NETL ENERGY INNOVATIONS

Boosting SOFC/SOEC Power/H_2 Production Through Nanocatalyst Infiltration

NETL's patented electrode infiltration technology for solid oxide fuel cell/electrolysis cell (SOFC/SOEC) electrodes increases the performance and durability of manufacturers' cells by easily applying nanocatalysts to their existing electrodes.

Deputy Secretary David Turk at spray coater.

The need for higher performing, longer lasting cells blocks the commercialization of high-temperature fuel cells and electrolyzers. One way to overcome this is to increase the cells' catalytic activity so they can be operated under milder conditions to extend their lifetime.

NETL's solid oxide cell research group has developed and matured solution-based infiltration technologies that can easily apply tailored nanocatalyst materials onto existing industrial cell electrodes. The nanocatalysts have higher activity and increase the amount of surface area available for fuel cell or electrolysis reactions. NETL has also advanced the technology from applying the solution by hand on small lab samples to using an automated spray coater to quickly and uniformly coat dozens of industrial samples in a day. Over the past decade, NETL has applied its technology to cells from six industrial partners and is currently in licensing discussions with OxEon. In one partnership, NETL added $0.60 in production cost to a $100 industrial cell and doubled the cell lifetime!

NETL PARTNER

OxEon energy