



Global Smart Energy Federation
Formerly known as Global Smart Grid Federation

NEWSLETTER

September 2022

The India Evening @CIGRE 2022 on 31st August 2022 by ISGF, CIGRE India and CBIP

ISGF, CIGRE India and CBIP organised The India Evening @CIGRE 2022 on 31st August 2022 at LES SALONS HOCHÉ in Paris. The Indian Evening was planned as part of the week long CIGRE Session scheduled from 28 August to 02 September 2022 in Paris. The Dinner Reception Co-host Partners were Hitachi Energy, Power System Operation Corporation Limited (POSOCO), NTPC, Power Grid Corporation of India Limited (PGCIL), Sterlite Power Transmission Limited and General Electric Company. The Silver Partners of the Dinner Reception were Krishna Electrical Industries Limited, CTR Manufacturing Industries Private Limited and Power Finance Corporation Limited (PFC). The reception was attended by over 250 senior officials from around the world. International Council on Large Electric Systems (CIGRE) is a hundred-year-old world-renowned organization dedicated to constant improvement of power system technologies. CIGRE Session is a unique bi-annual event which gives excellent opportunity to the participants of about 100 countries to interact and exchange technical knowledge with top international experts on various subjects related to power systems in the world. About 8,000 experts from around the world participated where 300+ technical papers were discussed. A world class exhibition also took place at the venue, which provides the opportunity to discover new products, services, tools, equipment and materials as well as the most advanced solutions in the field of power systems. India has been participating in CIGRE Session since very beginning; and from 2012 onwards India's participation has grown tremendously. For the last edition of CIGRE Session in 2018, we had more than 140 delegates from India. We have also been conducting an Indian Dinner at CIGRE; and for the 2018 event more than 280 senior officials from around the world participated at the Indian Dinner held at Hyatt Regency Etiole, Paris. For CIGRE 2022, the Indian Delegation comprised of 150 plus Senior Officers from power ministries and energy departments in states; Electricity Regulatory Commission Chairmen and Members; CEOs and Senior Officers of Utilities; and Senior Officers of technology companies. Next edition of CIGRE Session is scheduled from 25 - 30 August 2024 in Paris

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Global Stories on Smart Grid

1. AutoGrid Partners with Mysa to Launch Utility-Scale Virtual Power Plants

Industry-leading Virtual Power Plant (VPP) provider, AutoGrid to launch one of several VPP projects in collaboration with Canadian manufacturer Mysa, whose line of innovative smart thermostats for electric heating and cooling systems offers robust home energy management capabilities for both consumers and utilities. The initial VPP project with Puget Sound Energy (PSE) supports a targeted demand side program to postpone the buildout of a new substation in the Pacific NorthWest. AutoGrid will leverage its VPP platform in conjunction with Mysa's smart thermostat technology for electric heating and cooling to provide a comprehensive and scalable dispatch solution for both of these technologies, and other IoT solutions from various thermostat and Water Heater Controls platforms.

Read more: <https://prn.to/3SqHpM7>

2. DOE launches \$10.5B Grid Resilience and Innovative Partnerships Program

The Department of Energy to provide \$10.5 billion over five years for projects that prevent power outages and improve grid resilience, enhance grid flexibility, and demonstrate new approaches to power sector infrastructure resilience and reliability. The Grid Resilience and Innovative Partnership Program funding will be available to states, tribes, local governments, public utility commissions, grid operators, utilities and others. The planned funding includes \$2.5 billion for grid resilience grants, \$3 billion for smart grid grants and \$5 billion for grid innovation efforts.

Read more: <https://bit.ly/3COK1uT>

3. EU to Pave Way for \$786 Bn Overhaul of Electricity Grid

The European Union's will lay out a plan to digitalise its energy grid as it seeks to spur the roll out of renewables to reduce its dependence on Russian fuel. The "Digitalising the Energy System" action plan, to be unveiled by the European Commission, will require a €565 billion (\$786 billion) investment in infrastructure by the end of the decade to achieve its green plans and end reliance on Russia. The bloc seeks to promote the sharing of data on electricity use starting in 2024 to help boost flexibility in the region's energy markets.

Read more: <https://bit.ly/3SbKqAq>

4. China's CATL, a Tesla Supplier Expanding Battery Swapping Business Overseas

The world's largest electric vehicle battery maker CATL is evaluating to expand its battery swapping business to international markets. CATL is a supplier to companies such as Tesla and Ford. The Chinese battery manufacturer launched its battery swapping business called EVOGO in China across 10 cities. The aim is to remove the need for electric cars to stop at recharging stations. Instead, drivers can rent battery packs from CATL and put them into the car when their other battery runs out. This takes a matter of minutes.

Read more: <https://cnb.cx/3RfeTMB>

5. PPC Facilitates 3000 Smart Meters To Support Energy Access in Nigeria

PPC Limited, Nigeria's leading engineering and infrastructure development company, is supporting the local production of smart meters through the supply of accessories in the drive to ensure widespread access to electricity in Nigeria.

PPC through its partnership with prepaid meter producers in the country, has facilitated the installation of about 3,000 smart meters to households and electricity consumers. The company aims to increase the share of local components in energy meters as required by the Nigerian Electricity Regulatory Commission (NERC) by supporting local manufacturing capacity of Metering Service Providers (MSP).

Read More: <https://bit.ly/3T3q38m>



Global Stories on Smart Grid

6. Trilliant Implements Smart Water Metering Solution in Canada

Trilliant, a leading international provider of solutions for advanced metering infrastructure (AMI), smart grid, smart cities and IIOT, announced the successful implementation of a wireless water metering solution in Canada, confirming its position to support challenging metering projects where strong, reliable connectivity is required. Provident, an energy services and submetering company in the Greater Toronto Area specializing in the multi-residential market, selected Trilliant's Smart Water solution for a project in Toronto, Ontario, that required a basement metering solution for a number of townhomes.

Read More: <https://bwnews.pr/3TcNkoB>

7. EU to Introduce IoT Cybersecurity Legislation

The new act, called the Cyber Resilience Act, is due to be announced in September 2022 and will force companies providing IoT solutions to comply with the new rules or face legal consequences, including sale bans and daily fines for not fixing issues. According to the document, it has been estimated that the new legislation will save companies over \$290bn per year by protecting companies and preventing the need for paying ransoms, network maintenance, and rebuilding infrastructure after major attacks. Also, leaked information shows a study that only half of the manufacturers (a survey of 23,000 hardware manufacturers and 370,000 software developers) use adequate protection methods.

Read More: <https://bit.ly/3CJTpDz>

8. New Climate Change Laws In Australia Enters Into Force

The main objective of these laws is to facilitate achievement of Australia's greenhouse gas emissions reduction targets

The Climate Change Act 2022 and the Climate Change (Consequential Amendments) Act 2022 took effect in September and these acts legislate Australia's targets such as reducing emissions by 43% by 2030 and achieving net zero by 2050. This is an addition to ARENA's governing legislation, the Australian Renewable Energy Agency Act 2011, and the Australian Renewable Energy Agency Regulation 2016. Australian Renewable Energy Agency (ARENA) has supported 628 projects with USD 1.86 billion in grant funding since 2012 which has helped in unlocking USD 8.05 billion of investment in renewable energy.

Read More: <https://bit.ly/3Sjg7b0>

9. Nigeria Launched "Haské" Programme To Accelerate Access To Clean Energy

This project aims to increase the rate of access to electricity to 30% by 2026 and 80% by 2035

The government of Niger has officially launched the first phase of the Niger Electricity Acceleration Project, named "Haské," which is supported by the World Bank Group aims to accelerate access to electricity and clean cooking in the country. The programme will be implemented by Niger Electricity Company (NIGELEC), the National Agency for Rural Electrification (ANPER), the National Solar Energy Agency (ANERSOL) and the Direction de la promotion des énergies de cuisson (Directorate for the promotion of cooking energy) of the Nigerien Ministry of Energy and Renewable Energies. The programme will require an investment of more than \$317 million. The World Bank will contribute with a \$155 million loan, as well as a \$7.5 million grant through the Energy Sector Management Assistance Program (ESMAP) multi-donor trust fund.

Read More: <https://bit.ly/3DXIPKi>

10. Africa's First Hydrogen Power Plant to Produce Electricity by 2024

French independent power producer HDF Energy expects its green hydrogen power plant in Namibia, Africa's first, to start producing electricity by 2024. Once operational, the 3.1 billion Namibian dollars (\$181.25 m) Swakopmund project will supply clean electricity power, 24 hours a day all year round, boosting electricity supply in the Southern African nation. Currently, Namibia imports more than a third of its power from neighboring South Africa. The project will see 85 MW of solar panels powering electrolyzers to produce hydrogen that can be stored.

Read More: <https://bit.ly/3BS9N31>



Member Updates

EXCLUSIVE: THE LESSONS LEARNT AT CIGRE 2022, PARIS INTERVIEW WITH MR. PHILIPPE ADAM, SECRETARY GENERAL CIGRE BY VALÉRIE ANNE LENCZNAR, GSEF AMBASSADOR FOR EUROPE & FRANCOPHONE AFRICA REGIONS



V.A: Philippe, let us know how CIGRE was born and what were the Key Steps?

P.A: The first International Conference on Large Electric Systems (CIGRE) was organised in 1921, after a year of preparation for the standardization of electric systems. The experts needed to talk to each other, to share their views and experiences. 231 delegates from different countries participated in the field of electricity networks and network projects to understand what was happening in the sector.

After an overwhelming response from participants across the globe, it was decided to launch a new issue in 1923 and, from then to make it Bi-Annual.

In 1931, an association status was created for CIGRE, under French law. The first National Committees were created to recruit members and prepare the session. It was also decided that there would be a Central Office in Paris, with a Secretary General chosen by the Board.

In 1945, after the Second World War, CIGRE members decided to organize a session in June 1946 and the same has been continuing since then. In 1946, new National Committees were created and the topics presented were analyzed by study committees in various fields, e.g. Transformers, Switchgear, Oils, and Direct Current.

Even today, a summary of the recommendations of the previous congress is published to help the standardization of networks and their equipment.

CIGRE has always paid attention to the subjects of interest, and standardization of the industry. CIGRE started focusing on topics of Transport and Interconnection in the 1950s and 1960s and more recently on the energy transition and renewable energies, demand management, flexibilities, storage, and everything that contributes to more efficient electricity networks.

CIGRE looks after "end to end" distribution network due to the arrival of Renewable Energy sources.

V.A: How CIGRE dealt with the Covid epidemic?

P.A: In 2018, CIGRE prepared for 2020. CIGRE received 800 papers and was compelled to postpone the event to 2021. From 2020 onwards, the authors were allowed to present their papers through online sessions. CIGRE created a virtual event over ten days, from 12.00 to 16.00 CEST, at the end the content of the calls for papers were defined for the 2022 session.

V.A: What is your take on the CIGRE 2022 Edition?

P.A: There was a lot of fear about this CIGRE 2022 Session until June 2022, but eventually, 3650 delegates from across the globe were registered. Hundreds of participants could join online. The Chinese delegation was smaller due to the Covid restriction, the Russian delegation was also less in number due to the international sanctions linked to the Russian Ukraine War. The French were much less in number however Swiss, Romanians, Slovenians, Vietnamese, Beninese and Togolese were more in number.

V.A: What were the important themes of CIGRE 2022?

P.A: Energy Transition, Sharing of Experiences on Solutions, projects to move towards the decarbonization of energy, and how to accommodate more static equipment on the network were some of the most discussed themes.

V.A-Which countries were most noticed during this session?

P.A: European Union presented several use cases because they host a lot of Renewable Energy. The Australian inclination towards battery storage and the US, government’s ambitious projects were also evident.

V.A-What are CIGRE’s New Projects?

P.A-CIGRE wants to broaden its knowledge and experience based in the electrical field by taking its messages to countries like Africa where CIGRE is not well known. CIGRE recently created a West African Committee, and is working with East Africa to collaborate with the East African Power Pool, to bring new stakeholders on board. CIGRE is encouraging Electric Mobility. We see that different stakeholders are connecting to the networks with Renewable Energy, there are new entrants, including Oil Groups, which CIGRE must address and respond to through its publications.

For 2024, CIGRE wants to open up subjects to these new stakeholders. Electrolysers designed to produce non-carbonated hydrogen on a massive scale will become increasingly important, and will certainly contribute to the balance of the network, opening up new prospects and new uses.



Philippe ADAM is the Secretary General of CIGRE. He has been a member of CIGRE since 1982. He was Secretary of the CIGRE Technical Committee from 2002 to 2012.



Valérie Anne Lencznar, is the Advisor to the President, ENTSO-E, the association of the European TSOs, based in RTE (the French TSO) and the GSEF Ambassador for Europe & Francophone Africa Regions.



Member Updates

MEMORANDUM OF UNDERSTANDING (MOU) SIGNED BETWEEN ISGAN AND GSEF TO RECONFIRM COMMITMENT TO MUTUAL COOPERATION



Strengthening the partnership in Energy Sector, Chair of International Smart Grid Action Network (ISGAN), Luciano Martini, and Chairman of Global Smart Energy Federation (GSEF), Reji Kumar Pillai signed a Memorandum of Understanding (MoU) at the Global Clean Energy Action Forum on 23 September 2022 at Pittsburgh, USA, for Deployment of Electric Vehicles, Smart Grid Technologies, and Renewable Energy for Smarter, Reliable, Sustainable, Affordable and Accessible Electric Grids.

ISGAN is an international collaborative platform for developing and exchanging knowledge and expertise on more innovative, cleaner, and more flexible electricity grids (Smart Grids) to support high-level government attention and actions.

Global Smart Energy Federation (GSEF) is a global stakeholder organization of national smart grid associations, forward-looking utilities, and think tanks from around the globe working in the domains of energy transition and clean transportation. By linking the major public-private stakeholders and initiatives of participating countries, the federation shares practices, identifies barriers and solutions, fosters innovation, and addresses key technology standards and policy issues.

GSEF WORKSHOP ON “GRID INTEGRATED VEHICLES (GIV) TO ENHANCE FLEXIBILITY OF THE GRID FOR RENEWABLE ENERGY INTEGRATION”



Global Smart Energy Federation (GSEF) organized the workshop on “Grid Integrated Vehicles (GIV) to Enhance Flexibility of the Grid for Renewable Energy Integration” as part of Global Clean Energy Action Forum (GCEAF) and 13th Clean Energy Ministerial Meeting (CEM13) on 23 Sept 2022 at Pittsburgh, USA. Following were the speakers of the workshop: Girish Ghatikar, General Motors; Rodney McGee, University of Delaware; Kijun Park, Korea Electric Power Corporation (KEPCO); Parth Gadhavi, Nuvve Holding Corp.; Reji Kumar Pillai, Global Smart Energy Federation; and Reena Suri, India Smart Grid Forum (ISGF). The workshop was very successful and insightful for the participants.

GCEAF provided this great opportunity and platform to facilitate international collaboration and a great push for the implementation of Clean Energy Goals.

Member Updates

WELCOMING TEXAS STATE UNIVERSITY



We are pleased to welcome Texas State University's CIEDAR Consortium as an Associate Member of GSEF. Texas State CIEDAR Consortium is a Connected Infrastructure for Education, Demonstration, and Applied Research building 9 living labs in 1,000 acres focusing on Smart Cities, Smart Utilities, Energy, Water, Wastewater, Mobility, Buildings and Infrastructure, Networks, Sensors, Big Data and

Software. CIEDAR is a Research and Development marketplace for buyers and sellers of technology to come together and accelerate towards the solutions they seek and offer jointly. Three Labs are up and running (Smart Cities, Smart Networks, NOC/SOC Training Lab) and the rest will get built by 2023 (Smart Energy and Utilities Lab, CAV Shuttle System Lab, Drone and VTOL Systems Lab, Sensors Lab, Big Data and Software Lab) and 2024 (Smart Commercialization Lab, and CAV Test Track Lab).

Apart from leveraging the intellectual capital of smart energy stakeholders from around the world, the collaboration between GSEF & TXST CIEDAR will facilitate the expertise and experience in electric grid modernization to accelerate energy transition all around the world.

We believe that the joining of TXST CIEDAR to the GSEF family will be mutually rewarding and will contribute to a smarter and cleaner world.

For more information, you can visit: <https://www.marc.txst.edu/CIEDAR.html>

ELECTRIC VEHICLE CHARGING SOLUTION BY REN WINS INTERNATIONAL AWARD



The mobility solution created by REN - Redes Energéticas Nacionais that enables charging electric vehicles directly from Very-High-Voltage Lines, speed-E, won the "Good Practice of the Year" award in the "Technological Innovation & System Integration" category, awarded by the Renewables Grid Initiative (RGI). The award was handed over by the EU Commissioner for Energy, Kadri Simson, during the third edition of the "PCI Energy Days", hosted by the European Commission. The jury was made up of nine international experts, and decided in favor of REN's solution because "It makes a significant contribution to both Grid Reliability and Decarbonization of the Transport Sector, thus furthering and accelerating Electrification".

João Conceição, Executive Director, REN, stated "This award is extremely important for REN because it acknowledges the culture of innovation present in the company in the face of the demanding challenges posed by the transformations in the energy sector, namely the transition to sustainable mobility".

Link to the article: <https://bit.ly/3VbZwYv>

HYDROGEN TRANSPORT: NEEDS COST REDUCTION



In the September 2020 GSEF Newsletter, I briefly touched on the various “colourful” hydrogen varieties (based on production methods) and concluded about future areas of improvements to lower overall costs. Given recent technology developments, this is being revisited to examine the current status and weak links in its value chain.

In just two years, rapid progress has been made to produce large scale “green hydrogen” using electrolyzer powered by renewable energy. Large projects have been announced in many parts of the world. Most of these hydrogen production facilities are to be co-located at solar PV plants. Plans are now in the making to also co-locate these at wind-power plants. Several companies have announced their plans to manufacture large capacity electrolyzer units suitable for such projects. Saudi Arabia has announced ambitious green hydrogen production for producing ammonia in its Noam project. Other announcements include, (a) French firm Total Energies 25% investment in India’s Adani green hydrogen venture (ANIL) underpinning 30 GW of renewable energy; (b) India’s Tata Steel pact with McDermott, Danieli and Hatch (three Dutch firms) for technical preparations, to manufacture “green steel” in Ijmuiden, Netherlands.

The debate on end-to-end hydrogen value-chain, however, rages on with several competing options, (a) at the front end for hydrogen production - water electrolysis (H₂O) vs. ammonia (NH₃) vs. methanol (CH₃OH) vs. high temperature steam electrolysis (HTSE) using nuclear SMRs; (b) in its transport/storage - compressed hydrogen (CH₂) vs. liquefied hydrogen (LH₂) vs. Ammonia (NH₃) vs. Methanol (CH₃OH); and (c) in its utilization - electricity using fuel cell (FC) vs. direct hydrogen combustion (DHC). Note that ammonia and methanol can be used both as a production input and as a proxy-carrier for hydrogen storage and transport. *The energy balance differs widely with each option, so it is a tussle between efficiency and effectiveness.*

As a global first, Germany inaugurated its fleet of 14 hydrogen fuel-cell powered passenger trains in August 2022, at a project cost of \$92 million. Manufactured by Alstom, France, it replaces the diesel fleet in this route, in the State of Lower Saxony. The conversion saves about 1.6 million litres of diesel fuel annually (or emission elimination of 460 tons of CO₂ per year). The “grey hydrogen” is being supplied by Linde. The hydrogen fuel delivered to the train is good for a 950 km of travel range (single-day travel), with train speeds touching 140 km/hour. There are no details of operating costs, hydrogen storage and delivery logistics in fueling these trains.

This takes me back to two proposal reviews I was involved in, for a similar passenger train project (hydrogen production, storage, transport, fuel cells, train routes and stations). The green hydrogen was to be produced nearby (within 60 km) by electrolysis primarily using nuclear power (non GHG source). The project was technically feasible, but was shelved (postponed for now) due to the high cost of shipping/storing hydrogen on a daily basis from the source to the two train depots and then to the several terminal stations. *The light weight of hydrogen makes the business case weak for large capacity transport and storage.* Just as a comparison, a 34,000 litre (25T) gasoline road tanker, will likely hold only 100 kg of hydrogen even under high compression. Liquefaction is not viable for short transportation on a daily basis.

Just this week, I came across a very comprehensive open-source model outlining various hydrogen transport costs in comparison to other forms (outlined above). It is a very good effort by this Australian team. The paper is titled “*Shipping the Sunshine: An open-source model for costing renewable hydrogen transport from Australia*”, by Charles Johnston, Muhammad Haider Ali Khan, Rose Amal, Rahman Daiyan, Iain MacGill, published in the *International Journal of Hydrogen Energy*, August 2022. Incidentally Prof. Iain MacGill and I served on the IEA’s PVPS task force, Cigre and microgrid working groups years ago. The paper notes that given hydrogen has the lightest element and has a low volumetric density, it makes it unsuitable for cost-effective, large-scale transport at ambient temperatures and hence must either be liquefied or converted into an alternative medium (hydrogen carrier) for transport. The paper outlines that liquefaction process to - 252.9 C, results in losses of around one-third of the energy content with additional boil-off during transportation. Conversion into other hydrogen carriers (such as ammonia, methanol, methane or liquid organic hydrogen carriers (LOHCs) involve carrier specific conversion costs, but often cheaper transportation costs due to more favourable chemical properties (higher storage temperatures and better storage densities). Even though they evaluated an Australia-Rotterdam route and a shorter Australia-Tokyo

route, the following findings, would be similar in other circumstances given similar cost assumptions:

1. The model applied to the Australia-Rotterdam route revealed ammonia (\$0.56/kgH₂) and methanol (\$0.68/kgH₂) as the least expensive hydrogen derivatives to transport, followed by liquified natural gas (\$1.07/kgH₂), liquid organic hydrogen carriers (\$1.37/kgH₂) and liquid hydrogen (\$2.09/kgH₂).
2. Reducing transportation distance (Australia-Tokyo case study) led to overall lower shipping costs (due shorter distance), but the merit order for hydrogen shipping costs remains unchanged.
3. The impact of using hydrogen-fueled ships (or similar low/zero carbon transport), led to lowering of transport costs for liquified natural gas (\$0.88/kgH₂), a marginal increase for liquid hydrogen (\$2.19/kgH₂) and significant increases for the remainder.
4. Due to the emerging market, the cost profile, demand factors, end uses and economics are all expected to change rapidly in the coming years.

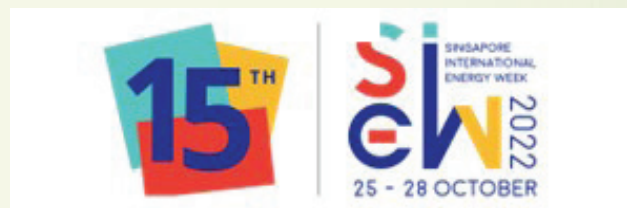
Canadian Nuclear Laboratories (CNL) in October 2021 announced it had achieved a breakthrough in hydrogen storage technology using a new magnesium alloy. It avoids hydrogen storage as a compressed gas (35-70 MPa) and liquified hydrogen (-252 deg C), as it is stored within a metal hydride solid (hydrogen adsorption). CNL in its explanation states (paraphrased), "the concept of storing hydrogen in a metal (a hydride) has been investigated for decades, but not all metals are suitable for this. The hydrogen must be able to (a) charge and discharge fast; (b) withstand many cycles; and (c) be practical - not too heavy (per unit of energy) and not too large (energy density)". The new alloy developed by CNL can store just a little over 6% of its metal weight in hydrogen. This will be too heavy for EVs but suitable for forklifts that require counterweight or other stationary applications.

Rapid progress is also being made on the safety aspects, fire-risk ratings and insurance side of hydrogen storage and transportation. Insurance brokerage Marsh said it launched an insurance and reinsurance facility for new and existing green and blue hydrogen energy projects. This is welcome news for commercial contracts.

In a just released September 2022 draft document by US Department of Energy (DOE), titled, "Clean Hydrogen Strategy and Roadmap", points out that US demand scenarios for 2030, 2040, and 2050 provide an opportunity for 10 million metric tonnes (MMT) of clean hydrogen annually by 2030, 20 MMT annually by 2040, and 50 MMT annually by 2050. Usage of such clean hydrogen can reduce U.S. emission by about 10 percent by 2050 relative to 2005 levels (consistent with the U.S. long-term climate strategy).

Like the battery energy storage business cases (Lithium vs. Flow), here too hydrogen transport/storage choices will influence outcomes. *Herein lies the trap. Unless an end-to-end business case is mapped out and evaluated, it may prove disastrous to invest in a hydrogen production facility, assuming the market demand will absorb its storage and transportation costs. This narrow investment misconception needs to be driven home.* A better bet would be to produce at the point of utilization given today's high transport costs. Also, large capacity hydrogen storage costs (akin to coal, oil and gas storage facilities) will likely be more expensive.

In my view, in the short-term, for e-mobility and large-capacity/long-term storage applications, the grey hydrogen route employing ammonia or methanol in the production, transport and storage value chain is a better bet. The cost of production and utilization may be more expensive, but the overall value may still be the best. *It is a case of efficiency vs. effectiveness.* Once hydrogen transportation costs come down, the same can be switched to green hydrogen production and transport.



Smart Grid Events

12th -14th October, 2022: 15th EIF World Energy Congress and Expo, Istanbul, Turkey
<https://www.worldenergy-congress.com>

17th-21st October, 2022: IEC 61850 Week 2022 Cardiff UK
<https://www.smartgrid-forums.com/iec-61850-week>

18th -19th October 2022: Smart Energy World Summit, Lisbon, Portugal
<https://smartenergyworldsummit.com/>

18th -21st October 2022: African Energy Week (AEW) Cape Town, South Africa
<https://bit.ly/3V9wKYB>

25th -28th October, 2022: 15th Singapore International Energy Week (SIEW), Marina Bay Sands, Singapore
<https://www.siew.gov.sg/>

26th - 28th October, 2022: Zambia Energy Summit Lusaka, Zambia
<http://afsiasolar.com/event/zambia-energy-summit/>

26th - 27th October, 2022: Future of the Grid Sands Expo & Convention Centre, Singapore
<https://bit.ly/3HjmDde>

29th November - 1st December 2022: Enlit Europe Frankfurt, Germany
<https://www.enlit-europe.com/>

30th October- 1st November, 2022: Egypt Energy Egypt International Exhibition Centre
<https://www.egypt-energy.com/en/home.html>

31st October- 3rd November, 2022: ADIPEC 2022 Abu Dhabi, United Arab Emirates
https://www.adipec.com/?utm_source=google-search&utm_medium=cpc&utm_term={keyword}&utm_content=&utm_campaign=ADIPEC-Visprom-Conversion-Branded-2022&actioncode=CPC1001

7th- 9th November, 2022: ASEAN M&E 2022 Kuala Lumpur, Malaysia
<https://www.aseanmne.com/>

6th- 18th November, 2022: COP 27 Sharm El Sheikh, Egypt
<https://www.unfccc.int/cop27>

15th- 17th November, 2022: Smart City Expo World Congress, Barcelona, Spain
<https://www.smartcityexpo.com/>

01st - 4th March, 2023: India Smart Utility Week 2023 New Delhi, India
<http://isgw.in/>

22nd – 23rd March 2023: Enlit Australia
<https://enlit-australia.com/>

GSEF at a glance

Charter Members



Think Smart Grids



India Smart Grid Forum



Korea Smart Grid Association (KSGA)



Prakarsa Jaringan Cerdas Indonesia (PJCI)



GridWise Alliance

Regular Members



Japan Smart Community Alliance



Smart Grid Ireland

Utility Members



Electricity Generating Authority of Thailand (EGAT)



Electricity Supply Commission of South Africa (ESKOM)



EDM Mozambique



Tenaga Nasional Berhad (TNB) Malaysia



European Distribution System Operators (E.D.S.O.)



Botswana Power Corporation

Associate Members



Green Business Certification Inc.



Florence School of Regulation (FSR)



Energy BlockChain Consortium



Caribbean Electric Utility Services Corporation



Electric Power Research Institute



Texas State University

Current Working Groups

- Blockchain for Utilities
- Regulatory Changes or Regulatory Reforms for the post Covid Digital Utility
- AI and Analytics for Utilities

Working Groups in Pipeline

- Green Recovery Playbook for Utilities

Contact us for more information.

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