



Sustainable Energy Economy Workshop University of Toledo

January 14, 2020



***What's
Happening
in Ohio
in Fuel Cells?***



OHIO'S COMPETITIVE ADVANTAGE

- The global fuel cell industry surpassed \$2.4 billion worldwide and is forecast to grow to \$6 billion or more by 2021.
- **Ohio recognized** by the DOE/EERE as a **Top 5 Fuel Cell State** for supportive policies and incentives that have proven to encourage fuel cell installations, industry research, and development and business expansion.
- Direct investments in Ohio's research, development, supply chain, and manufacturing maintain Ohio's competitive advantage in this critical industry.



Ohio's Supply Chain

There is not a fuel cell manufactured in the U.S. that does not have Ohio components.

- **Nexceris, Lewis Center**
- **Johnson Matthey, Ravenna**
- **Die-Matic, Brooklyn Heights**
- **Special Power Sources (formerly Atrex Energy), Alliance**
- **Kalt Manufacturing, North Ridgeville**
- **Swagelok, Solon**
- **OEAMC, Lima**
- **American Tank and Fabrication, Orville**
- **Gorman Rupp, Mansfield**
- **Hexagon Purus, Heath**



OHIO'S COMPETITIVE ADVANTAGE

Integrators

- **Plug Power – NY & OH**
- **Hyster-Yale Nuvera, MA & OH**
- **Ballard, Vancouver, BC**
- **Bloom – CA & DE**
- **Doosan - CT**
- **Fuel Cell Energy – CT**
- **US Hybrid – CT**
- **Cummins – IN**
- **Ceres Power – UK**
- **Hydrogenics - Canada**

FUEL CELL APPLICATIONS

For over 30 years, **Honda of America Mfg.** has and continues to maintain an Ohio presence with the location of their North American Headquarters in Marysville, four state-of-the-art manufacturing plants, and over 14,000 employees. The quality of their products and highly skilled Ohio workforce enable Honda to contribute millions of dollars to the Ohio economy every year.



The 2020 Honda Clarity Fuel Cell Vehicle is fed by a 103kw fuel cell stack and 1.7kwh lithium ion battery pack, and yields a rating of 360 mpg/69 city/67 highway.



FUEL CELL SUCCESS

In January of 2017, **Honda and General Motors** announced the auto industry's first manufacturing joint venture to mass produce an advanced hydrogen fuel cell system to be used in both companies vehicles starting around 2020. The work is expected to create nearly 100 jobs.

FUEL CELL APPLICATIONS

STARK AREA REGIONAL TRANSIT AUTHORITY

Canton, OH: With the addition of 12 fuel cell buses and four paratransit to their fleet by the end of 2019, **Stark Area Regional Transit Authority (SARTA)** has put Ohio in the drivers' seat of Hydrogen Fuel Cell-powered public transit. With these buses, SARTA will have the largest deployment of fuel cells in the State of Ohio, and will have the 3rd largest fuel cell bus fleet in the nation.





FUEL CELL APPLICATIONS



STARK AREA REGIONAL TRANSIT AUTHORITY

Potential microgrid results and benefits

- Utilize renewable hydrogen for buses/vehicle power
- Recycle organic and biomass waste
- Upgrade current fleet's psi and hydrogen computer connections
- Increase services including direct access to transportation to those who currently have no availability
- Renewable power for an elementary school, community center (including medical clinic and dentist), and public housing facility.
- Utilize waste heat to produce electricity for heating and cooling of buildings

OHIO'S TOP SUCCESSES



Nexceris in Lewis Center, is an innovative leader in solid oxide fuel cell components including ceramic materials, hydrogen sensors and residential fuel cells.



Die-Matic Corporation in Brooklyn Heights, is a precision metal stamping company serving traditional markets as well as the fuel cell industry.

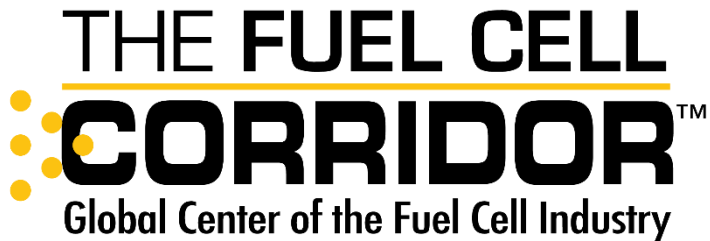


Kalt Manufacturing in North Ridgeville, has expertise in precision machining, rebuilding services, engineering, quality, and service.

OFCC CONTACT INFO



OHIO FUEL CELL
COALITION



Pat Valente

Executive Director

Ohio Fuel Cell Coalition

pat.valente@fuelcellcorridor.com

614-542-7308

www.fuelcellcorridor.com

