

DOE Sustainable Transportation Summit

Eileen Brown – July 12, 2016

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Linde Covers The Entire Hydrogen Value Chain

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Large-Scale Production



Conventional
(e.g. SMR)



Green
(e.g. BTH)

On-site Supply & Storage



CGH2 storage



LH2 storage

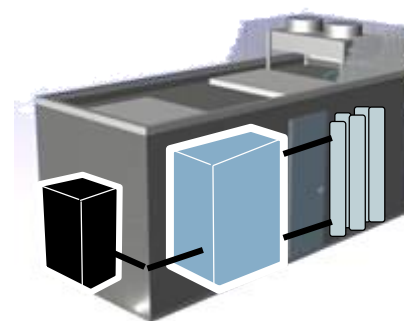


Onsite SMR



Onsite Electrolyzer

Compression/Transfer



Ionic compressor



Cryo pump

Dispenser



350 bar



700 bar

Public H₂ Fueling Sites in California

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- **Accomplishments**

- 1st truly retail open station in the world at West Sacramento
- West Sacramento site has other fuels including ethanol, diesel and methanol and is solar powered
- San Juan Capistrano – more typical retail/convenience store setup with a liquid tank
- Credit card ready with no user agreements, similar to gasoline
- DMS certified for sale by kg
- Easy to use user interface with on demand training and gasoline equivalent fill times
- Safe designs following today's codes and including AHJ approval
- High throughput stations (300 kgs or 75 cars/day)
- Achieved 6 back to back car fuelings
- The world's largest bus fueling station at AC Transit Emeryville, CA
- World's largest hydrogen fueling station (forklift application) in Spartanburg, SC approaching 1 ton per day

- **Challenges/Lessons Learned**

- Permitting
- Architectural Designs
- Site agreements (equipment layout/space, interested owner, setback distances)
- User experience
- Slow/early ramp up with cars

