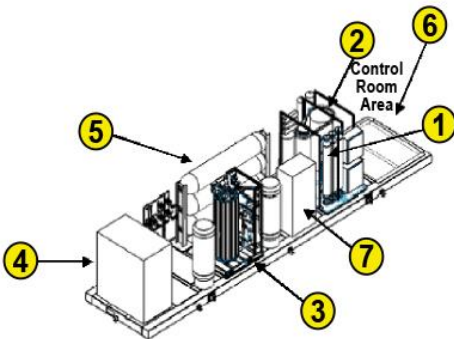


## Hydrogen Fueling Station

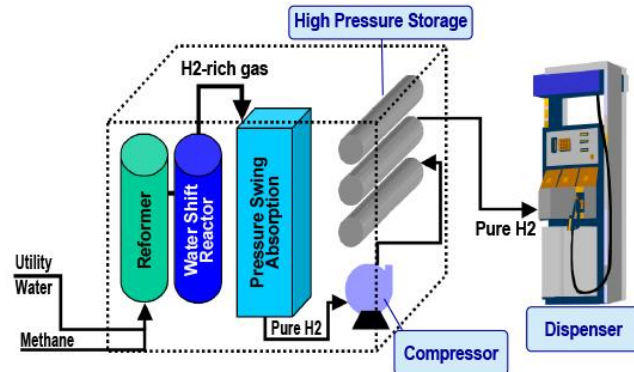


CEM hosts one of the few hydrogen fueling stations in the state of Texas. GTI and its project partners developed and built a fully integrated hydrogen fueling station to be deployed at CEM. An advanced high-pressure dispensing system based on GTI's proprietary algorithm was developed and built for this system, intended to be both simple and reliable. The fueling station includes a control system that can provide remote monitoring and operation. The system is capable of producing up to 80 kg of hydrogen per day, at a marginal cost under \$2/gge and shows promise of reaching DOE's fully loaded cost goal of \$3/gge at commercial production rates. GTI's dispenser and hydrogen generation technologies have been licensed to Texas-based GreenField. CEM serves as the fuel station operator in conjunction with ongoing fuel cell vehicle evaluation projects.

Item	Description	Comment
①	Gas Pretreatment system and water purification	These components are a skid-mounted, fully enclosed hydrogen station that can be permanently sited on a 35 x 10' concrete pad or moved from time to time as needed.
②	Natural gas reformation system (SMR). This includes the gas pretreatment, reformer, water shift reactor, heat exchanger, and burner.	
③	Pressure swing absorption hydrogen purification system	
④	Hydrogen compression. Compresses hydrogen to 6600 psig for on-board storage.	
⑤	On-board hydrogen storage with capacity of approximately 50 kg of hydrogen at 7,500 psig	
⑥	Power controls system and data acquisition system	
⑦	Natural gas booster compressor (if needed) to boost gas feed pressures to 150 psig.	
⑧	Off-board hydrogen dispensing using GTI's HydroFill™ technology. Dispensing pressure will be 5,000 psig (not shown in diagram).	The dispenser is to be located on separate fueling island pad, at least ten feet from hydrogen station skid.



3-D view of station skid without the enclosure.  
Major system components described in table.



GTI / GreenField Fueling Station Process Flow Diagram

- Skid-mounted
- Easily installed (basic utility hook-ups)
- Can be moved for future relocation
- Simple concrete slab foundation
- 5000 psi dispensing
- 80 kg / day production
- Variable on-skid storage capacity
- GreenField Recip Oil-free compressor