Low-Cost Intermediate-Temperature Fuel Flexible Protonic Ceramic Fuel Cell Stack

Expanded Utility through Manufacturable Processes and More Fuel Options

Highly durable protonic ceramic fuel cells
- Intermediate-temperature (400-600 °C)
- Highly durable
- Fuel flexible
- Low-cost
- High-performance
- High coking resistance
- High sulfur tolerance

12 different fuel streams

Unique features of protonic ceramic fuel cells

In-situ exsolved Ni nanoparticles

Different system design objectives generate varying optimal PCFC stack parameter selections

Scale up
- Electrolyte
- Anode
- Half cell

Low-degradation on multiple fuels

BZY is active for carbon mitigation and WGS

Performance of PCFC with active cathode area of 10 cm²

FlexiblePCFC remarkable features
- L.O.N.S. stability (>8000 hours)
- Fuel-flexible (>10 fuels)
- High-performance with HCs
- High coking resistance
- High sulfur tolerance

Current Project Status
- Pre-commercial “quarter-stack” prototype (~100W)
- Commercial product prototype for remote DG applications (~1-3 kW)

Industrial Partner
Fuel Cell Energy