)

ISO Fueling Protocol Harmonization with:

- ISO TC 197 WGs 5, 24,etc. / SAE / CSA / GTR, etc.

** Note: Further Pressures / Vehicle Applications could be evaluated in the future*

Conclusion

- There is an urgent need for HF nozzles and HD fueling protocol development including new fueling hardware and data projects for 70MPa HD

- NWIP from US-Germany to be made for a fueling protocol effort
  - Preliminary NWIP scope to be developed by March 2019

- Standardization in ISO/SAE is needed for high-flow HD components

THANK YOU!

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