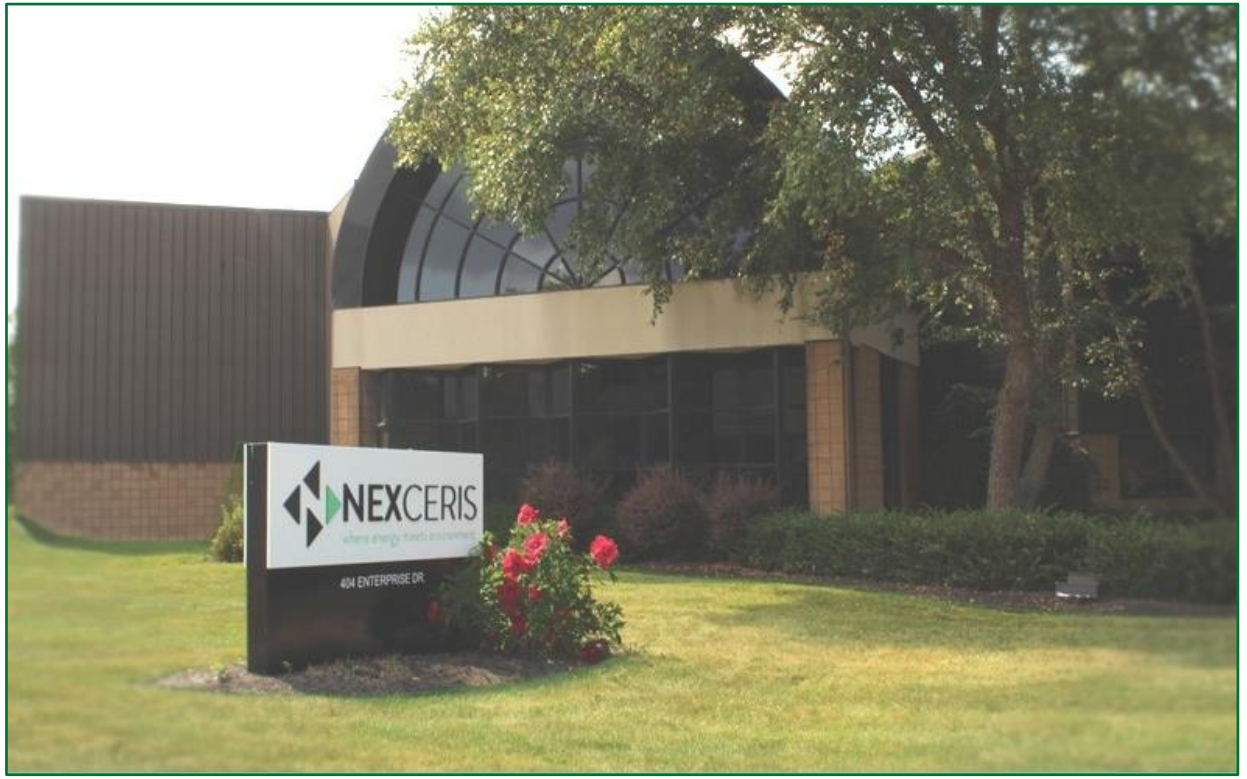
About Nexceris

Nexceris, LLC

- Founded in 1994, privately held, located in Lewis Center, Ohio.
- 25+ years of experience in the solid oxide fuel cell and electrolysis space.
- Vertically integrated manufacturer of solid oxide materials, cells, coatings and stacks.



Proven solid oxide technology provider and stack manufacturer with state-of-the-art high temperature electrolysis technology.

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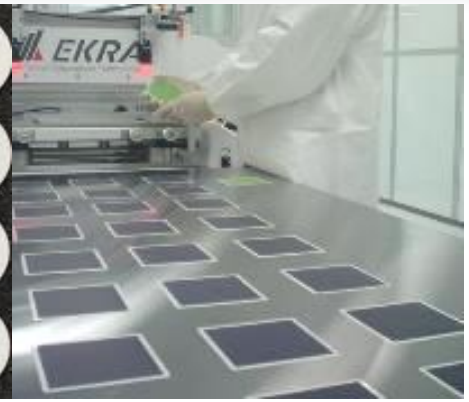
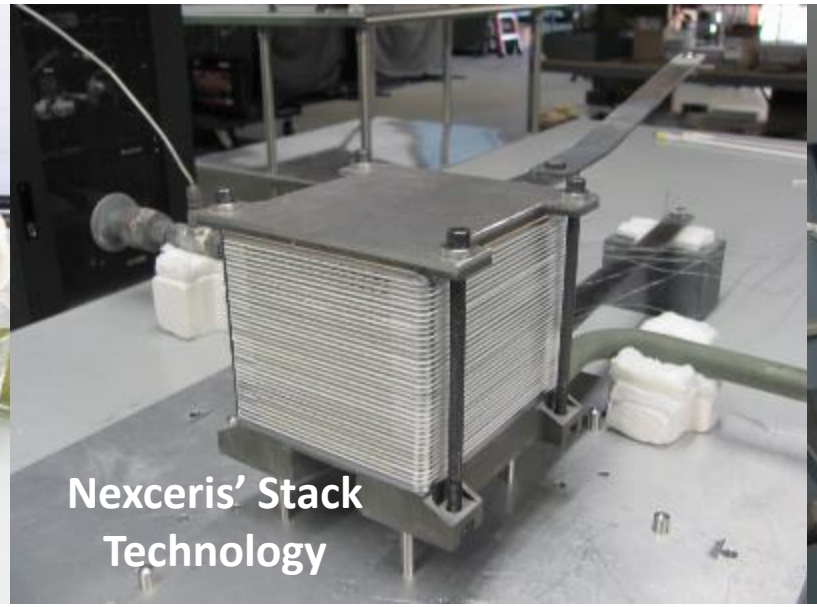
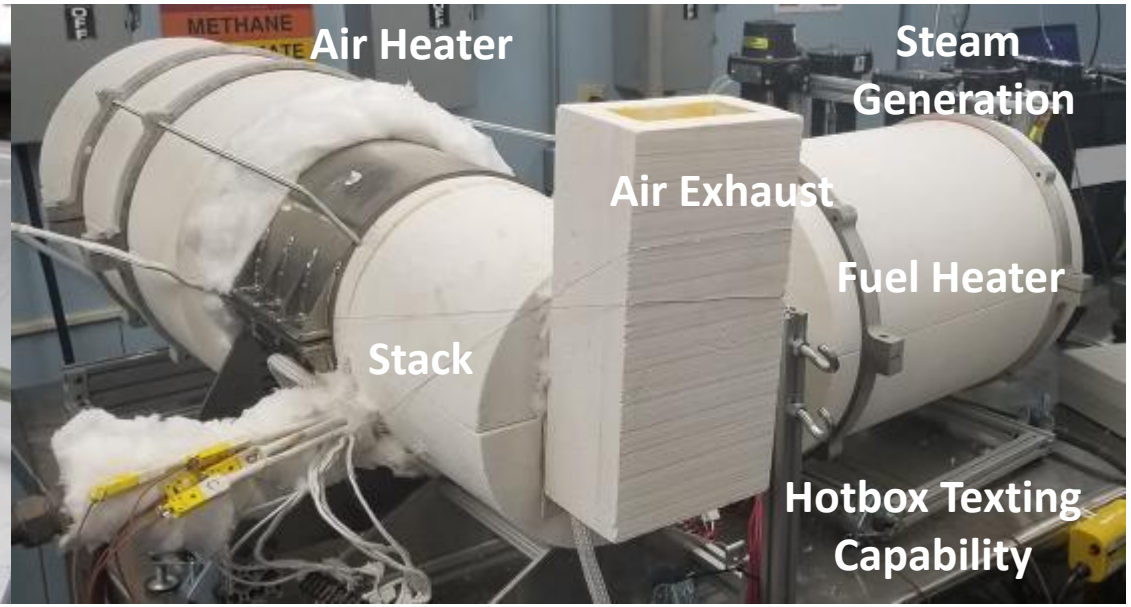
Nexceris is a vertically integrated HTE technology provider.









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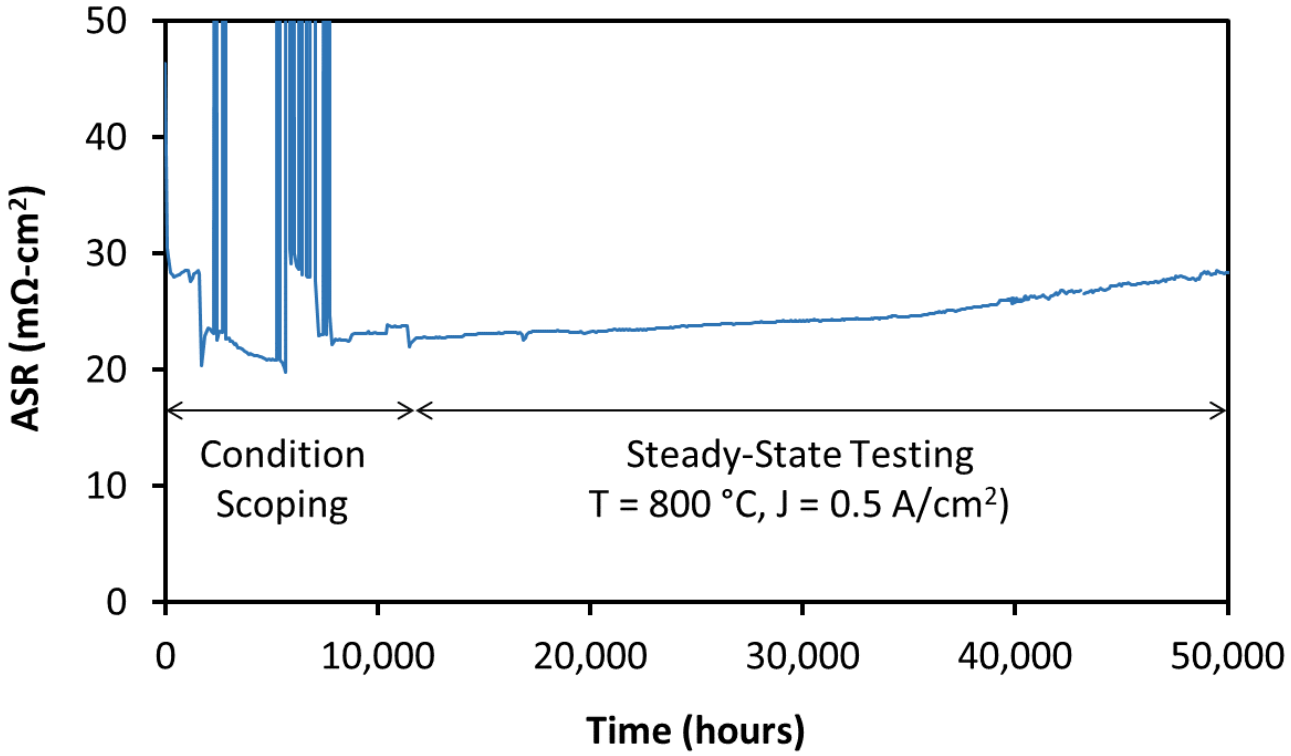
Interconnect Coatings (ChromLok™)



Nexceris' commercialized manganese cobalt oxide (MCO) coatings for protecting metallic interconnects from corrosion will be critical for HTE applications.

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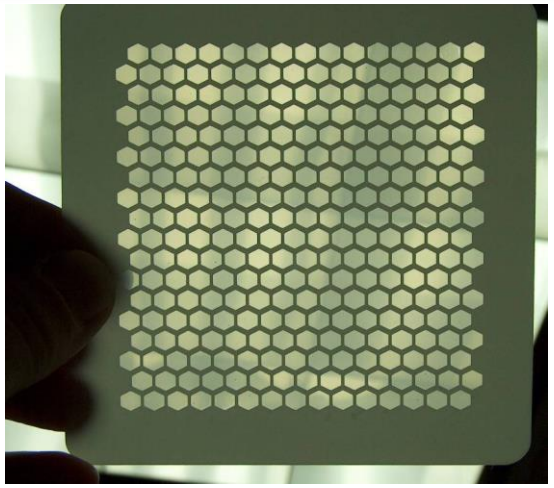
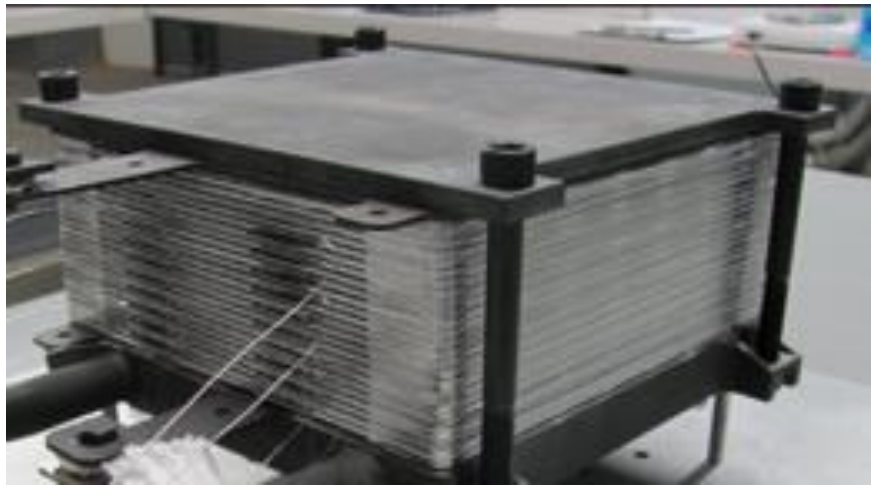
Nexceris' Cell and Stack Platforms





Nexceris' FlexCell

- Two-layer membrane mesh layer mechanically supporting a thin electrolyte membrane.
- Thin membrane for improved performance.
- Dense cell periphery facilitates sealing.
- Electrode material/process flexibility.

Nexceris' FlexStack

- Stack components designed for low-cost manufacture.
- External air manifolding scheme simplifies egress of oxygen effluent into ambient.
- Large active cell area enables large stack module size for megawatt-scale HTE systems.
- Electrolyte supported stack platform for ease of sealing.

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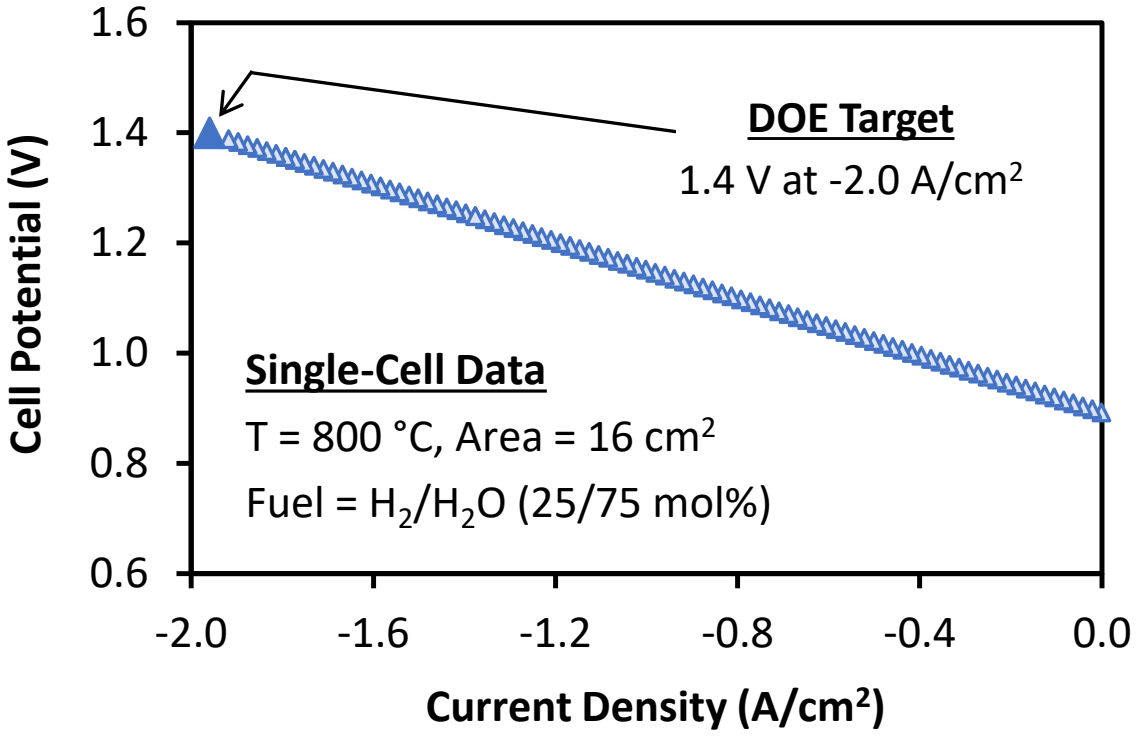
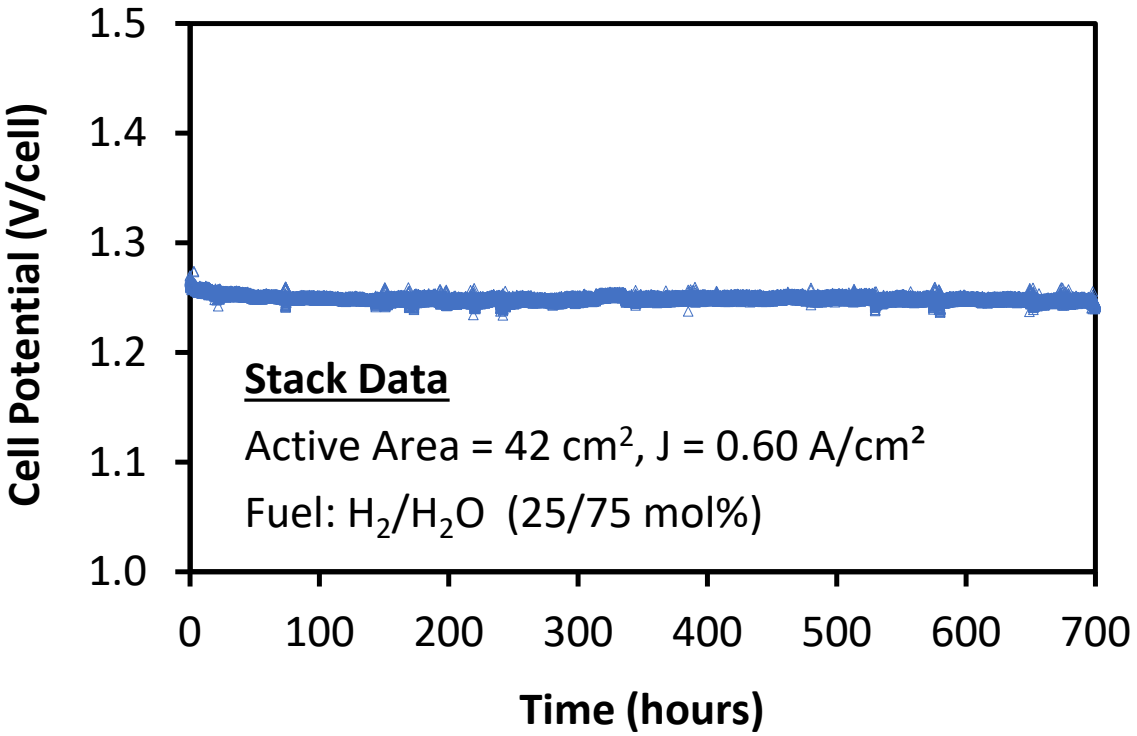
HTE Cell and Stack Testing





Nexceris' HTE cells and stacks have state-of-the-art performance and stability.

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Cell Cost Reduction

FlexCell

- FlexCell membrane fabricated by tape casting, laser cutting, lamination and sintering.
- Barrier layers and electrodes made by spraying and annealing.
- Quality control methods include profilometry and high-pot testing.

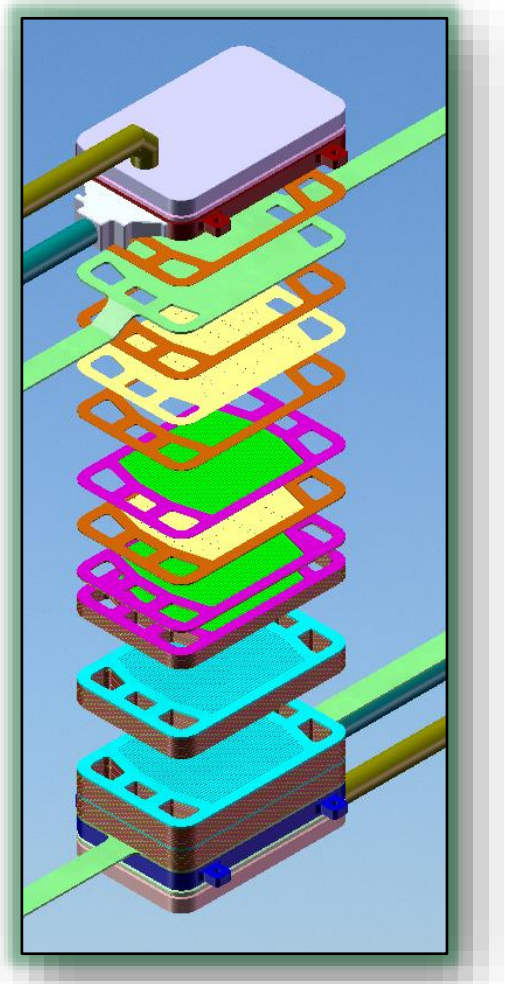
Cost Reduction Opportunities

- Increase cell area.
- Reduce support and membrane thicknesses to extent possible.
- Improve performance to operate at high current density.
- Automated manufacturing.
- Maintain high manufacturing yields as process is scaled.
- Recycle electrolyte material.

Stack Cost Reduction

SOFC Stack Components

- **Manifolds:** Laser cutting / welding.
- **Alloy Interconnects:** Laser cutting and MCO coating deposition.
- **Seal Gaskets and Inks:** Laser cutting and robotic dispensing
- **Alloy Shims:** Laser cutting.
- **Alloy (Air Side) Current Collectors:** Mesh fabrication and corrugation.
- **Nickel Foam (Fuel Side) Current Collectors:** Sizing and corrugation.



Cost Reduction Opportunities

- Reduce cell cost. Use lower cost alloys.
- Investment casting of manifolds.
- Lower cost seal approaches.
- Operate at higher current density.
- Reduce number of discrete components to be stacked.
- Automate stack component fabrication and stack assembly.
- Streamline stack conditioning process.

Thanks for your Attention!

Contact Information

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