



# Center for Clean Hydrogen

Accelerating the Transition to Clean Energy



## Dr. Thomas I. Valdez

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**Plug Power Inc.**

### **ANALYSIS OF PEM MEMBRANE ELECTRODE ASSEMBLIES IMPACT ON THE LEVELIZED COST OF HYDROGEN**

Plug is building an end-to-end green hydrogen ecosystem to help its customers meet their business goals and decarbonize the economy. This hydrogen ecosystem is inclusive of production, storage, delivery, and energy generation. As the largest user of liquid hydrogen globally, Plug Power plans to build and operate green hydrogen production plants across North America and Europe. Plug's hydrogen production plants are based on electrolyzer systems featuring internally developed proton exchange membrane (PEM) based, water electrolysis membrane electrode assemblies (MEAs). This presentation will review the state of commercial PEM water electrolysis MEAs and provide insight as to what advances in MEA technology might be needed to produce hydrogen at a levelized cost of \$1/kg.

### **BIOGRAPHY**

Thomas has over 30 years of experience in advanced power systems for military, space, underwater, and commercial applications. His career began at NASA's famed Jet Propulsion Laboratory (JPL) where he was a major contributor to the JPL Fuel Cell Group and Power Systems Section. After a 25-year career at JPL, he transitioned to Teledyne and continued to develop advanced fuel cell technologies such as what is featured in the Teledyne Subsea Supercharger®.

His educational background starts with being a student of Mr. Jaime Escalante, whose teachings were the basis of the Hollywood movie Stand and Deliver. Thomas holds a Bachelor of Science degree in Mechanical Engineering and a Master of Science degree in Materials Engineering from the University of California, Irvine. He completed his doctorate in Materials Science under Professor Florian Mansfeld, winner of the Electrochemical Society Vittorio de Nora Award, at the University of Southern California. Thomas also holds a Masters in Business Administration from Loyola University Maryland.

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