



2022 SUSTAINABLE FLEET TECHNOLOGY CONFERENCE
HYDROGEN AS A TRANSPORTATION SOLUTION

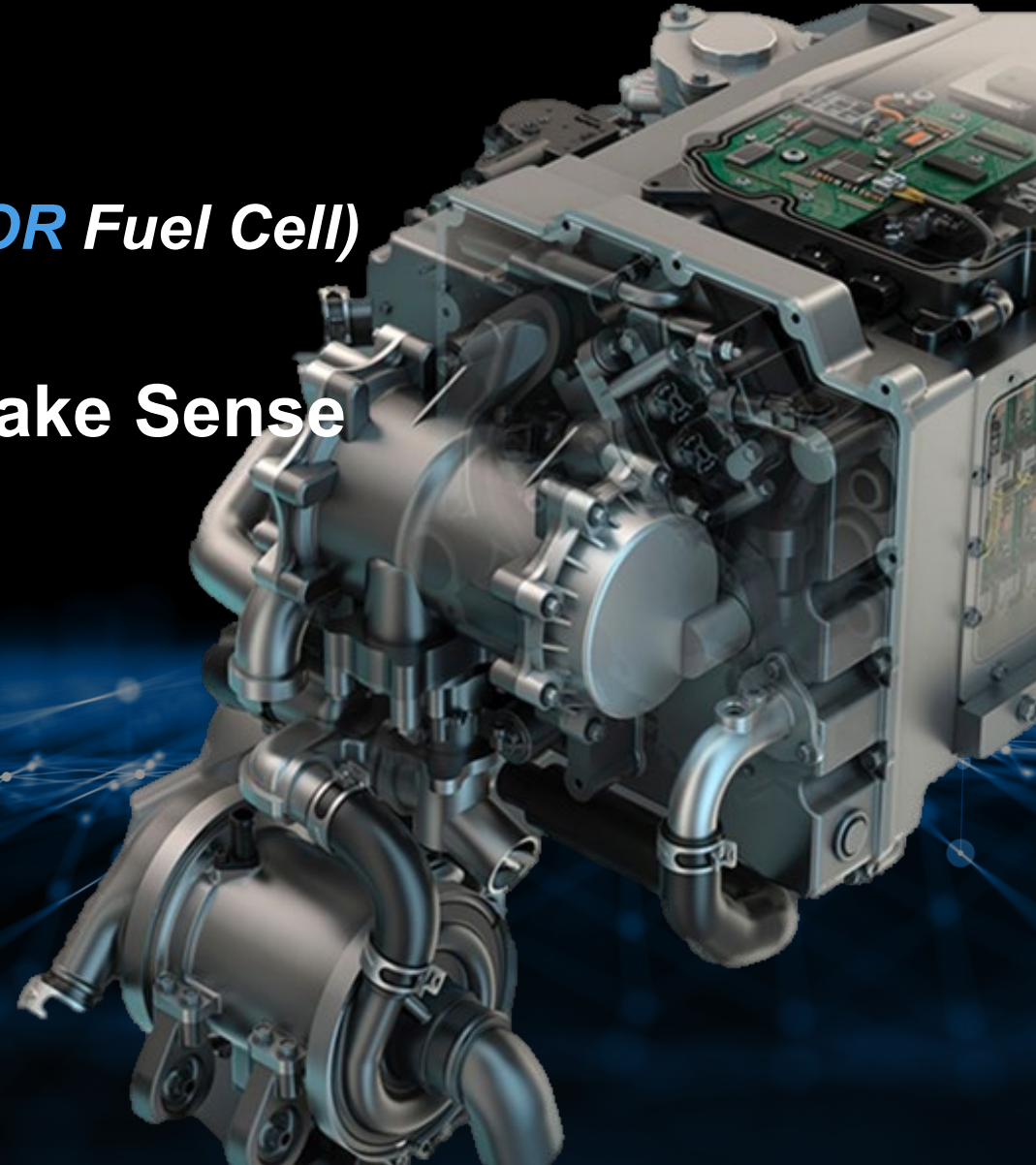
Adam King

GENERAL MOTORS

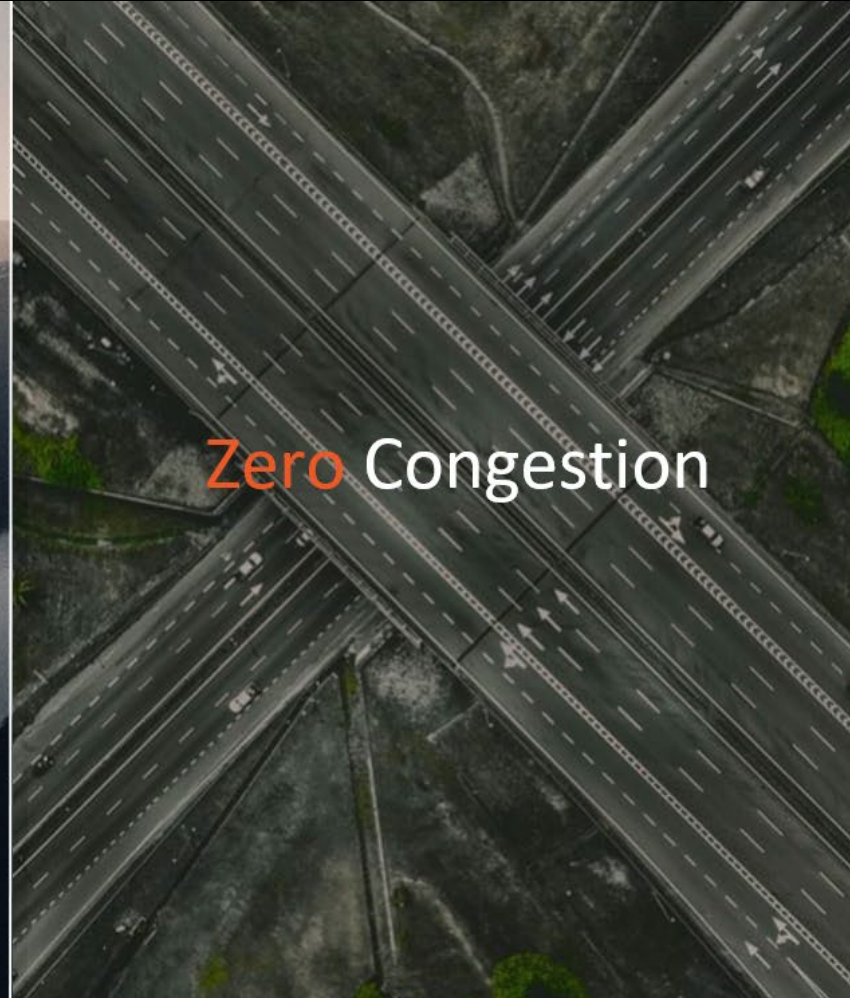
BUSINESS DEVELOPMENT MANAGER – HYDROTEC FUEL CELLS

OVERVIEW

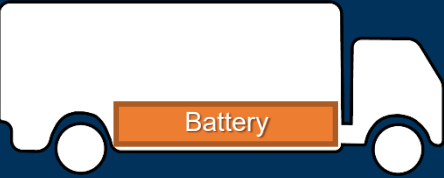


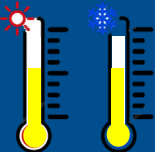
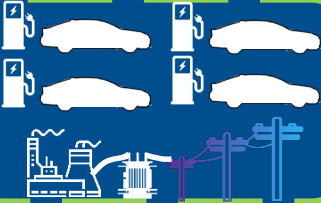
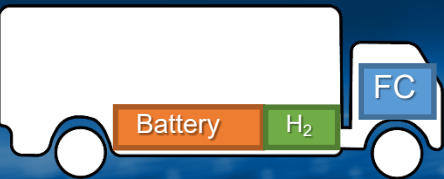




- GM Vision
- Battery **AND** Fuel Cell (*VERSUS* Battery *OR* Fuel Cell)
- Where & When Hydrogen Fuel Cells Make Sense



THE GM VISION



"AND NOT OR" - HYDROTEC FUEL CELLS COMPLEMENT BEVS

		Energy Storage Mass Energy Density / Cost	Refueling Time	Fuel Cost	Operating Temperature	Infrastructure & Scale
BEV Charge battery from external power		LOW 	MED 	\$		
Fuel Cell Produce electricity on board from hydrogen		MED 	FAST 	\$ → \$		 1 to Many

HYDROTEC APPLICATIONS

PORTFOLIO EXAMPLES – PLANES, TRAINS, TRUCKS, & MORE

- ✓ Large, High Fuel Consuming Applications
- ✓ Fleet & Known Refueling Sites
- ✓ Efficiency, Range, & Fast Refueling Required



Commercial Aircraft Auxiliary Power Unit



Locomotive Prime Power



Class 7/8 Commercial Trucks



Class 4/5/6 Commercial Trucks
(GM)



Stationary Power

HYDROTEC FUEL CELLS SUPPORTING BEV DEPLOYMENT



Renewable Innovations EMPOWER Rapid Charger



Charging Hummer EV's with GM Palletized Fuel Cell DC Fast Chargers

GM DOE SUPERTRUCK3 PROJECT

- Medium duty trucks are used in a diverse and challenging array of applications
- Zero emission solutions required
- Targeting performance and total cost of ownership (TCO) equal or better than ICE trucks
- Requires scalable infrastructure to support zero emission trucks



HYDROTEC Advantage

- GM's vision to create a world with zero emissions isn't limited to cars, light trucks and SUVs.
- HYDROTEC fuel cells will drive electrification beyond the auto industry including freight trucking, aerospace, power generation and locomotive – as these industries look to improve their performance and reduce emissions.
- GM is one of the only companies with advanced, homegrown technology platforms for both EVs and hydrogen fuel cells which allows us to deploy each technology where they best serve our customers' needs.



everybody in.

Q&A

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HYDRATEC

GENERAL MOTORS GLOBAL FUEL CELL BUSINESS