



Overview for Indiana Sustainability Partners

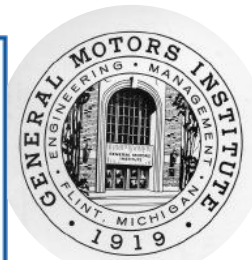
John O'Brien

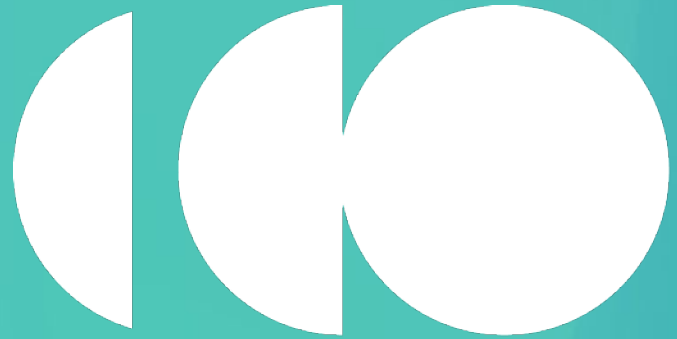
*Director - Powertrain Engineering
Accelera eMobility*

11 April 2024

About Me

- Originally from Cincinnati, OH
- Undergrad: BSME - GMI/Kettering University (Flint, MI)
 - Coop working in manufacturing at General Motors in Dayton, OH - 5 years
 - Full time Technical Support/Maintenance Supervisor (Body Shop) - 2 years
- Grad School: MSME - University of Michigan (Ann Arbor, MI)
 - 3 years research at US EPA NVFEL - diesel injection systems, high EGR diesel combustion, hydraulic hybrids and diesel-hydraulic free piston engine
- 16 years with Cummins Electrification (Columbus, IN and Stamford, UK)
 - R&T - CPE: Hybrid engine cold cranking, Best Hybrid Engine studies
 - EBU - CPE: Engine Optimization, S/S; Team Lead: electric accessories
 - R&T (Engine Start/Stop, Integrated Alternator PPT) - TPL, design team lead
 - UK EXPAT R&T (FIRST) - TPL/SI (MG/Power Electronics development, PE and System controls)
 - EBU, then EPBU, then NPBU - BEV Powertrain TPL
 - NPBU, then Accelera, now Accelera eMobility - Powertrain Engineering Director
- 30+ granted US/International Patents





accelera™

by Cummins

OUR MISSION

**TO ACCELERATE THE SHIFT TO
NET ZERO BY PURSUING THE
MOST PROMISING PATHS FORWARD.**

ACCELERA BY CUMMINS

Experience + Agility

Accelera - a business segment of Cummins - is a global leader in zero-emissions technologies for the world's most economically vital industries, empowering them to accelerate the shift to a sustainable future.

2,000

of the world's brightest minds
focused on decarbonizing
technologies

70+

years of hydrogen experience

190+

countries and territories in our
distribution + support network

1.5B+

miles driven by electric vehicles
with Accelera eMobility products

600+

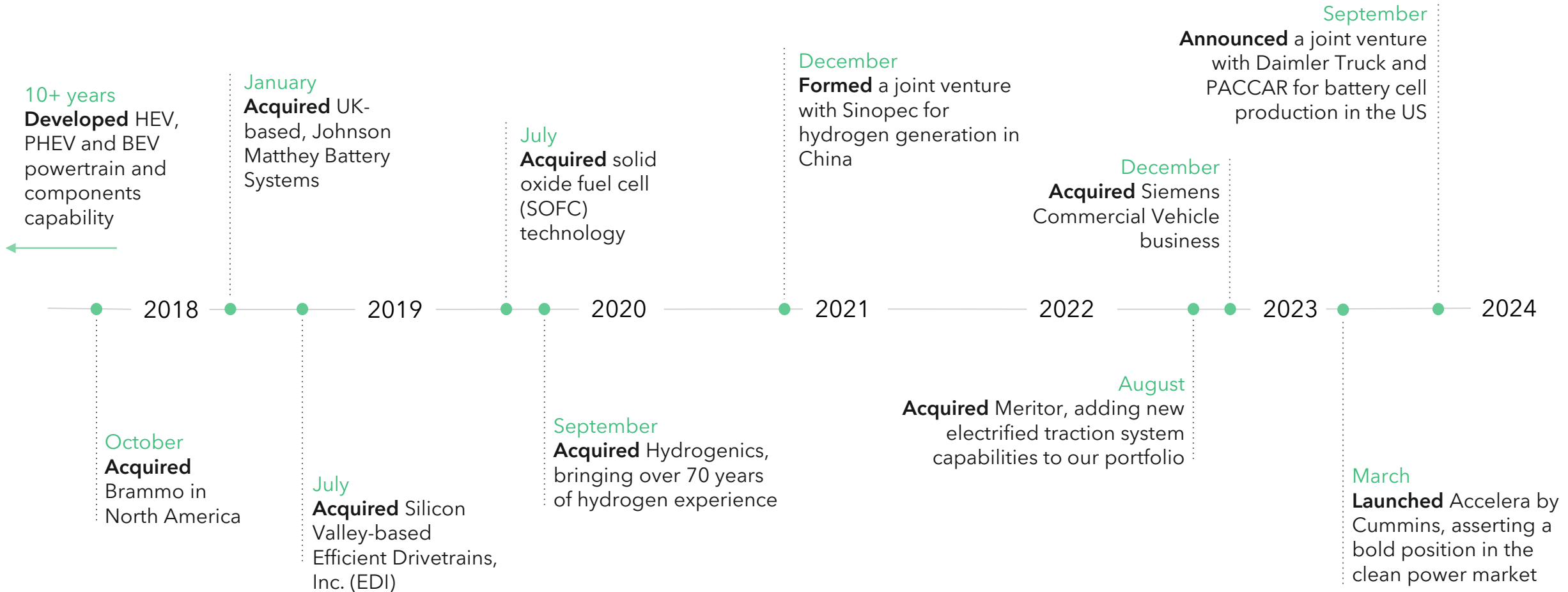
electrolyzers deployed in the field

3,000+

fuel cells deployed in the field

OUR JOURNEY

Growing Capabilities & Stacking Experience



SCALING CAPACITY

Accelera's Footprint



FOUNDATION FOR THE FUTURE

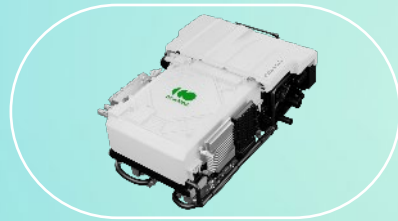
Accelera's Core Technologies

Electrolyzers



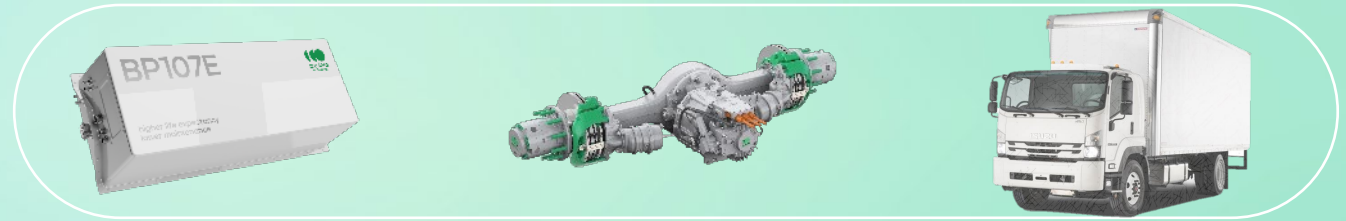
Creating solutions for industrial and commercial hydrogen generation and MW-scale energy storage

Fuel Cells



Creating and integrating fuel cells for mobility and stationary power applications

eMobility



Battery Product Line

Creating technologies and products for commercial battery electric vehicles and battery energy storage systems

Traction Product Line

Creating technologies and delivering electric traction systems and eAxles for electrified vehicles

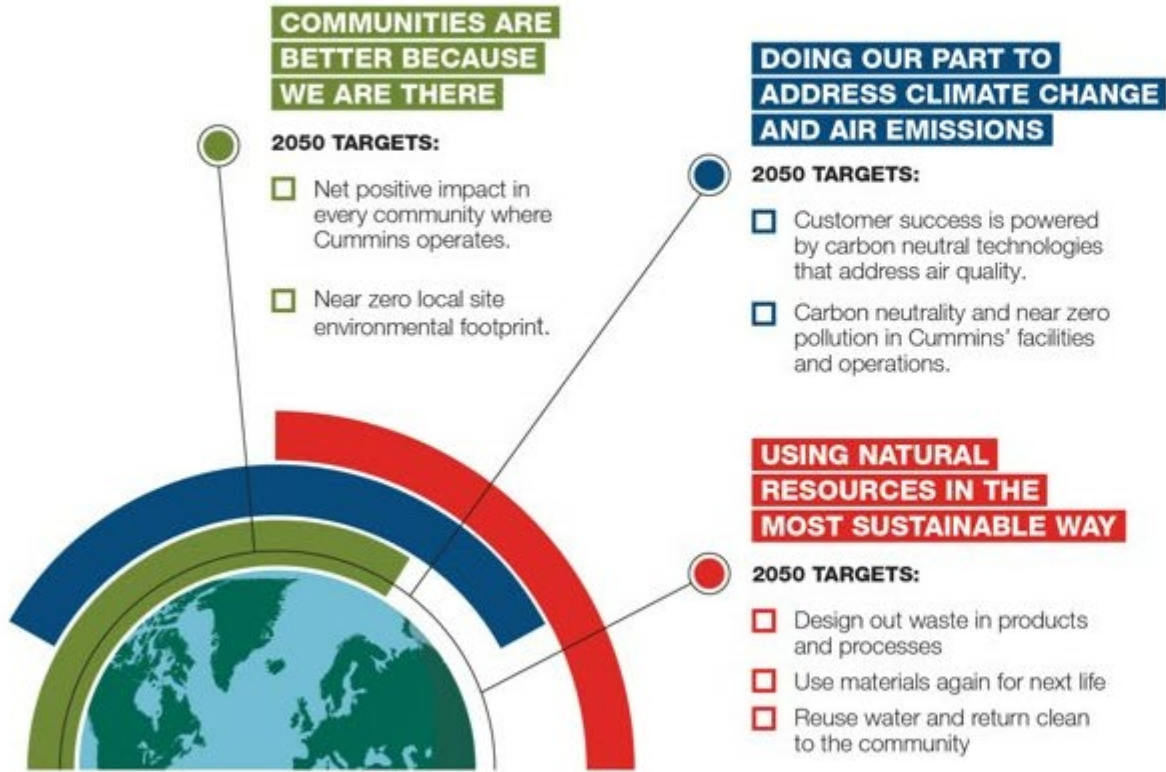
Powertrain Product Line

Creating technologies and delivering full powertrain solutions for electrified vehicles

Delivering Sustainability Goals Now



CUMMINS' 2050 ASPIRATIONAL TARGETS



NOTE: Company facilities include all consolidated operations and joint ventures that are part of the Cummins Enterprise Environmental Management System. The company's strategy also includes addressing environmental needs in communities where Cummins employees live and work and where the company does business. Those goals are under development.

NINE 2030 GOALS

SCIENCE-BASED TARGETS	1. Reduce absolute greenhouse gas (GHG) emissions from facilities and operations by 50%.
	2. Reduce scope 3 absolute lifetime GHG emissions from newly sold products by 25%.
	3. Partner with customers to reduce scope 3 GHG emissions from products in the field by 55 million metric tons.
	4. Reduce volatile organic compounds emissions from paint and coating operations by 50%.
CIRCULAR ECONOMY	5. Create a circular life-cycle plan for every part to use less, use better, use again.
	6. Generate 25% less waste in facilities and operations as a percent of revenue.
	7. Reuse or responsibly recycle 100% of packaging plastics and eliminate single-use plastics in dining facilities, at employee events and as amenities.
	8. Reduce absolute water consumption in facilities and operations by 30%.
	9. Produce net water benefits that exceed Cummins' annual water use in all Cummins regions.

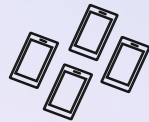
1000 school buses will reduce carbon emissions by approx.

10,600 metric tons

Equivalent CO2 emissions we see from



1 million diesel gallons consumed



1 billion smart phones charged

The same amount of carbon sequestered by



Planting over 175,000 trees



Real World Experience

Battery



School bus



Pick-up + delivery truck



Class 8 truck



Terminal tractor



Transit bus



Mini-excavator

Fuel cell



Passenger train



Class 8 truck



Transit bus



Dump truck



E-ferry



Stationary power

Electrolyzer



Hydrogen generation



Hydrogen blending



Hydrogen refueling station



Thanks!