

Electric Aircraft Development

H2@Airports Virtual Workshop

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W. Kyle Heironimus

Head of Powertrain

Hyundai Motor Group, Urban Air Mobility Division

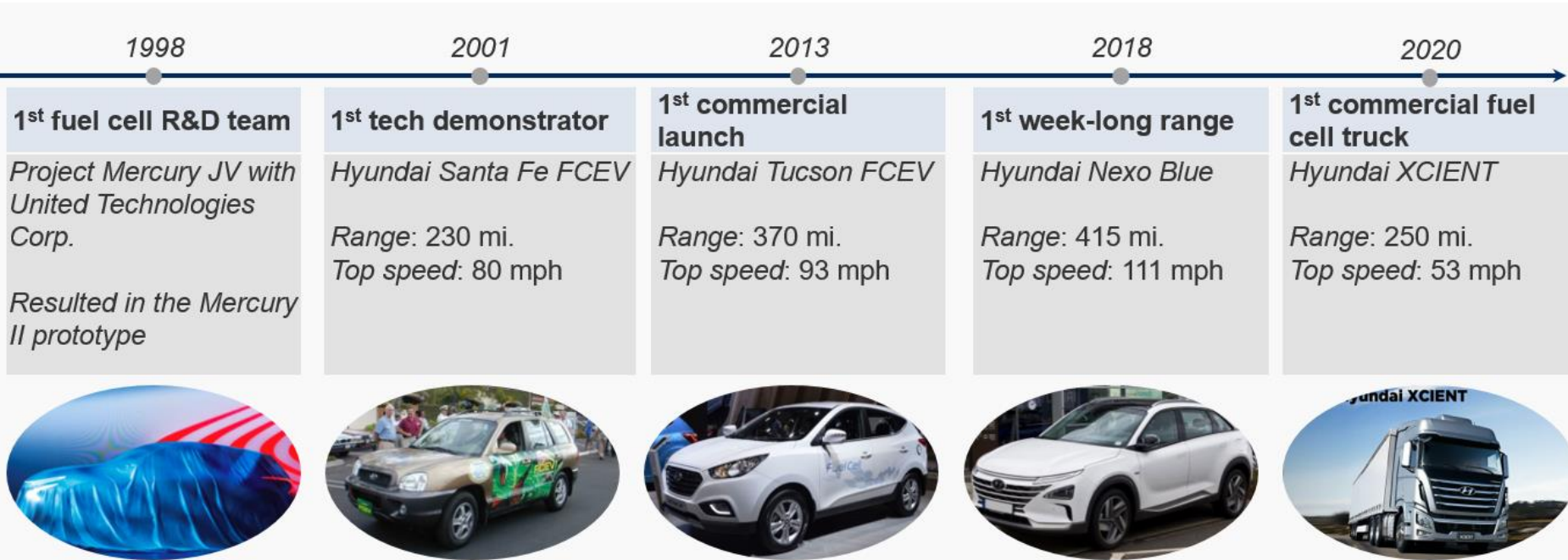


Hyundai Electric Aircraft Development



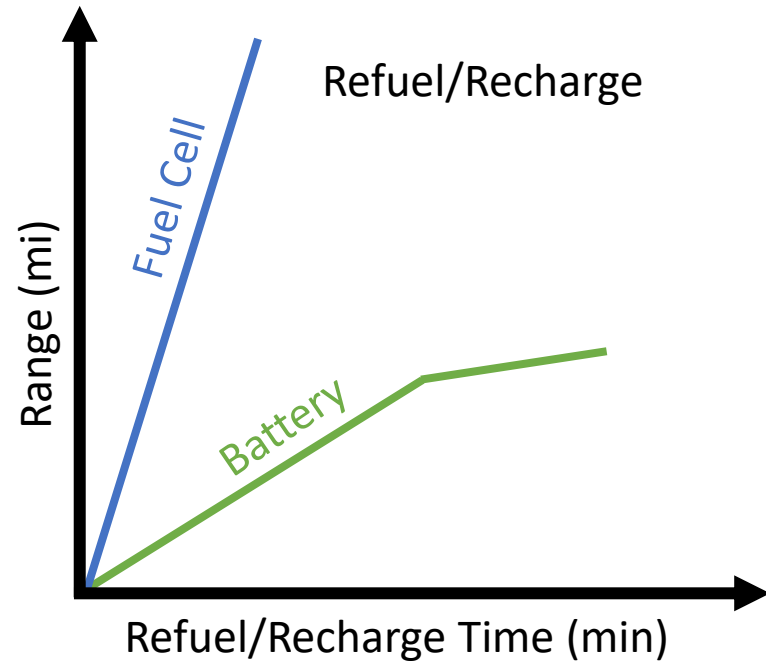
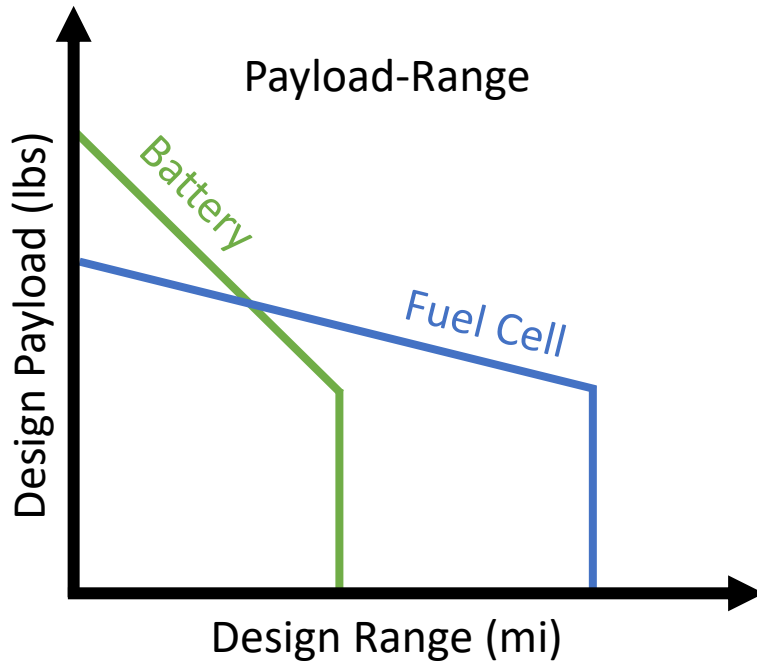
Safe · Quiet · Affordable · Passenger Centered

Hyundai H₂ Fuel Cell Development

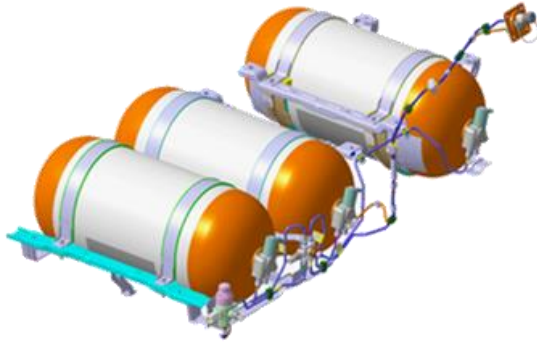


Hyundai is 2019 market leader in fuel cell vehicle sales

Fuel Cell Propulsion Opportunities



Fuel cell enables longer range and higher operational tempo



Hydrogen Storage:

- 10k psi gaseous storage 1:20 fuel to tank weight ratio
- Cryogenic liquid storage operational challenges
- Solid state hydrogen storage is desirable



Batteries:

- FC Electric aircraft need large battery systems
- High specific power – different cells from BEV
- Aircraft concept must accommodate FC system and battery installation



Thermal Management:

- Fuel cells are only ~50% thermally efficient
- Low grade heat requires significant TMS equipment
- Aircraft concept designed to accommodate TMS








Technical challenges require industry innovation

Aviation Fuel Cell Certification

Currently no coverage for fuel cell propulsion systems in Part 33



Consensus standards and accepted means of compliance need to be adapted/developed for all fuel cell system components

Fuel cell system		Development Required
Hydrogen Storage		High
Hydrogen Supply		Medium
Battery System		High
Air supply		Medium
Controls		High
FC Stack		High
Thermal Management		Medium

Opportunity for industry collaboration to define a safe and effective framework for fuel cell certification



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