

33rd IPHE Steering Committee Meeting 16 - 19 June 2020 Virtual Meeting





- Discussions are being held with different stakeholders in Brazil with the objective of considering the insertion of hydrogen energy in the Brazilian Energy Matrix, involving:
 - the Ministry of Science, Technology, Innovation (MCTI)
 - the Brazilian Hydrogen Association (ABH2)
 - the Ministry of Mines and Energy (MME)
 - the Brazilian Electricity Regulatory Agency (Aneel)
 - the Brazilian Energy Research Office (EPE) and
 - academy and industry representatives









FEI UNIVERSITY CENTER wins 2020 Brazil Student Regional Conference – AICHE with an open cathode fuel cell car

CHEM-E-CAR COMPETITION "AICHE2020 - American Institute of Chemical Engineers from Student Regional Conference - Brazil







https://www.aiche.org/chenected/2020/02/centro-universitario-senai-cimatec-student-chapter-hosts-first-brazil-student-regional-conference





New Lab at FEI University Center - Electrochemical Engineering Laboratory / Chem. Eng. Dept.





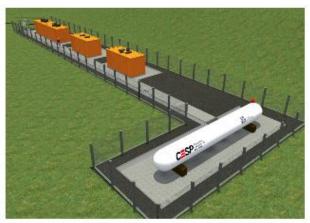
















Demo project: 8 million Euros supported by the Federal Fund for R&D projects of the electrical energy sector Hydrogen-based energy storage plant, in which surplus hydroelectricity and solar PV electricity are converted into hydrogen by water electrolysis, the hydrogen being stored for utilization during dry seasons and peak times. The hydrogen-

based energy storage pilot plant includes a 20 Nm3/h PEM Electrolyser, a 600 Nm3 tank for hydrogen storage @ 25 bar, and a 100 kW Fuel Cell used to reconvert the hydrogen back to

electricity.













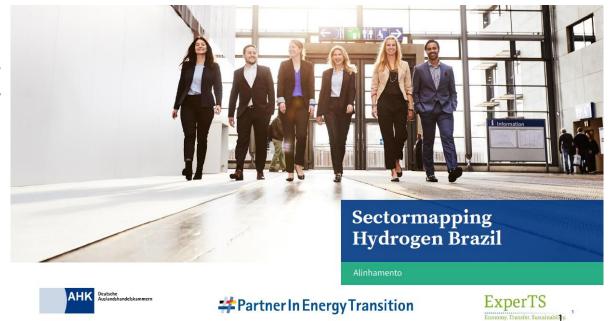
Demo project: 11.9 million Euros supported by the Federal Fund for R&D projects of the electrical energy sector Large-scale deployment of the hydro-solar synergy in which areas around hydro dams and even floating PV plants on the surface of hydraulic reservoirs; both dispatch energy as an unique combined energy source; it works to fill up seasonal and hourly gaps in the transition from one to the other energy source in the optimization of both as part of the interconnected system. The pilot plant includes a 50 Nm³/h Alkaline Electrolyser, a 900 Nm³ tank for hydrogen storage @ 27 bar, and a 300 kW Fuel Cell used to reconvert the hydrogen back to electricity.







In June 2020, the Brazilian/German Industry and Commerce Association (AHK) has started a three months pre-project together with GIZ and MME to prepare a study called Sector Mapping Hydrogen Brazil. The objective of this study is to identify the main stakeholders for a Brazilian Green Hydrogen Roadmap. addition, the study will give a general vision about the main technologies for green hydrogen production and Power-to-X, and its status in Brazil.













In January 2020 the 3rd Biosphere World (BW EXPO 2020), a multidisciplinary event of technologies for sustainability of the environment, organized by SOBRATEMA (the Brazilian Association of Technology for Construction and Mining), has included a new Curator Topic called "Energy Transformation — Hydrogen" among the existing ones such as Sustainable Agribusiness, Conservation of Water Resources, Sustainable Construction, Recycling, Waste to Energy, Valorization of Degraded Areas and Circular Economy.

https://www.bwexpo.com.br/transformacao-energetica-hidrogenio/











In April 2020 the SAE BRASIL, an affiliate of the SAE International, with activities for the dissemination of knowledge and technological updating in the industry, focused on innovation and trends in Brazilian and international mobility, became partner of the BW EXPO 2020, created a working group called "Mentoring in Technology and Innovation for the Mobility with Hydrogen" and is organizing the "SAE Brasil & Ballard Student H2 Challenge" among universities and research institutions in Brazil. Ballard Power Systems from Canada has donated 10 fuel cell stacks, technical support and online courses for the challenge, which will be to design and construct 10 small vehicles for the event.





Examples of Lessons Learned and Impact

(Brazil)



Program initiative, policy, regulation or mandate

Science, Technology and Innovation Plan for Renewable Energies and Biofuels

Lessons Learned/Outcomes

 Public Consultation was carried out with strategic partners (governmental, industrial and academic). The plan received 65 contributions which reinforces society's demand.

https://www.mctic.gov.br/mctic/export/sites/institucional/publicacao/arquivos/Plano-de-Ciencia-Tecnologia-e-Inovacao-Para-Energias-Renovaveis-e-Biocombustiveis.pdf

(Only in Portuguese)









Thank you



International Partnership for Hydrogen and Fuel Cells in the Economy

IPHE

Highlight to Include in IPHE Newsletter Brazil

• FEI will represent Brazil in the Chem-E-Car world championship of AICHE, which is supported by IPHE, using the concept of open cathode fuel cell integrated into the vehicle (2020).



FEI Student Team







Status of Applications and Goals Brazil



Applic	ation	Status (As of June, 2020)	Goal
1) H ₂ Applications			
а.	Energy Storage (e.g. MW, GW of capacity)	7 MWh/day	No target yet
b.	Electrolyzers	1500 Nm3/day	No target yet
C.	Other (e.g., Steel, Marine, Fertilizer, etc.)	None	No target yet
2) Transportation			
a.	Light Duty Vehicles	None	No target yet
b.	Medium and Heavy Duty Vehicles	None	No target yet
C.	Buses	1 hybrid HFC	No target yet
d.	Trains	None	No target yet
e.	Forklifts	None	No target yet
3) Stationary			
a.	Residential	None	No target yet
b.	Commercial	None	No target yet
C.	Back Up Power	None	No target yet
4) Other (applicable to your country and not covered in the categories listed above)			No target yet





