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NEWS RELEASE:

70Mpa/35MPa Mobile Hydrogen Station Development

Taiyo Nippon Sanso Corporation (TNSC) announced today that it has recently developed a 70MPa/35MPa mobile hydrogen station to supply fuel cell vehicles with 70MPa and 35MPa hydrogen gas. This is the first mobile hydrogen station in Japan to be able to supply hydrogen compressed to 70MPa. Details are as follows.

1. Background

Today, in the field of hydrogen energy and fuel cells, a great deal of research and development work related to technologies for hydrogen production, storage and use is being conducted by car manufacturers, universities and research organizations. Storage of hydrogen in the form of compressed gas is the most common hydrogen storage method and is used in most hydrogen stations that supply fuel cell vehicles with hydrogen. This method is expected to become more widespread in the future because it is more cost effective than employing liquid hydrogen or metal hydride for fuel storage.

There is, however, a disadvantage in that, among the hydrogen stations currently in operation, the maximum filling pressure for fuel cell vehicles is 35MPa, and the distance a vehicle can travel on one fill is short compared with the distance a gasoline-fuelled vehicle can travel on one tank of gas. In order to extend the distance a fuel cell vehicle can travel without changing the capacity of the fuel

tank, it became necessary to fill the fuel cell car with hydrogen gas at a higher pressure. In Japan, under a New Energy and Industrial Technology Development Organization (NEDO) project, equipment that could be used at 70MPa and above is therefore being developed. Development work is also being done in other parts of the world especially North America and Europe.

2. Introducing the 70MPa/35MPa mobile hydrogen station

By making the hydrogen station mobile and also enabling not only supply at 35MPa but also supply at 70MPa — a first for Japan — TNSC is making the supply of high pressure hydrogen much more widely available and meeting a diversity of needs. The station facility and station base are outlined below.

(1) Station facility

The70MPa/35MPa mobile hydrogen station comprises a compressor, accumulator and dispenser and these are built into a truck.

Compressor

The compressor capacity is about 30m^3/hr and maximum delivery pressure is 90MPa.

Accumulator

The accumulator has an accumulation capacity of 912m^3 and uses a C-FRP* composite container to make the whole facility more lightweight.

* Carbon Fiber Reinforced Plastic

70MPa and 35MPa dispenser

Has a Coliori flow meter and a flow adjustment valve and controls flow during filling

As a result, when filling fuel cell vehicles, the station could fill about eight 35MPa fuel cell cars consecutively or it could fill one 35MPa fuel cell bus. In the case of filling at 70MPa it could fill one fuel cell car.

Station base
The base has a parking space for the 70MPa/35MPa mobile hydrogen station and a space for packed cylinder.
Place of installation: Mizue-cho, Kawasaki-ku, Kawasaki (in our Kawasaki Mizue office)

3. Future plans
Taiyo Nippon Sanso has taken part in many related-activities such as the development of basic technologies for hydrogen utilization including the Komatsu hydrogen station under the WE-NET Project (World Energy Network: International cooperation in research and development of clean energy system with particular emphasis on hydrogen), and the Kasumigaseki hydrogen station, the Senju hydrogen station and the Expo 2005 hydrogen stations under the JHFC Project (Japan Hydrogen and Fuel Cell Demonstration Project), and the formulation of NEDO’s technical standards. This latest facility is a second-generation station incorporating these achievements. We will capitalize on the flexibility, safety and originality of this station to make up for the weaknesses in the existing hydrogen infrastructure and to contribute to various activities for a hydrogen energy society, and we will also promote this technology energetically to car manufacturers, universities, and research organizations involved in the field of hydrogen energy and fuel cells to create demand, etc.


高圧ガス


Mobile Hydrogen Station
大陽日酸
ydrogen