Boyer Receives Patent for "CNG/LNG Filling Station" (*Canopy Mounted Alternative Fuel Filling Station*)

Houston, TX. – Boyer, Inc., an Electrical, Mechanical, Civil and Alternative Fuel Contractor based out of Houston, Texas recently were granted a Patent from the U.S. Patent & Trademark Office for a "*Canopy Mounted Alternative Fuel Filling Station*".

With U.S. natural gas production increasing and the price of natural gas currently lower than the price of gasoline and diesel fuel, this phenomenon has led to an increasing interest in natural gas-based fuels for vehicles. The most common type of natural gas vehicle operates on compressed natural gas (CNG) as well as liquefied natural gas (LNG) as a vehicle fuel, especially for commercial trucks because LNG is natural gas, super-cooled to its liquid form resulting in a much higher energy density than CNG. Moreover, Hydrogen is now emerging as a major alternative fuel for vehicles and can be stored and provided in liquefied or gaseous form.

At CNG refueling stations, the natural gas is typically taken from the local gas utility's line at low pressure, compressed to around 3,600 pounds per square inch gauge ("psig"), and then stored in a vehicle's storage tanks at high pressure. For example, at a "fast-fill" CNG station, the combination of a relatively large compressor coupled with a high-pressure storage tank system fills the vehicle's storage tanks in about the same amount of time it takes to fuel a comparable petroleum vehicle. LNG (or LH) stations are structurally similar to gasoline/diesel stations, because they both deliver a liquid fuel.

In the mobile fueling arrangement LNG is delivered by a tanker truck that contains metering and dispensing equipment onboard to fill the storage tank. In the case of LH, the cooled gas is likewise delivered to a storage tank at the refueling station.

In addition to expenses related to construction ($1 to $4 million, according to the Energy Information Administration), a fueling site will require at least one storage tank as well as pumps/ compressors. For this reason, there is interest in converting gasoline/diesel stations to those that can supply CNG/LNG and Hydrogen. Current attempts to retro-fit existing stations have envisioned setting aside surface area for the tanks, compressors, pumps, and related equipment or even excavating the gasoline/diesel tanks and replacing them with tanks suitable for natural gas. These solutions are expensive and create a substantial change of the footprint of the filling station. As a result, there is a need, therefore, for a simple and efficient arrangement to convert or retro-fit a gasoline/diesel station into one that can also provide CNG, LNG, Hydrogen or any other alternative fuel that would typically require a retro-fit.

The premise of the Boyer Patent is simple. With the limitations of any existing retail fueling station or anticipated construction of a new facility, it goes without saying; there exists one inevitable problem...space. For existing retail outlets, more specifically, "fueling stations", it is in many cases, non-existent; for future new structures, well, obviously the cost will be excessive.

With the Boyer "*Canopy Construction Method"*, coined by Boyer personnel as a "Top Down" method of construction, this problem is not only eliminated, there are numerous advantages as well:

- Safety
- Maintenance
- Ease of Installation of Fueling Lines
- Ease of Filling and/or Tank Replacement
- Protection of Tanks
- Will not impede on available parking spaces
- Cost
- Does not interfere with Retail Structure "Foot Print"

...and more

Boyer Inc. has a staff of some 230 employees consisting of Engineers, Draftsman, Electricians, Fabricators, Mechanics, and more. With an expert team of experienced Engineers, Welders and Fabricators and a state of the art complete "in-house" fabrication facility, Boyer has plans to pre-construct "stations" as to allow for all components to be skid mounted, "pre-assembled" and simply loaded on a 40' flat bed for delivery to any potential location. Upon arrival, "component skids" can simply be off loaded with a Hydraulic Crane and lifted into position on the Station Canopy; included in Boyer's "Top Down" construction Method would be the inclusion of Canopy Mounted Tanks. Any companion "component skids" would follow.

It goes without saying this "pre-fabrication approach" of construction results in nothing less than:

- Quality Fabrication, Engineering & Construction Performed In-House
- Reduction of On-Site Construction Time by Upwards of 50%
- Reduction of On-Site Interference to Existing Retail Shops/Stations

…ultimately saving the owner tens of thousands of dollars in additional construction costs.

Lastly, as for the owner of any retail shop or station being retrofitted, one fact cannot be overlooked. The loss of revenue to any retail shop/station during construction related interference is a given. Utilizing a conventional "piece by piece" on-site method of construction, well…takes time. With the Boyer pre-fabricated, skid-mounted ship to the site, component pieces ready to be off loaded and set in place, on-site construction time and retail shop/station interference is reduced dramatically.

.