

## PRESS RELEASE

### 1,000 Fuel Cell Electric heavy vehicles for cleaner port operations - powered by Horizon

*Fuel cells are expected to play a big part in addressing air quality problems at shipping ports and logistics hubs around the world.*

**Singapore, 10 July 2019:**

Horizon Fuel Cell Technologies has announced the signing of an MOU to supply 1,000 units of 100kW and higher automotive fuel cell systems for heavy duty trucks within three years, with the first units to be delivered in the second half of 2019. This represents one of the largest deployments of fuel cell heavy vehicles globally.

This is an important step in improving air quality around busy shipping ports, with diesel engines a major contributor to air pollution. According to scientific groups, diesel powered vehicles and equipment account for approximately 50% of all nitrous oxides and two thirds of all harmful particulate matter in major economies. The International Agency for Research on Cancer draws attention to the damaging nature of tailpipe emissions from diesel engines.

This latest deal on the recently unveiled high power, high power-density automotive fuel cells from Horizon highlights the competitiveness of the Horizon systems in terms of performance and economics. It also underscores the attractiveness of hydrogen as fleet operators seek to meet new restrictions on the use of diesel-powered vehicles and equipment. The demanding usage scenarios in ports and logistics hubs are not well suited to Battery-Electric Vehicles due to range limitations and charging down-time.

Germany's highest court recently prioritized air quality above the interests of leading German automotive players by opening the way for bans on diesel vehicles in German cities. Notably, 48 of the 80 European Union cities tested in 2018 recorded elevated levels of Nitrogen Dioxide (a known cause of cardio-pulmonary diseases), with 75% of vehicular emissions estimated to come from diesel vehicles.

Groups such as the California Air Resources Board (CARB) have long campaigned for improvements in air quality around ports and heavy vehicle hubs, pushing for measures to improve air quality for the benefit of community health in the United States, and similar initiatives are reflected around the world. Dependence on diesel powered heavy vehicles must be reduced dramatically, and it must happen with urgency. The world needs clean transport solutions.



### **Deployments of Fuel Cell Commercial Vehicles in China are now at fleet scale**

When moving to electric powered heavy vehicles, there are distinct advantages of Fuel Cells, with one or two hydrogen filling stations able to support busy fleets. Many fleet equipment operators are unaware what it takes to convert from diesel to electric power if totally dependent on battery-based solutions; large increases in equipment numbers are usually needed, along with significant investment in charging infrastructure, acquisition of additional space for charging, upgrades to electricity supply, and the inevitable increase in electricity costs. Shifting to hydrogen, on the other hand, involves no significant change in the port and warehouse operations, with each filling station able to perform hundreds of fills each day.

Mr. George Gu, Chairman of Horizon Group, commented: "We are proud that our humble PEM Fuel Cell technology can contribute to a cleaner world. The awakening of the world to the harmfulness of diesel engine emissions has accelerated the electrification of heavy vehicles. The resultant improvements in air quality transform the quality of life for those most affected by air pollution. We are delighted to be a force for good."

#### **About Horizon:**

Horizon is a fuel cell pioneer and global leader in fuel cell commercialization, having been engaged in fuel cell R&D for 16 years. Horizon has a strong track record of innovation, winning awards along the way from Frost & Sullivan, Time and RedPoint, and recognition from various national research laboratories. Horizon supplies a full range of fuel cell systems, from low power air-cooled fuel cells through to high power automotive systems over 100kW, and containerized fuel cell power plants. Horizon is one of few enterprises with depth in all core technologies of PEM fuel cells, from catalyst, membrane electrode, bipolar plates and stacks, to system control.

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