

Merritt Norton CH4 Energy

Public Service Commission of Utah
Technical Conference
Sept 2, 2009

Liquefied Natural Gas (LNG)

Cryogenic Liquid

- Super-cooled methane -260F.
- 600 times more condensed than liquid
- Non-toxic
- Non-corrosive
- Odorless
- Colorless
- Half the weight of water

Advantages of LNG

Clean, low cost, abundant in North America

1. Extends vehicle range
2. Lower-cost vehicle-fuel tanks
3. L/CNG requires much lower power to produce
4. Bridge fuel to hydrogen

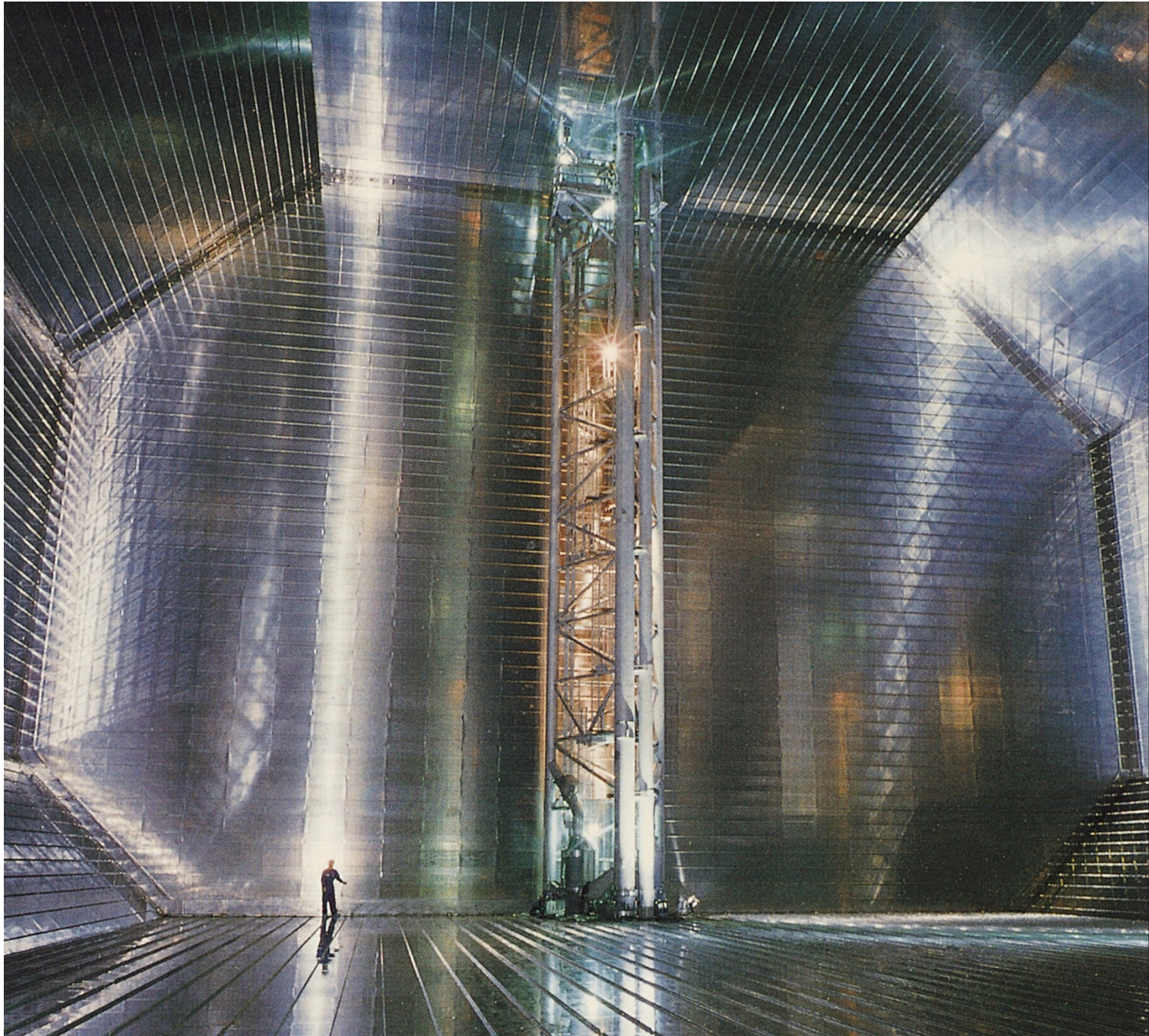
Topics

- How LNG is produced
- Heavy-Duty Vehicles
- LNG L/CNG Stations
- LNG Safety
- New CNG Compression Technology
- Bio-Methane



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Shen Shen, China



LNG Loading Facility



LNG Transport (China)



Satellite Station



LNG Plant, Australia



Micro-LNG



Satellite Station, Norway



Heavy-Duty Engines

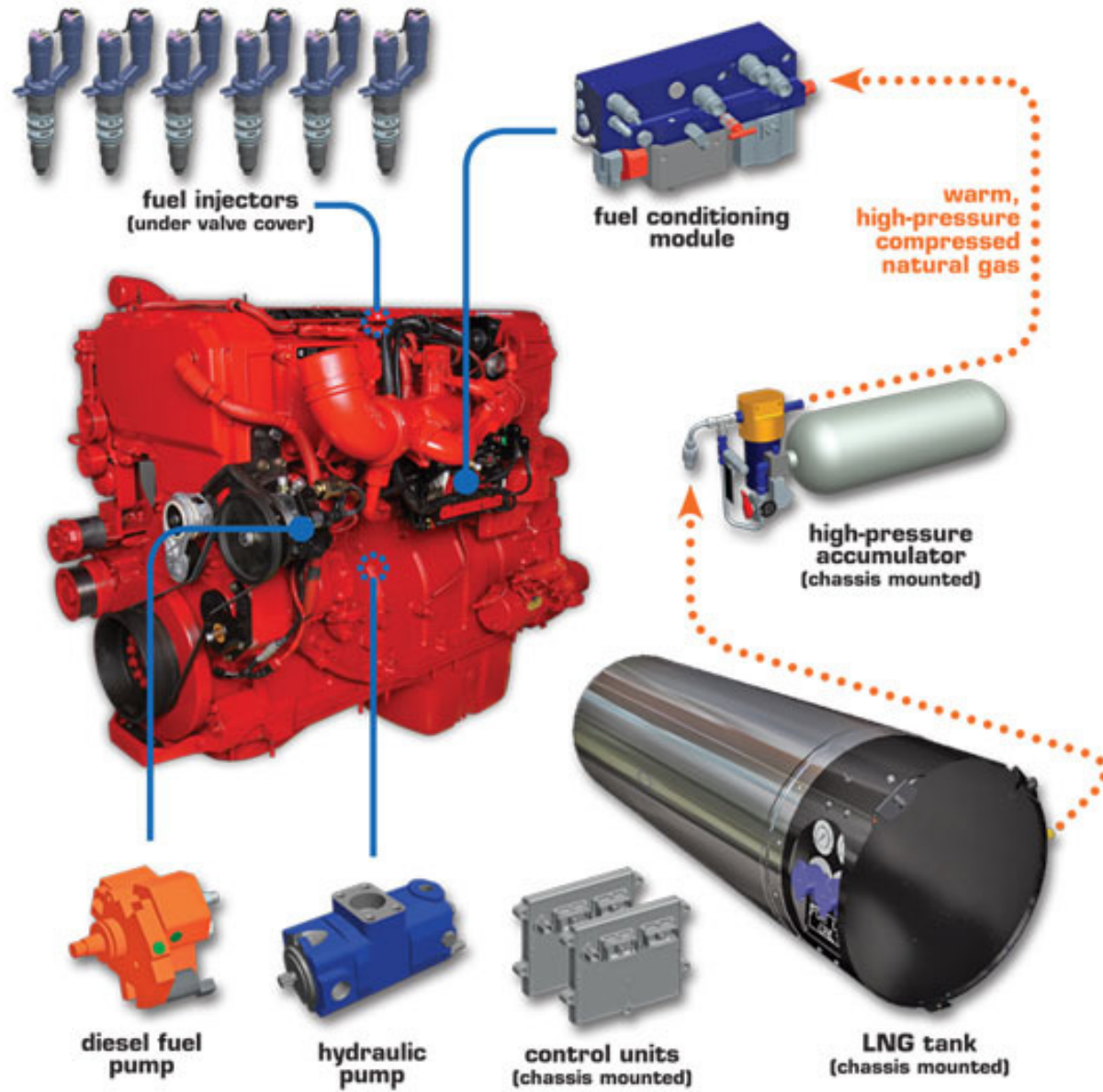
Engine Technology

1. Spark-Ignited
2. HPDI

Liquefied Natural Gas Freightliner M2













LNG Fueling Stations

City Mesa, AZ

City of Mesa, AZ



LNG-- Fueling Station



Sun Metro



Grand Canyon, South Rim



Korea



LNG L/CNG Safety

- National Fire Protection Code 52 (LNG)
- National Fire Protection Code 70 (Electrical)
- ASME 31.3 (Pressure Vessels)

Primary Safety Systems

- Methane Detection
- Flame Detection
- Manual Station Shut-Off
- Odorant

Bio-Methane

- Landfill gas
- Agriculture
- Other organic feedstock



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