

ANGVA2U Info 06/2019. 19th June 2019.

(for ANGVA members only)

ANGVA2U Info aims to share information, data, and news related to NGV with ANGVA members. However, these information, data, and news are collected and shared in good faith, without any guarantees of accuracies. Members are advised to use these information and data prudently and at their own risks.

1.0 Safety of Fuels

As highlighted in ANGVA2U Info issue 02/2019 dated 25th February 2019, safety is crucial in all transport fuels be it gasoline, diesel, LPG, CNG, LNG, Electricity or Hydrogen. Safety incidents can happen and it will happen if safety is not managed properly. "Anything that can go wrong will go wrong" said Murphy's Law. And it will go wrong when it can do the most damages.

Safety incidents related to conventional fuels such as diesel and gasoline are treated as normal and do not called into questions about the safety of these fuels unlike incidents involving alternative fuels such as CNG, LNG, Electricity and Hydrogen. In reality all these fuels, be it conventional fuels or alternative fuels are as safe as it could be. It is how we handled it make it safe or unsafe. Each fuel, due to its chemical and physical characteristics, will require slightly different safety practices, precautions and handlings.

The starting point of ensuring safety is to have safety standards in place, and adoption of these standards as regulatory requirement by the relevant authorities of the country concern, followed by compliances, monitoring, enforcement, education & awareness, emergency response plan, and incident investigation (see figure 1).

Emergency responders such as police, fire fighters, medical emergency personnel, etc., must be trained and any safety incidents must be investigated. Safety incident investigations must be based on finding the causes and contributing factors and to make recommendations. Incident investigations must be based on placing no blame and liability with emphasis on learning, to improve future safety and prevent similar safety incidents from happening.



2.0 Selected News / Articles

2.1 Norway: Explosion at hydrogen filling station June 11, 2019.



In Sandvika near Oslo, an explosion occurred at a hydrogen filling station for fuel cell cars on Monday. Until establishing the cause of the incident, the supplier Nel has closed ten more stations.

According to Norwegian media, the explosion took place on Monday around 5:30 pm at the Uno-X

station in the Oslo suburb of Sandvika. According to the company, no one was injured but one report mentions two minor injuries.

"It is too early to speculate about the cause," Nel boss Jon André Løkke said in a telephone interview. "Our top priority is the safe operation of the stations we supply. As a precaution, we have temporarily closed ten more stations until further information is available." According to the portal E24, the closed stations are located across Norway, Denmark and other countries.

The drivers of fuel cell vehicles in Norway will probably have some difficulties in the coming days, as Uno-X is the leading supplier in the country. It is not yet clear how long the H2 filling stations will be out of service.

Two experts are said to have flown in from Denmark during the night to advise the rescue forces on site and support the authorities in their technical investigations.

The operating company Uno-X Hydrogen is a joint venture of Uno-X, Nel and Praxair. They inaugurated the station in November 2016 as the first of a new generation of filling stations developed by Nel. In addition to requiring less space, it is a new layout that distinguishes this type of station: Due to the improved cooling of the hydrogen, the pump can be placed up to 50 meters away from the other components.

Source: <u>https://www.electrive.com/2019/06/11/norway-explosion-at-fuel-cell-filling-station/</u>

2.2 Norway

A hydrogen fueling station fire in Norway has left fuel-cell cars nowhere to charge

by Echo Huang. June 12, 2019

Update, June 15: *The article has been updated from a statement from Nel Hydrogen.*

A hydrogen fueling station explosion earlier this week in Norway, <u>one the world's most electrified</u> countries in transport is worrying.

On Monday, a hydrogen refueling station located in Bærum, a suburb of Norway's capital Oslo exploded around 5:40 pm local time. The fire was contained within three hours, <u>said Nel Hydrogen</u>, a hydrogen supplier which formed the joint venture Uno-X to operate the station. Two people were sent to the hospital after the explosion due to an airbag triggered in a car nearby under the explosion pressure, <u>local media Tu reported</u> (link in Norwegian).

Founded in 1927, Nel operates one of the largest hydrogen fueling businesses in Norway. It has $50 \frac{1}{1000}$ fueling stations in nine countries. After the explosion, the company has shut down 10 more stations, which are located in multiple countries including Denmark and Norway, <u>local news E24 reported</u> (link in Norwegian). Quartz has reached out to the company for investigation process and will update the piece when hearing back.

In an email statement to Quartz, Nel's chief executive officer Jon Andre Løkke said that no unit exploded at the site. The company's initial investigation showed that hydrogen gas that had leaked caught fire in the open air. And that created a pressure wave.

Japanese carmaker Toyota and South Korea brand Hyundai <u>have also both halted sales</u> of Fuel-cell vehicles (FCVs) in Norway after the incident.

The explosion has left fuel-cell vehicle (FCV) owners <u>few options to charge</u> as Uno-X, is the leading supplier in the country. And the situation has a broader global implication. A chemical explosion last week in California's Santa Clara has also put local drivers in a similar situation where they face a hydrogen shortage <u>after the explosion</u>.

These incidents come at a time the world is increasingly talking about moving to fuel-cell cars as they provide solutions to range anxiety, a core problem for battery electric car owners today. FCVs have long distance range and require a short time to refuel. Plus, FCVs are zero-emission. The trouble is there aren't enough hydrogen stations, which discourages car buyers from choosing FCVs but this often means companies don't want to build hydrogen stations in the first place. And questions of transporting and storing hydrogen remain the top priority—<u>hydrogen has lower ignition energy than natural gas or gasoline</u>.

As the world pushes forward with FCVs its problems will need to be addressed. China, the world's largest auto market, is going full force at FCVs now. Wan Gang, China's former science and technology minister has been vocal about using FCVs in <u>public transport and ride-sharing</u>. And China is taking notes on <u>FCV</u> <u>developments</u> from Wan, the architect behind China's battery-powered market, now taking <u>half of the world's total sales</u> of electric cars. In the US, California <u>takes up half of the 11,000 FCVs</u> on the road. Toyota's selling its flagship fuel cell <u>passenger car Mirai</u> to eleven countries including the US, Japan, and nine countries in Europe.

Source: <u>https://qz.com/1641276/a-hydrogen-fueling-station-explodes-in-norways-baerum/</u>

2.3 Belgium

Tesla vehicle caught on fire while plugged in at Supercharger station

by Fred Lambert. June 1, 2019. @FredericLambert



Here are some pictures of the aftermath (by Marc De Roeck via HLN)

A Tesla Model S has caught on fire and completely burned down while plugged in at Tesla's Supercharger station in Antwerp, Belgium.

The local news is reporting that the Model S caught on fire a little while after starting to charge (translated from Dutch):

"The driver of the car had parked it at a so-called 'Supercharger', a fast charging station, at the Novotel at Luithagen-Haven. When he returned a little later, his Tesla and the supercharger were lit up. Possibly there was a technical problem before charging."

The fire brigade used an interesting technique to extinguish the fire and make sure it doesn't reignite, which has been an issue with electric car fires.

Antwerp's fire department submerged the car into a pool of water:

"Moments later, the fire was extinguished by the fire department by immersing the car in a container with water. To ensure that the fire does not flare up again, the Tesla, or what remains of it, remained in the water for the rest of the night."

We contacted Tesla about the situation and we will update if we get an answer.

Tesla fires at Supercharger stations have been quite rare, but it's not the first example.

Back in 2016, a Tesla Model S caught fire and burned down while charging at a Supercharger station in Norway.

At the time, the automaker said that the cause of the fire was a short-circuit in the car and though the automaker doesn't know why the short-circuit happened, it nonetheless pushed a software update to its fleet to "provide extra security during charging".

More recently, Tesla updated its battery management software after several Tesla Model S vehicles have caught on fire seemingly on their own without any accident.

Electrek's Take

It seems like there have been many Tesla fires lately and they seem to all be Model S vehicles. We know of at least 4 in the past 2 months.

To be fair, thousand more gas-powered cars have caught on fire during those two months.

What's more worrying about the Tesla fires is that we don't know much about the cause of the fires.

If the fire started after connecting to the Supercharger, it's important to understand what happened.

Like with the situation in Norway 3 years ago, it might be difficult to pinpoint the cause due to the state of the Model S, which is almost completely burned down.

Either way, I think it's fair to point out that there have been millions of charging sessions on the Supercharger network at this point and only a handful of incidents like this one.

Source: <u>https://electrek.co/2019/06/01/tesla-fire-supercharger/</u>

2.4 Pakistan

Five burnt alive, several injured as van catches fire in Narowal Web Desk On Jun 16, 2019 Last Updated Jun 16, 2019



NAROWAL: At least five people, a woman and child among them, were burnt to death while several others got injured when a gas cylinder installed in a passenger van exploded on the Zafarwal road in Narowal district early Sunday morning, reported ARY News.

Rescue sources relayed the ill-fated van caught fire as a CNG cylinder installed in it exploded after a collision with a passenger coach.

As a result, five people were burnt to death and several others sustained burn wounds.

Upon being informed of the incident, rescue teams reached the site and shifted the deceased and injured to the District Headquarters (DHQ), Narowal.

At least 15 people were travelling in the van when it met the accident, said rescue officials.

Last month, five people were killed and ten others wounded when a gas cylinder of a passenger van exploded near Kashmore, Sindh.

The passenger van's gas cylinder exploded near Kashmore, resulting in the death of five people, including two women and two children, on the spot and burn injuries to several others.

Source: <u>https://arynews.tv/en/five-alive-several-injured-van-catches-fire-narowal/</u>

2.5 Thailand

Operators call for cheaper NGV to compete with diesel

By; Yuthana Praiwan. June 18, 2019.



Taxi are refilling NGV at the station.

NGV Traders are calling for the Energy Ministry to subsidise NGV price as it used to do in the past.

Local traders and fleet operators of compressed natural gas are calling for the Energy Ministry to control the retail price of the fuel to make it 50% cheaper than diesel.

The request is based on their fear that many commercial buses

and trucks are shifting to biodiesel, for which the ministry is subsidising prices.

The operators established the Natural Gas for Vehicle Business Association in order to increase their negotiating power with the ministry.

The association includes well-known companies such as Sakol Energy Plc, Scan Inter Plc, Wind Energy Co, Saraburi Truck Sales Co, Kiatthana Transport Plc, Cho Thavee Plc and Siamraj Plc.

Compressed natural gas, also known as NGV (natural gas for vehicles), used to be capped at 8.50 baht per kilogramme during 2007-14 because the ministry aimed to support motorists suffering from global crude prices rising to US\$90-130 per barrel. NGV was positioned as the alternative fuel.

As the sole NGV seller, PTT Plc was ordered to subsidise NGV prices.

The ministry then decided to float NGV prices in 2014 as oil prices declined.

PTT has an accumulated loss from the NGV price subsidy of roughly 100 billion baht over the past 12 years.

NGV now costs 15.88 baht per kg while the diesel price tag is 25.79 baht per litre. Two biodiesel types, B10 and B20, have been subsidised to the tune of three baht and five baht per litre.

Sakchai Leesavan, president of the new association, said NGV traders and fleet operators want the ministry to promote NGV again by keeping the retail price lower than for diesel or biodiesel.

"We are suffering from the market price because the government is ignoring support for NGV, while this gas is a good solution to the air quality problem and the smog crisis," Mr Sakchai said.

He said aggressive support of biodiesel is not the best solution to tackle poor air quality.

Moreover, the association is calling for an import tax exemption for truck chassis and NGV-related equipment, contending that natural gas releases less emissions.

Jakkraphong Sumethchotimetha, the association's vice-president, said NGV consumption dropped from 9,000 tonnes per day to 7,600 tonnes in 2017.

"The transport sector is now consuming roughly 5,500 tonnes daily," he said. "NGV stations also dropped from 500 in 2013 to 462 stations in 2017. Now there are 440 NGV stations nationwide."

Source: <u>https://www.bangkokpost.com/business/1696956/operators-call-for-cheaper-ngv-to-compete-with-diesel</u>

3.0 ANGVA related events

- The 37th ANGVA Board Meeting will be held on Thursday, 20th June 2019, 1530 hrs 1730 hrs, at Meeting Room of Commercial Director of Commerce, PT Perusahaan Gas Negara Tbk, Building A, 3rd Floor, Jalan KH, Zainul Arifin No.20, West Jakarta 11140, Indonesia.
- ii. LNG Supply, Storage and Transportation South Asia Forum 2019. Dhaka Bangladesh. 5th 7th August 2019. This event is organized by All Events Group AEG), Singapore and supported by ANGVA. More information on this event at: <u>http://www.lng-world.com/lng_southasia2019/</u>
- iii. Biogas Upgrading and CBG Roundtable 2019. Chiangmai, Thailand. 14th 15th August 2019. This event is organized by International Clean Energy and Sustainability (ICESN), Singapore and supported by ANGVA. More information on this event at: http://www.icesn.com/thai2019/assets/BiogasThailand2019.pdf
- iv. 9th Annual LNG Transport, Handling and Storage 2019. Padma Resort, Bali, Indonesia. 10th 13th September 2019. This event is organized by All Events Group (AEG), Singapore and supported by ANGVA. More information on this event at: <u>http://www.lng-world.com/lng_bali2019/</u>
- v. ANGVA 2019, The 8th ANGVA International Biennial Conference & Exhibition. Balai Kartini Exhibition & Convention Center, Jakarta, Indonesia. 25th 27th Nov 2019. Hosted by ANGVA and Indonesian CNG Association (APCNGI). For more information please contact <u>angva@angva.org</u> or <u>aznita@angva.org</u> or visit website <u>www.angva2019.com</u>

4.0 End

Any comments and suggestions on the topics and information covered and to be covered in future are most welcome. Please send your comments and suggestions to Lee Giok Seng at email: leegs@angva.org