FCET NEWS: May 15, 2019

FCET Attends DOE Fuel Cell Conference in Washington, D.C.

Last week, Brian Long, FCET's Director of Governmental Affairs, attended the Department of Energy's Hydrogen and Fuel Cells Program's Annual Merit Review in Washington, DC, with more than 1,000 in attendance. This is the largest gathering of the fuel cell world (outside Japan). Most of the national labs, many universities (Case Western, Penn, Stanford, University of Connecticut, and Georgia Tech, among others), federal and state agency heads, and industry representatives (including Andy Marsh, CEO of Plug Power) were there.

Brian says:

> When I mentioned FCET's operating temperature, everyone—especially those doing the actual research at the national labs—was visibly surprised and impressed. Brent Kirby, a solid oxide PhD researcher with Pacific Northwest National Lab, heard about FCET and sought me out, stating, **"No one that I'm aware of is doing anything like that."** Most everyone with whom I spoke had a similar reaction, including Bryan Pivovar, a fuel cell group research manager with the National Renewable Energy Laboratory (NREL) in Golden, Colorado. He said that NREL would love to work with FCET and will be referring us to the key people when we are ready.

Steve Stringer, Alliance Manager with Los Alamos (a center for a myriad of renewable energy projects) followed up with an email and hopes to set up a meeting by phone with FCET's principals. Brian says, "It is important that Steve Stringer has a high level of interest in FCET since he deals with all of Los Alamos's industry clients."

Brian also spoke with other officials of note, including:

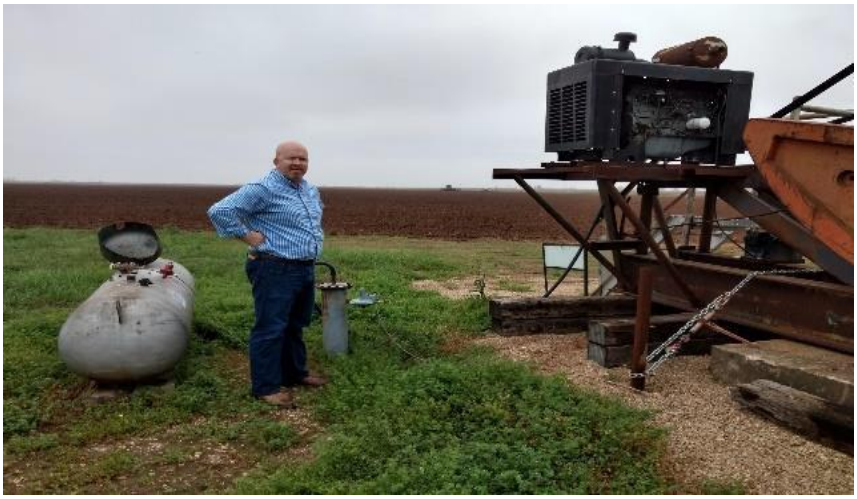
- Kevin Harrison, who does PEM research at NREL and will be directing Brian to a friend at Idaho NL who is an expert in SOFCs
- Dimitrious Papageorgopoulos, who manages the fuel cell research program at the Fuel Cell Technology Office at the Department of Energy (the conference organizer).

Brian ends his report by saying that "the most telling impression I can convey is the consistent surprise when I convey information about FCET's low operating temperature. These are top-level researchers with national labs, knowledgeable about cutting-edge fuel cell research globally."

Natural Gas Wellhead Slated To Serve as Demonstration Site for FCET's First Fuel Cell System in 2020

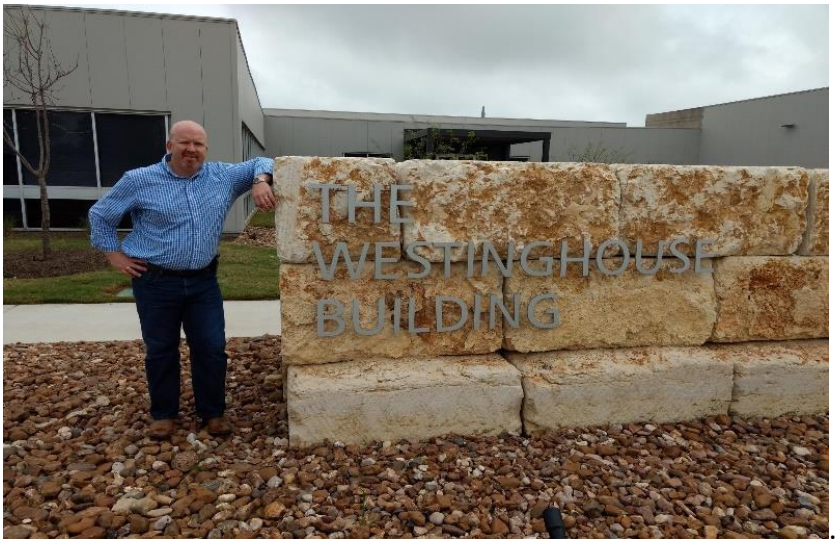
The picture below was taken at College Station, Texas (home to Texas A&M University), where FCET's new COO, Matt Ferguson, stands beside one of his 350 Viceroy Petroleum wellheads. This one operates off a natural-gas electric generator.

We prepared a video that talks about how most of the methane coming off this gas production site comes from the generator. The video can be found in the Executive Summary section of the FCET website at www.fcet-inc.com. Matt plans to replace this leaky gas generator with an FCET fuel cell system and use it as a demonstration site for prospective clients in the oil patch. One of these clients may be McLean Electric Cooperative in North Dakota, which just asked FCET to collaborate with it in designing future 150kW fuel cell systems for multiple wellhead sites in that state.



FCET Looks Ahead To Establishing Mass-Production Facility in College Station, Texas

Below is a photo of the entrance to a highly secure laboratory, office, production site, and warehouse facility—formerly a Westinghouse SDI ("Star Wars") research center near Texas A&M—that Matt Ferguson and Mark Deininger walked through at the end of April. The owners know Matt and indicate that it will be available for use as FCET's mass-production facility when FCET is ready to start scaling up in 2020.



Chairman Fisher Meets with German Engineers Interested in Helping FCET Design Mass Production Lines for Its Fuel Cells

Last week, FCET's Chairman of the Board, Paul Fisher, attended the Ceramics Expo trade show in Cleveland, Ohio. Paul had a follow-up meeting with Ryan Washburn, an American representative of a German concern (Eisenmann), which specializes in designing and installing production-line equipment for companies that have furnaces as part of their set-up. Washburn was with four of his German associates during his meeting with Paul.

Paul says: "At several past events Mr. Washburn has been enthusiastic about FCET's plans to build a prototype production facility for making our solid oxide fuel cells. So, I already knew he was very interested; now I know why. Ryan was involved quite some time ago in building the first significant SOFC from Westinghouse/Siemens. Eisenmann has also built production equipment components for Acumetrics' SOFCs in Massachusetts. And, at one time, Eisenmann discussed providing part of Bloom Energy's SOFC line (even though that never worked out)."

Paul goes on to say: "Eisenmann's people appear impressed with what we're doing at FCET." They have long thought that lower SOFC operating temperatures can lower the cost of electricity from an SOFC and that this approach is the one that SOFCs need to become successful."

Eisenmann's people want to visit our lab in Alpharetta. Paul Fisher, Matt Ferguson, Mark Deininger, and FCET Chief Scientist Mike Pozvonkov will be present for these important preliminary discussions of plant design, perhaps as early as June.

Noteworthy News Articles: Hydrogen Availability Continues to Increase as Hydrogen Production Costs Decline

Because FCET's fuel cell operates from hydrogen, links to the following articles are noteworthy.

Salt Cavern To Be Transformed Into H2 Facility

Low-cost catalyst boosts hydrogen production from water

Air Liquide Invests in the World's Largest Membrane-Based Electrolyzer to Develop Its Carbon-Free Hydrogen Production

Regulatory News: Air Liquide (Paris:AI) announces the construction in Canada of the largest PEM (Proton-Exchange Membrane) electrolyzer in the world w

www.businesswire.com

Oil Giant BP Joins Nouryon in Rotterdam Hydrogen Quest | Greentech Media

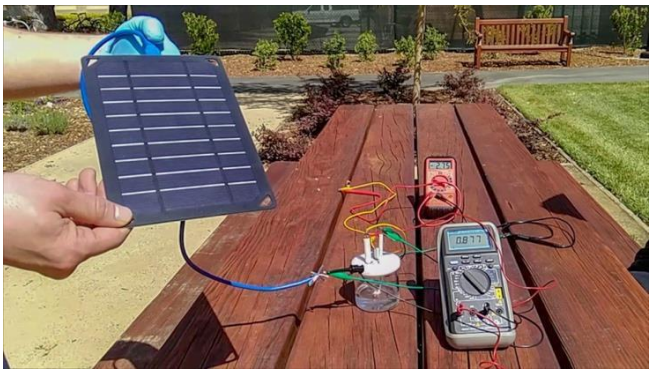
British oil giant BP is looking to create Europe's largest renewable energy-based hydrogen production facility at a refinery in Rotterdam, the Netherlands.

www.greentechmedia.com

[December: How Northwest Europe can shape a clean hydrogen market - iea.org]

Clean hydrogen is one of the few options available to decarbonise hard-to-abate sectors like industry and heavy transport (Photograph: Shutterstock) There is a growing awareness that the global energy transition will not succeed unless it finds ways to decarbonise the “hard-to-abate” sectors ...

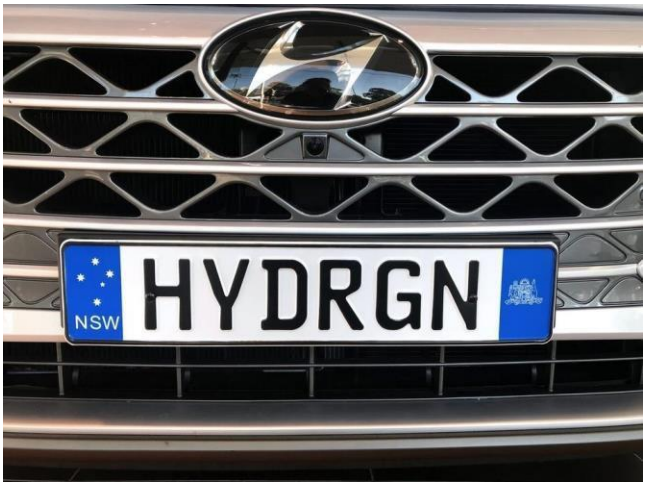
www.iea.org



[A new way to generate hydrogen fuel from seawater | Stanford News]

March 18, 2019 Stanford researchers create hydrogen fuel from seawater. Splitting water into hydrogen and oxygen presents an alternative to fossil fuels, but purified water is a precious resource.

news.stanford.edu



[Hydrogen’s time has come | News | gasworld]

Hydrogen was first formally presented as a credible alternative energy source in the early 1970s but never proved competitive at scale as an energy source – until now. With worldwide demand for hydrogen set to increase substantially over the coming decades, driven by Japan’s decision to put ...

www.gasworld.com