



US DOE HTE Manufacturing Workshop

SOEC MANUFACTURING IN HIGH VOLUME



**VENKAT
VENKATARAMAN**

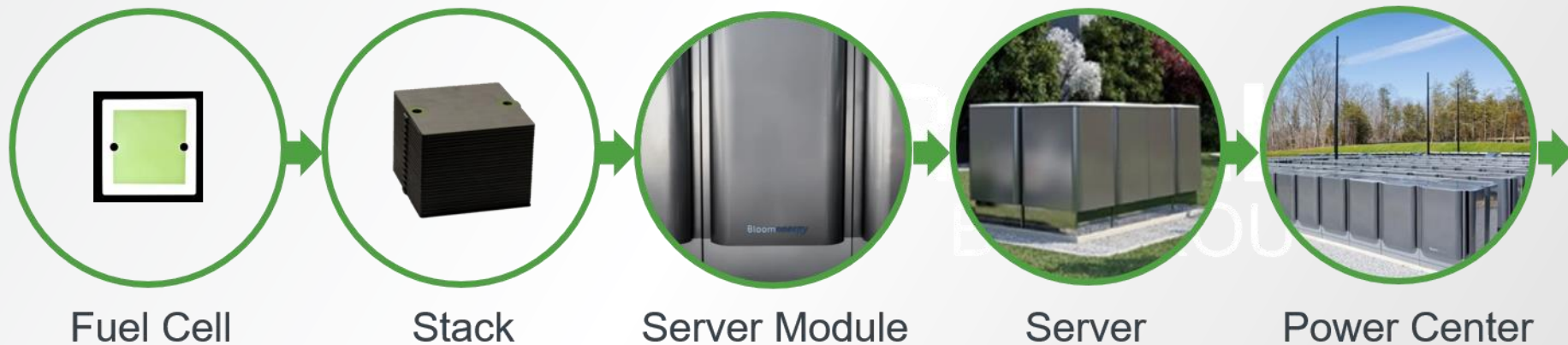
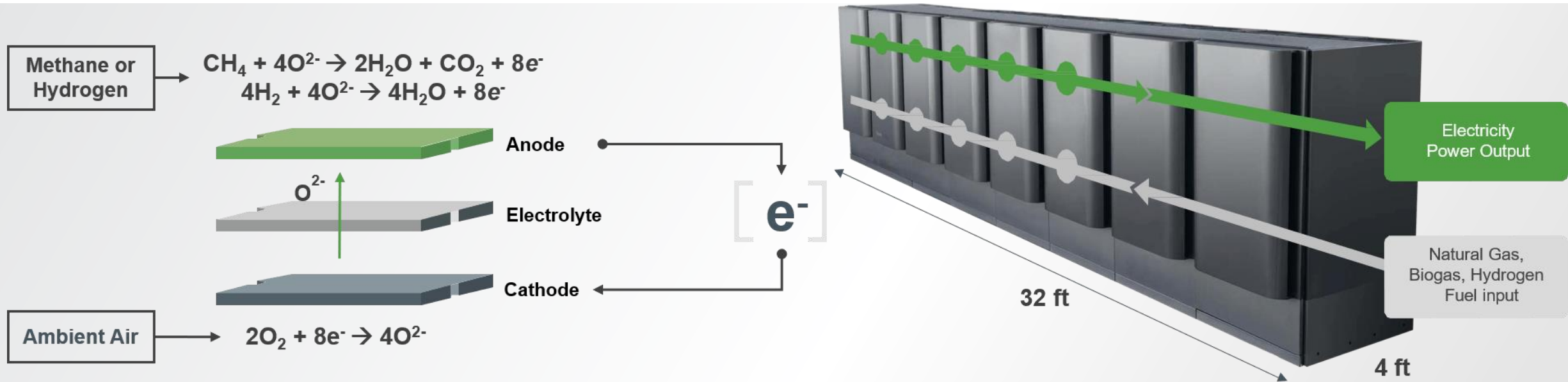
Chief Technology Officer
Executive Vice President of Engineering

March 8 2022

TECHNOLOGY PLATFORM OVERVIEW

MODULAR AND REDUNDANT DESIGN

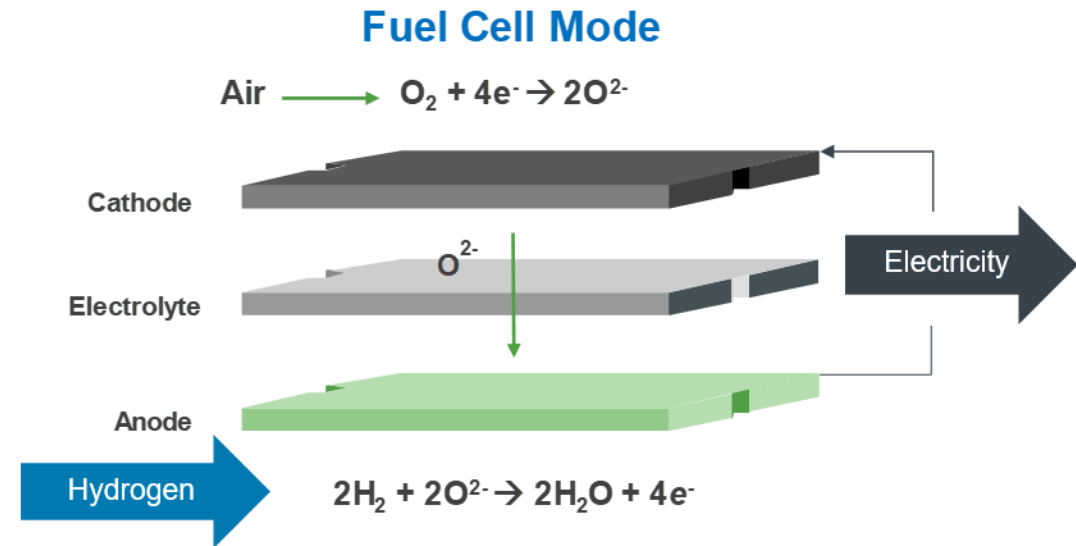
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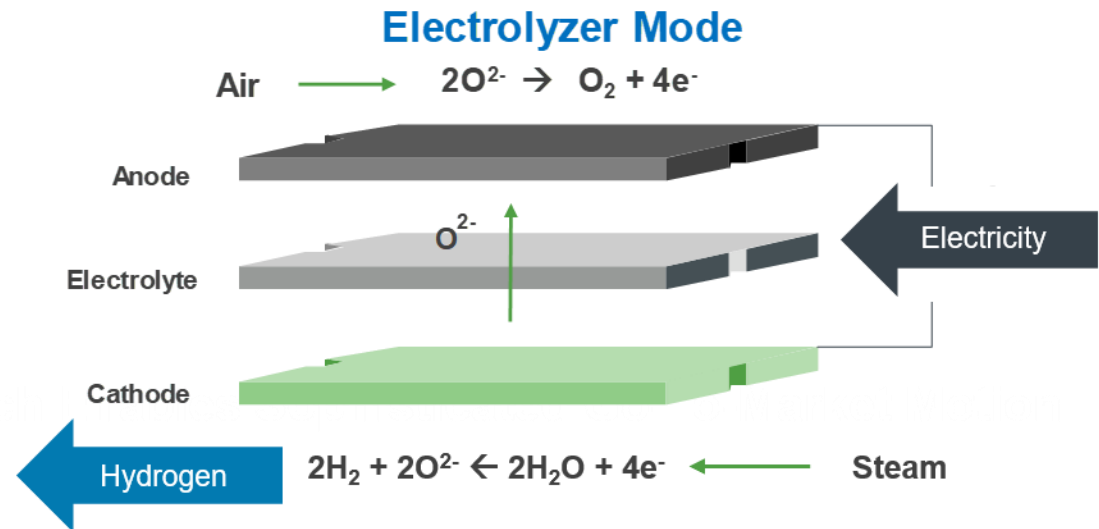
SOLID OXIDE REVERSIBLE CELL

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Fuel Cell Mode



Electrolyzer Mode



BLOOM ELECTROLYZER LAUNCH

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Bloom Energy Electrolyzer

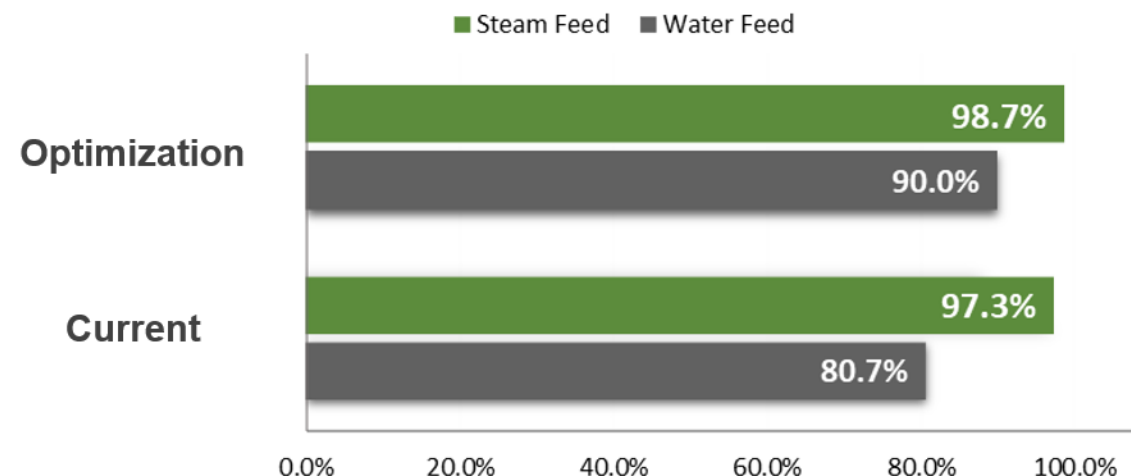


Results (Single Module Testing)	Water Feed	Steam Feed
Hydrogen Production (kg/hr)	2.54	2.69
Electrical Energy (kWh/kg H ₂)	48.8	40.5
Electrolyzer Efficiency HHV (%)	80.7	97.3

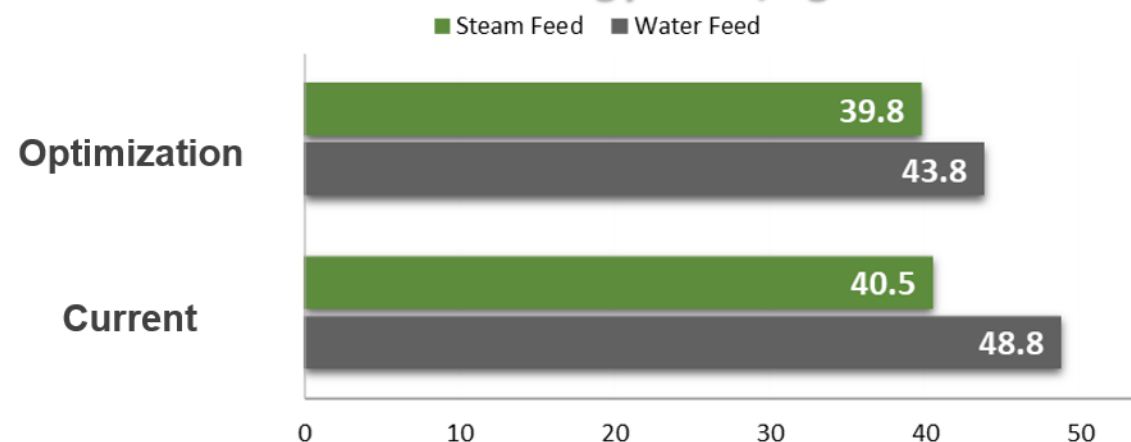
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(Not including downstream compression)

Electrical Efficiency HHV%



Electrical Energy kWh/kg H₂



SOEC MANUFACTURING IN HIGH VOLUME

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Bloom's Stack Manufacturing:

- Fully automated cell manufacturing and stack assembly
- Scalable infrastructure to GWs
- SOEC and SOFC use the same line
- Shifting from stack to column paradigm

Opportunities:

- Material changes to help component manufacturing
- Continuous sintering and conditioning
- Enhanced high volume electrode printing

A photograph of a modern building's exterior featuring a series of vertical solar panels. The panels are dark and reflective, arranged in a long row that recedes into the distance. A metal railing is visible in the foreground, and some green foliage is on the right side. The Bloomenergy logo is centered over the panels.

Bloomenergy®