Hydrogen Storage and Infrastructure

OCT | 2020 BULLETIN



WHAT'S INSIDE!

What are the new advancements in hydrogen storage?

How is hydrogen set to be a part of our day-to-day lives?

How is Japan developing its hydrogen economy?

What is new about Hydrogen in Maritime?

What are the new advancements in hydrogen storage materials?







Comparative analysis of developments in H₂ storage and infrastructure – September 2020 v/s October 2020



Key Takeaways

- Significant infrastructure developments are seen in India, Poland and Norway. Countries like Netherlands, U.S., Italy and Russia are carrying out feasibility studies and technical research. Spain and Australian governments are fast-tracking hydrogen to spur lowcarbon economy.
- Companies like Wystrach, Ulstein and Engie EPS have launched products to facilitate efficient use hydrogen as fuel.
- Novel materials and devices for hydrogen storage have been developed and are expected to make significant contributions to the field.
- Technical advancements are observed in marine sector for incorporation of hydrogen fuel.





Expert says

"Long seen as a technology for the day after tomorrow, the hydrogen-energy industry is gaining momentum and we are proud to be contributing to its future in partnership with a major French group such as Faurecia."– Christophe Gaussin, Chairman of Gaussin

Industry Bulletin | OCT 2020

02 October 2020

Ulstein Unveils Hydrogen Hybrid Wind Turbine Installation Vessel



 Ulstein has unveiled its second hydrogen hybrid design for the offshore wind industry, the ULSTEIN J102 zero emission wind turbine installation vessel (WTIV).

The new WTIV can operate 75% of the time in zero emission mode. The WTIV has been designed in such a manner that future developments in hydrogen technology can easily be fitted into the vessel without major modifications.

Ulstein's analysis showed that using a combination of a hydrogen fuel cell system and a relatively small battery energy storage system (BESS) is then sufficient to meet the overall power demand on board and crane peak loads. Last year, Ulstein introduced a hydrogen-powered construction support vessel design which it claims to be market-ready now with sea trials as early as 2022.

Read this story

12 October 2020

Gaussin And Faurecia Partner On Hydrogen-powered Logistics Vehicles





 The companies have signed a MoU wherein Gaussin will equip a fleet of its logistics and port vehicles with hydrogen storage systems from automotive technology company Faurecia.

Faurecia will develop storage systems containing 5kg of hydrogen at 250 bars and with up to 12 hours of autonomy. This collaboration has further empowered Gaussin's strategy to offer a full range of zero CO2 emission vehicles.

Delivery of the systems will begin later this year and will power Gaussin's ATM-H22 and AMP-H2 vehicles, used in ports and logistic centres..



Read this story





Expert says

"With the fantastic support of Australian state and federal governments, as well as many others around the world, we believe that hydrogen storage technology has a very bright future with a wide variety of everyday applications."- Alan Yu, CEO and Executive Director of Lavo.

29 October 2020

South Australia Launches Hydrogen Prospectus



22 October 2020

Lavo Reveals Hydrogen System Designed for Everyday Use in Home And Business

LAVO

Port Bonython, Port Adelaide and Cape Hardy/Port Spencer are three hydrogen hubs identified by the South Australia Government in a new hydrogen prospectus.

hydrogen prospectus, the South Australian its In Government has outlined the plan for three hydrogen hubs boost hydrogen production and exportation. This prospectus reveals that South Australia can become a national and international exporter of clean power, while achieving the goal of net-100 per cent renewable energy.

Hydrogen is shaping up as a game changer in the fight against climate change and our aim is to get the cost down so that it's a commercially attractive option for heavy transport, power generation and use by industry.

Australian technology and lifestyle company Lavo launched cutting-edge hydrogen storage technology designed for everyday use by residential homes and businesses.

Developed by leading researchers at the University of New South Wales (UNSW), the technology provides a more complete, versatile and sustainable solution than other energy storage solutions currently on the market. Lavo's patented metal hydride absorbs hydrogen in a metal alloy to enable safe, long-term storage within a secure vessel.

Lavo estimates the addressable market for its technology as \$2 billion in Australia, expanding on a global scale to \$40 billion.





Key Takeaways:

- Japan will be an importer of hydrogen and automakers are developing the supply chain by forming collaborations.
- Steel industry of Japan, is under the radar for reducing emissions urgently and hydrogen is best opportunity.
- Consortiums, government framework are shaping to promote hydrogen economy.
- While liquefied hydrogen storage and transport is still most common transport method, LOHC is steadily gaining traction



*Note: Further details on technical aspects can be read by clicking on the hyperlink.





- It was observed that carbon based systems for hydrogen storage are becoming more popular for research activities.
- Russian and Indian research institutes are showing steady interest in hydrogen storage materials.
- Steady research developments in metal hydrides and alloys are observed however, only LOHC and metal hydrides are showing signs of early commercialization.
- Further developments in novel hydrogen storage materials like COF and metallic glass are awaited.

Technical Advancements in Hydrogen Storage

Significant research activities around hydrogen storage were undertaken by developing countries

Carbon nanotubes were used as integrated hydrogen storage for fuel cell cars by few Indian scientists. They provided better uptake of hydrogen at mild operating conditions.



Researchers have developed Covalent Organic Framework (COF) with a borophosphonic acid linker. This material needs to be applied for hydrogen storage.



The research team developed an amorphous nanostructure (FeNi-based metallic glass) to store hydrogen. This can replace Li-ion batteries in small systems.



Researchers developed nanocomposites with a carbon sphere and graphene oxide. It has good hydrogen absorption rate, is cost effective, has good reversibility and safety.



Russian scientists designed a device to study of the behavior of stored hydrogen in thin metal hydride films.



New rare earth hydrogen storage alloy electrode materials has been put into operation in China. The new material has a higher hydrogen storage capacity of 30%

YOUR FEEDBACK IS IMPORTANT

Do you like our coverage? Share your thoughts







Latest Deliverables to Read

Q3 Pulse – HYS (>>)

What's inside??

- New advancements in hydrogen storage
- New-comer to the hydrogen industry



November Bulletin - HYS

Do you need any customized, actionable insights aligned with your priorities?

Submit your business objectives here

North America

55 Madison Ave, Suite 400 Morristown, NJ 07960 USA T: +1 212 835 1590

Europe

328-334 Graadt van Roggenweg 4th Floor, Utrecht, 3531 AH Netherlands T: +31 30 298 2108

United Kingdom

5 Chancery Lane London EC4A 1BL United Kingdom T: +44 207 406 7548

Asia Pacific

Millennium Business Park Sector 3, Building # 4, Mahape Navi Mumbai 400 710 India T: +91 22 6772 5700

FutureBridge