

Messer Hydrogen Mobility



Company

Messer is the world's largest privately owned industrial gases and technology provider.

Products

Messer manufactures and supplies hydrogen, oxygen, nitrogen, argon, carbon dioxide, helium, specialty gases, and cryogenic equipment technologies for our customers. Messer offers hydrogen with a range of carbon intensities to meet our customers' funding requirements and sustainability targets.

Key Markets



Food and Beverages



Metals



Chemicals and
Specialties



Healthcare



Water Treatment



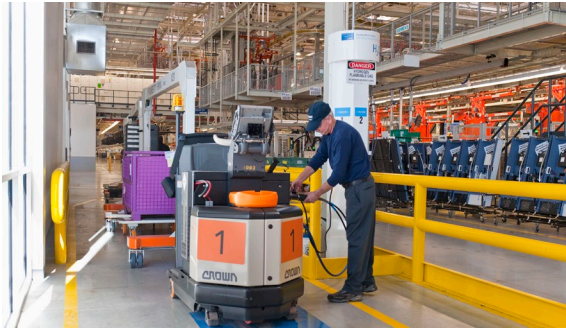
Electronics



A Leader in Hydrogen Mobility



Material Handling



- Fueling material handling equipment since 2004
- First indoor hydrogen dispensing in 2006
- Supply hydrogen and fueling equipment to the largest fleet of fuel cell forklifts in the world

Heavy Duty Trucking



- Messer is expanding our work with heavy duty public transit vehicles to hydrogen fueling for commercial trucks.
- Messer's first light duty hydrogen fueling station was with Ford in 1998

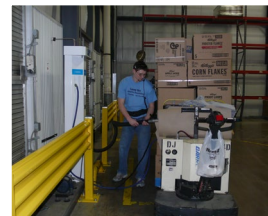
Transit

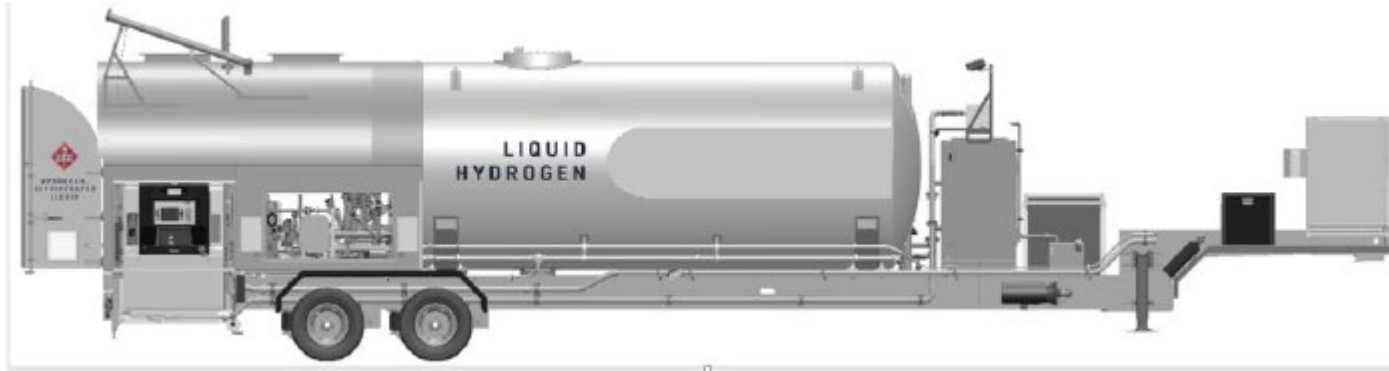


- Fueling 30 bus fleet since 2011 in Emeryville, CA and Oakland, CA stations since 2014 for AC Transit
- Upgraded AC Transit Emeryville to liquid hydrogen pumping system in 2019 that currently supports 30+ fuel cell buses
- Oakland upgrade to liquid pumps under-way (Q3 2025)

Messer Delivers Dependability and Safety:

- Decades handling liquid hydrogen
- 1,000 kg/day + fueling in Transit
- Project lead for California Energy Commission funded projects
- Successfully executed for multiple municipal transit fueling systems
- Zero-recordable H2 fueling system safety incidents
- Over 2 million safe fueling events
- 100% operational up-time on transit fueling systems
- No missed AM roll-outs
- Strict Internal Change Controls





Overview

- Liquid based Fueling System for 350/700 Bar vehicles
- Ideal for small – medium fleets
- Independent power / facility power
- Fully self-contained system
- LH2 tank / pumps / dispensing
- Simplified permitting

Specifications

- 4,000 gallon tank
- High pressure liquid pump
- Approx flow rate: 135 kg/hour
- J2601 compliant fill protocol

Messer

Install / Permitting / Commissioning / O&M / LH2 supply

Design – Build - Operate – Maintain +LH2 Supply



Engineering Design

Design using latest Codes & Standards, lead AHJ process

Construction Management

Build systems to design specifications on time and on budget

Commissioning and Training

Manage the safe start-up of your system with training on the fill protocol to increase safety and system performance

O & M + LH2 Supply

Dependable uptime supported by remote monitoring systems and rigorous preventative maintenance program, multiple supply sources to help ensure on-time deliveries



Construction Management

Project awarded in 2014

Supports 30 Fuel Cell Bus fleet

Major upgrade in 2019 to liquid pumps (previous gaseous compression)

Messer provided Design Services and equipment supply, along with commissioning and training

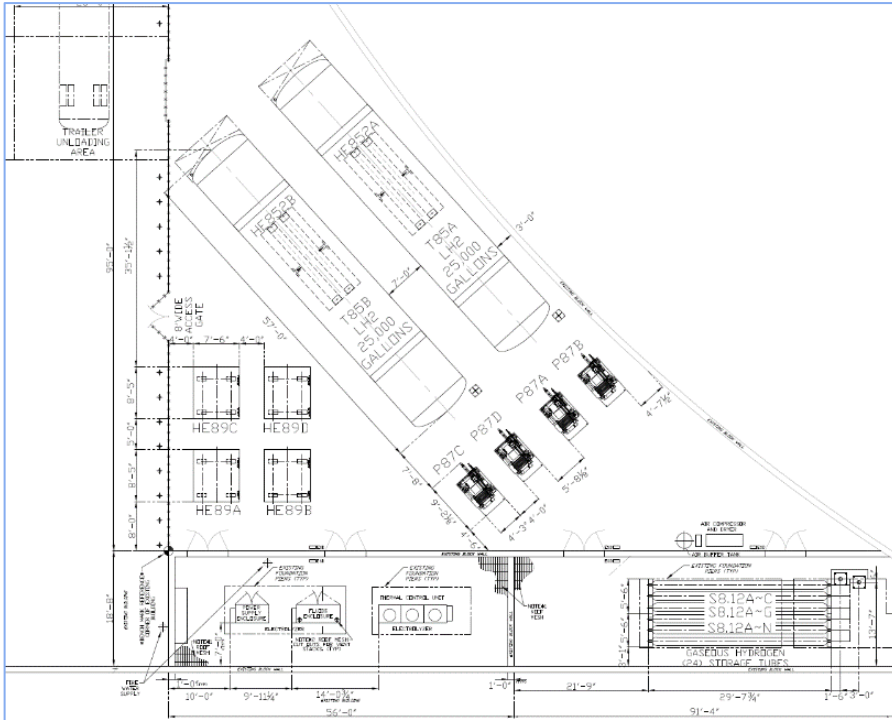
Construction Management

Site in Operation since 2017

Supports 30 Fuel Cell Bus fleet

Major upgrade under-way to operate up to 150 fuel cell buses

Dual 25,000 gallon LH2 tanks and (4) dual piston pumps, capable of 600 kg/hour



Project Overview

Design-Build project awarded in 2025

LH2 Station to Support 53 Fuel Cell Buses

Design under-way, Construction to begin 1/2026

Commissioning July 2026

Messer is the Prime, leading all Design, Construction, Equipment Supply, along with Commissioning and Training

Messer to provide LH2 Supply & on-going O&M activities

