

Weihuan zhao 10:22 AM

What is the challenge in reducing the cost of Hydrogen currently?

Anonymous Attendee 10:23 AM

Japan has few primary energy sources, so hydrogen, which is secondary energy source, should be also imported from overseas as shown in the presentation. But isn't it difficult to import hydrogen because of its low volumetric density? If importing hydrogen in liquid form, the boiling point of hydrogen is too low so that it is difficult to store in liquid form for a long duration of transportation.

Peter Godart 10:28 AM

Why use fuel cells and not just run H₂ into existing internal-combustion-based engines and generators? Can we instead convert ICE vehicles to run on H₂ or convert Honda diesel generators to run on H₂ for example? Fuel cells have lower power density and can be much more expensive. What is the reason for the big fuel cell push?

Wayne Roth 10:29 AM

Can the Hydrogen turbine replace airplane engines?

Reimar Weissbach 10:30 AM

What do you think is the reason for slow adoption of Hydrogen in the Mobility sector (compared to Battery Electric Vehicles) given the obvious advantages over BEV? The existing infrastructure of fossil fuels (e.g., pipelines, gas stations) could be used for Hydrogen much easier than for BEV as well, and not requiring batteries would have a huge impact on the environment.

Anonymous Attendee 10:30 AM

If using brown coal, isn't it better to import brown coal and do gasification inside the Japan? It would be much easier to transport.

Rohit Vedhara 10:31 AM

What is the LCA of liquefying lignite in Australia and bringing it to Japan?

Anonymous Attendee 10:32 AM

Does liquid hydrogen tanker use fuel cell for propulsion, or use internal combustion engine with hydrogen, or use internal combustion engine with heavy oil?

Ole Agesen 10:33 AM

What is the energy loss associated with shipping hydrogen across oceans?

Camilo Herrera 10:37 AM

Professor Okazaki: What could be the role of hydrogen in the de-carbonization of thermal uses in the industry sector, namely for processing heat applications (e.g. boilers, furnaces, etc.) and likewise for iron ore reduction for the steel industry? Thanks.

LINDSAY WALTER 10:38 AM

What are the main barriers to achieving a hydrogen society (accounting for >20% of all energy consumption) at a global scale?

Wayne Roth 10:39 AM

What is the US budget for Hydrogen development?

Rohit Vedhara 10:39 AM

When DME didn't take off as an obvious low-carbon / H₂ carrier for transport, it feels that H₂ will also have cost challenges. What do you think?

Santosh Shanbhogue 10:42 AM

what is the price point in terms of \$/kW (dollars per KiloWatt) at which we can have a large scale adoption of fuel cell vehicles (say 800,000 by 2030 as you mention) or home heating fuel cells (like the ene-farm)

James Seaba 10:45 AM

Do you see any promise for carbon reuse, H₂+CO₂ (green hydrogen and captured/bio CO₂) to fuels, in your future sustainable energy world?

Mark Spector 10:46 AM

Interesting that Safety is not one of the options for poll.

Brian 10:51 AM

Would hydrogen propulsion be realistic for two wheelers?

Anonymous Attendee 10:52 AM

It surprises me to hear so much about hydrogen fuel cell vehicle plans in Japan, given that comparatively hearing about them a lot less in the US. There is some discussion in California, but the focus is more on electric. To what extent, do you count this difference?

Luke Richard Higgins 10:54 AM

What are the safety requirements / concerns associated with hydrogen vehicles? Are there currently classifications for tested and certification of these vehicles?

Anonymous Attendee 10:55 AM

Thank you. Questions related with storage safety for large-scale hydrogen: how to ensure the safety of vehicle/airplane loaded with flammable hydrogen gas, which could also make hydrogen vehicle/airplane cost less to engineer and slowly win public acceptance.

Jun Jiang 10:56 AM

Very interesting poll results. I would like to ask what is your view about the future key manufacturing techniques required to lower the cost for hydrogen storage?

jorge.alvarado 11:00 AM

To what point, would customer preferences besides cost affect the demand for hydrogen in the future?

Mark Kapner 11:00 AM

Please comment on feasibility of using natural gas pipelines to transport large quantities of hydrogen, especially coating the inside of large natural gas pipelines, blending hydrogen with natural gas. Maybe separating the hydrogen out of the blended gas at the receiving end of the pipeline.

Iryna Zenyuk 11:04 AM

We can use existing natural gas infrastructure to move H₂ in US. We can inject H₂ up to 20 % into natural gas pipeline and then extract it using electrochemical hydrogen compression for example.

HARISH SIVASANKARAN 11:05 AM

A lot has been on water splitting reaction for decades. Recent works predominantly focus on non-precious catalysts. What is the academic interest in working on this?

Rohit Vedhara 11:06 AM

Methane is very cheap at the moment around the world, so even more potential to use this as a base feedstock in the medium term.

Anonymous Attendee 11:11 AM

As we scale up hydrogen transport (the moving & distribution of hydrogen), is hydrogen leakage an emergent issue?

Theresa 11:12 AM

Re: safety, what is the relative stability? What other concerns are there in the use of hydrogen?

Ray Sacks 11:13 AM

One safety issue is that a hydrogen flame is invisible - would it be necessary to add something to make the flame visible since almost inevitably a leak will ignite?

James Seaba 11:13 AM

Agree, H₂ FCV is very safe. H₂ is the most buoyant molecule and goes away quickly if the tank is ruptured. This is safer than gasoline vehicles from this perspective.

Wayne Arden 11:13 AM

Please discuss hydrogen as a possible fuel for transoceanic ships versus other possible low-carbon alternatives under consideration such as ammonia and methanol.

Rohit Vedhara 11:14 AM

DME is a hydrogen carrier and could have replaced diesel for trucks. What does Arun think?

Anonymous Attendee 11:17 AM

Comment: Hydrogen combustion in internal combustion engine makes NOx emissions and other pollutant, but fuel cell does not make any.

Vivien Lecoustre 11:17 AM

What about the startup time between H2-powered ICEs and fuel cells?

James Seaba 11:18 AM

H2 ICEs are difficult to mass produce. The FC is a much better option for transportation applications. In addition, H2 ICEs will have pollution due to the oil required for lubrication.

Mark Kapner 11:18 AM

If one is using a blend of hydrogen and methane to fuel combustion turbine, what is the highest level of hydrogen concentration that can be used without modification to the GT? What modification is required for higher levels of hydrogen?

sebastian marin quiros 11:18 AM

It seems that H2 production/distribution and H2-demanding infrastructure are two entities that limit each other, but they also have the potential to boost each other. Do you think that a "spark" will ever be set in either of these two areas that will give a quick rise to H2, or will it always be a slow transition?

Anonymous Attendee 11:19 AM

Comment: Hydrogen internal combustion engine has larger heat losses than internal combustion engine using gasoline.

Comment: Embrittlement issues exist in using steel infrastructures, as Arun said.

Santosh Shanbhogue 11:20 AM

It was about \$10,000/kW a few years ago for ENE-FARM

Anonymous Attendee 11:20 AM

What do you think about the combination of H2 combustion generator and superconducting motor cooled by liquid H2 for aircraft?

Anonymous Attendee 11:23 AM

Thank you. Could we have a thermal superinsulation materials topic/discussion in the future colloquia?

Mark Kapner 11:28 AM

I am advising grad students at Univ of Texas, Austin, in hydrogen-related research. I would like to communicate with Mr. Majumdar, markmkapner@gmail.com

John Hofmeister 11:29 AM

Can you please sign me up for future program notifications? Thank you. john.hofmeister@jkhgroup.org

Anonymous Attendee

Please remember that people viewing through a web browser cannot see or participate in polls. please share question and results verbally.