

FUEL CELL TESTING

Customer:

As the world's demand for energy increases, new energy sources are being researched and developed, specifically alternative fuels, including hydrogen. And now with the manufacture and commercialization of stationary electric power generation on the rise, multiple manufacturers are discovering CTS's foothold on the leak and functional testing of hydrogen fuel cells. The need for portable electrical generation has been addressed by UltraCell "a leading producer of fuel cell systems for remote or mobile devices." UltraCell, Cincinnati Test Systems, and PNNL (Pacific Northwest National Laboratories) worked together in partnership with the US Department of Energy to produce a multi-capable Fuel Cell Test Suite. With guidance from the research group at PNNL and test requirements identified by UltraCell, CTS designed and built a test stand that addresses static leak testing and dynamic functional testing of UltraCell's fuel cell system.

Test Requirement:

The fuel cell stacks required a series of tests to ensure product integrity:

- Stack Compression and Bolting
- Stack Mechanical Analysis
- Testing included
 - Crossover Current
 - OCV (open circuit voltage) Decay
 - Pressure Decay Leak Test
 - Gaseous Flow Measurement & Control
- Electrochemical Break-in
- Performance Testing



CTS Solution:

Cincinnati Test Systems team collaborated with the UltraCell engineering team and PNNL research team to identify the technical functions of the fuel cell system along with its measureable qualities. With all of the measureable tolerances identified CTS designed a test system utilizing Labview cRIO controller, PC data collection, and multi-screen operator interface supplying real time data analysis.

The Result:

CTS supplied a Fuel Cell Test System that will function as a highly accurate R&D tool that PNNL will utilize for reporting Fuel Cell manufacturing research to the Department of Energy along with the Fuel Cell Manufacturing Industry.

