

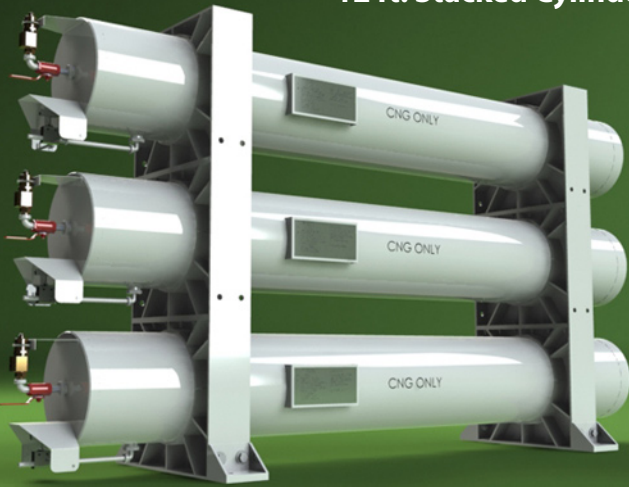


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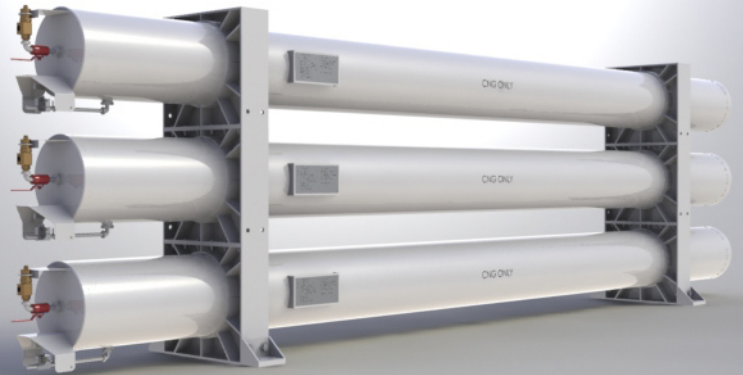
Compressed Natural Gas Storage Vessels

Stacked Cylinder Design

12 ft. Stacked Cylinders



24 ft. Stacked Cylinders



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The 20-inch outside diameter, cylindrical CNG storage vessels are for the commercial dispensing of compressed natural gas to motor vehicles at CNG fuel stations. The vessels can supply CNG at up to 5,000 psi to a fill-up nozzle. Typical commercial systems supply CNG to the customer vehicles' fuel tanks at ~3,500 to 3,000 psi.

The vessel assembly is custom designed for the end users, and is designed using the specifications and requirements from ASME Section VIII, Division 2, for National Board registration and ISO 11439, CNG-1, non on-board unit.

The vessels overall length may be customer specified up to 24-ft. long. The footprint width is 42-inches (1.067 m). The height of the unit, with 3 vessels oriented horizontally and stacked vertically, one on top of the next, is 85 inches (2.159 m) tall.

The empty 24-ft. 3-tank assembly weighs 31,225-lbs. and 32,630-lbs. fully loaded with CNG.

The pressure vessel design employs a thick walled cylindrical shell, and specially designed 1/2, 3/4 and 1-inch NPT couplings. The pressure relief valve nozzle has the same design as the other nozzles, except it has 3/4-inch NPT thread.

The vessel has a saddle-type support structure, designed to allow stacking of the vessels in a variety of fashions.

A drain line with a high pressure needle valve is located at the bottom of each vessel for easy maintenance cleanout.

An optionally provided high pressure "lock out" valve can be used to close off the vessel's relief nozzle during scheduled maintenance operations. This valve's use in design and practice are prescribed in ASME Section VIII, Division 2.

SPECIFICATIONS

- Capacity: three (3) 12-ft. vessels is 16,437-SCF at 5,000 psi.
- Capacity: three (3) 24-ft. vessels is 33,840-SCF at 5,000 psi.
- Maximum allowable working pressure of 5,000 psi, at 120° F.
- Minimum design metal temperature of -20° F at 5,000 psi.
- Analysis of cyclic pressure loadings between 5,000 and 3,500 psi yields a vessel life in excess of 109 years.
- Design also incorporates strength requirements for maximum wind and seismic loads.



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