

Fuel Cell Electric Vehicle in Mining

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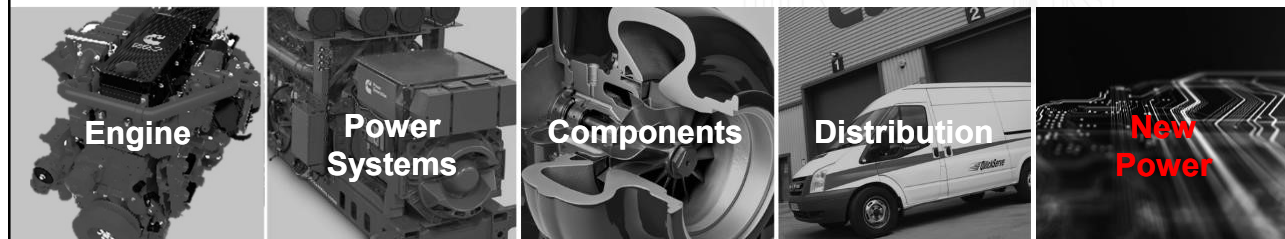


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FIVE OPERATING SEGMENTS

NEW POWER

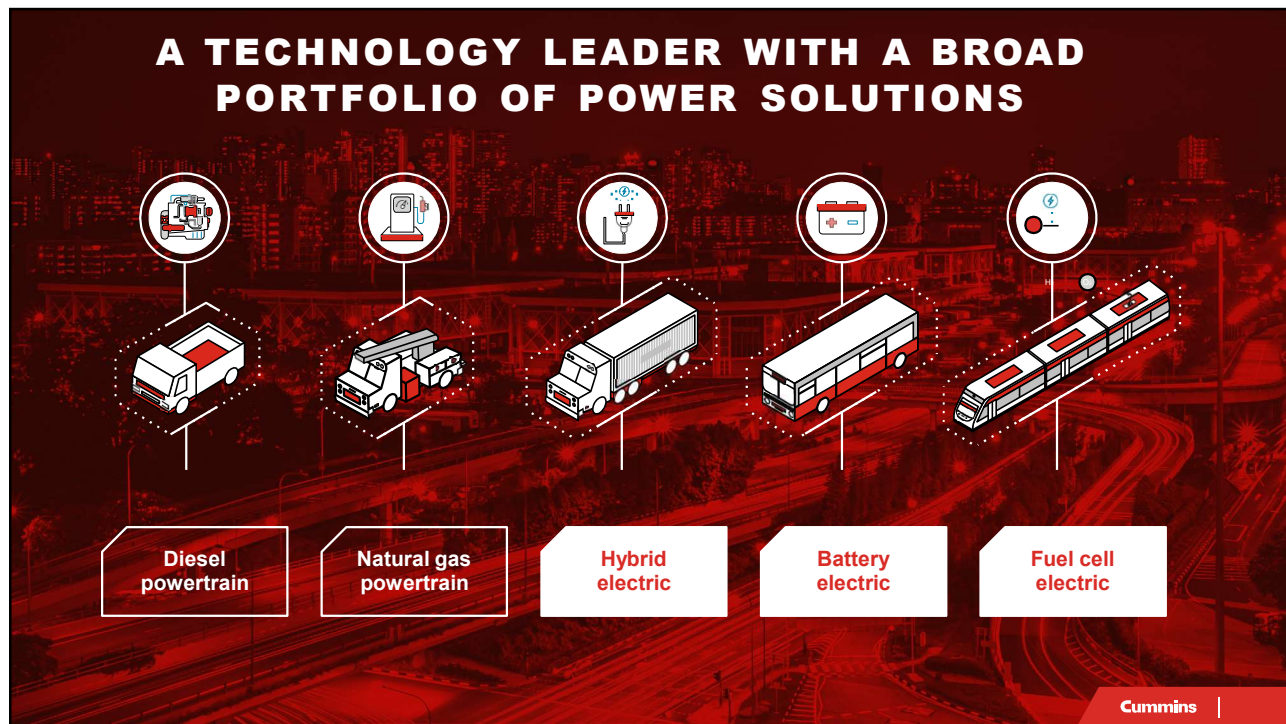
Cummins has a 100-year-long track record of delivering leading power solutions. As we look ahead, we know our industries and markets will continue to change, and we are committed to bringing our customers the right technology at the right time.



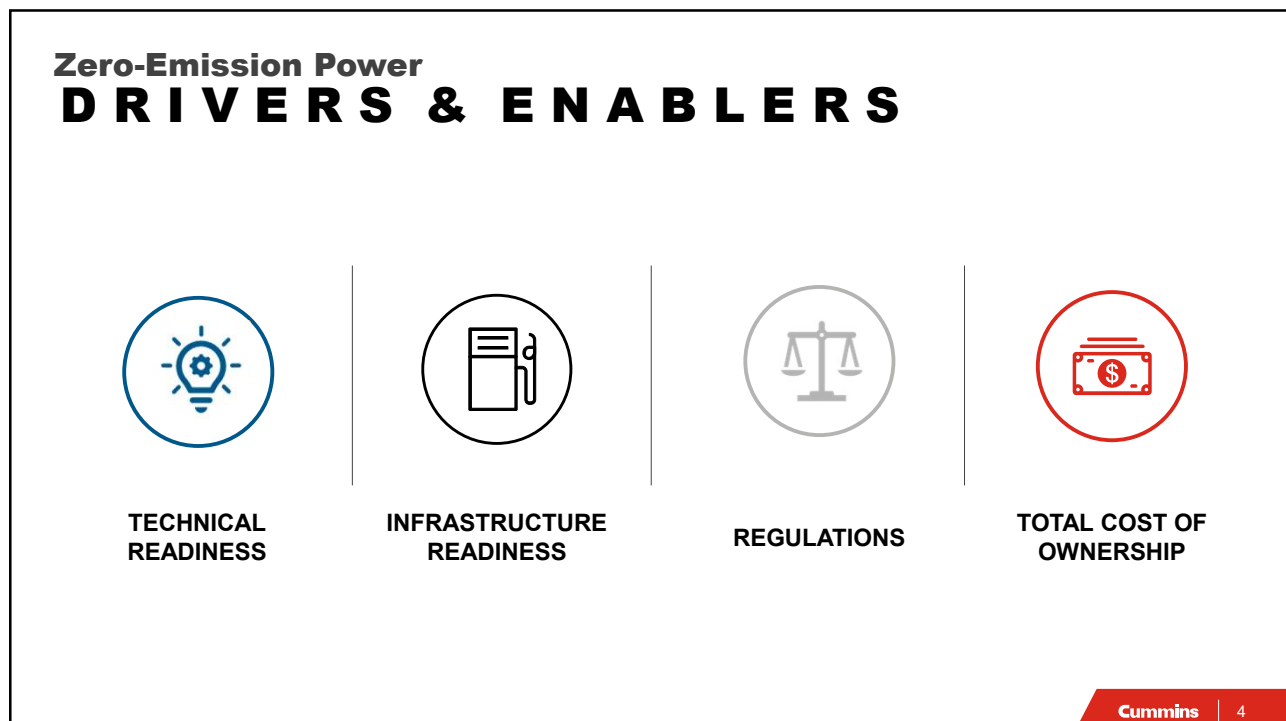
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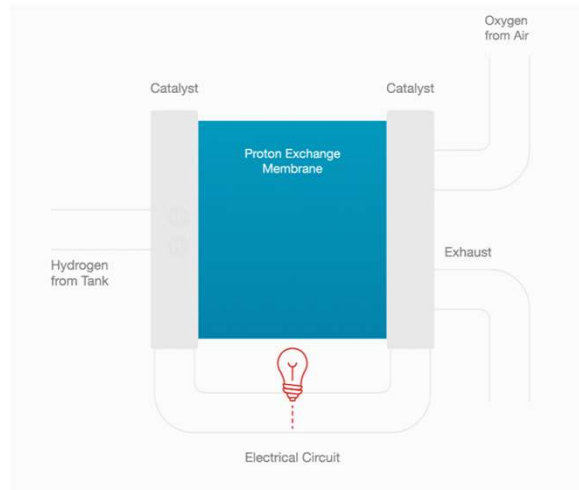
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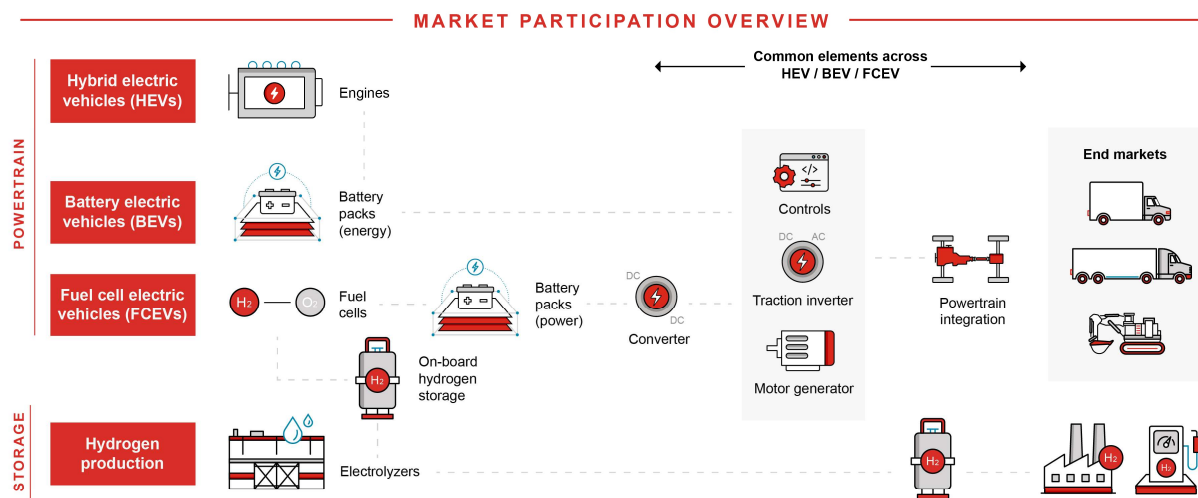
HOW FUEL CELLS WORK

- **Oxygen (O₂)** and **hydrogen (H₂)** migrate into the fuel cell.
- The oxygen molecules migrate to the catalyst where the anode strips some of their electrons.
- This allows them to move through the cathode and to react with the hydrogen molecules to produce water vapor.



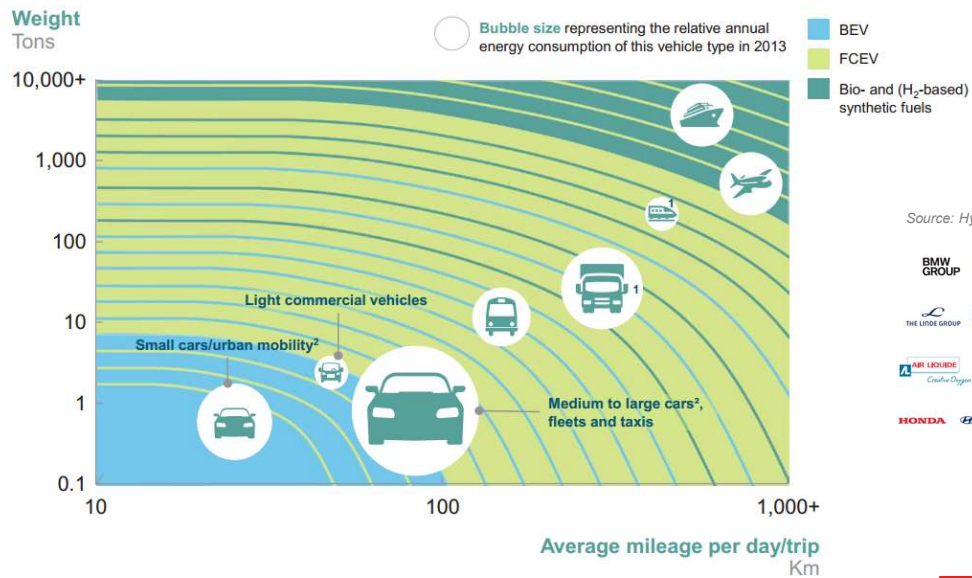
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HYBRID, BATTERY, AND FUEL CELL ELECTRIC ARE COMPLEMENTARY



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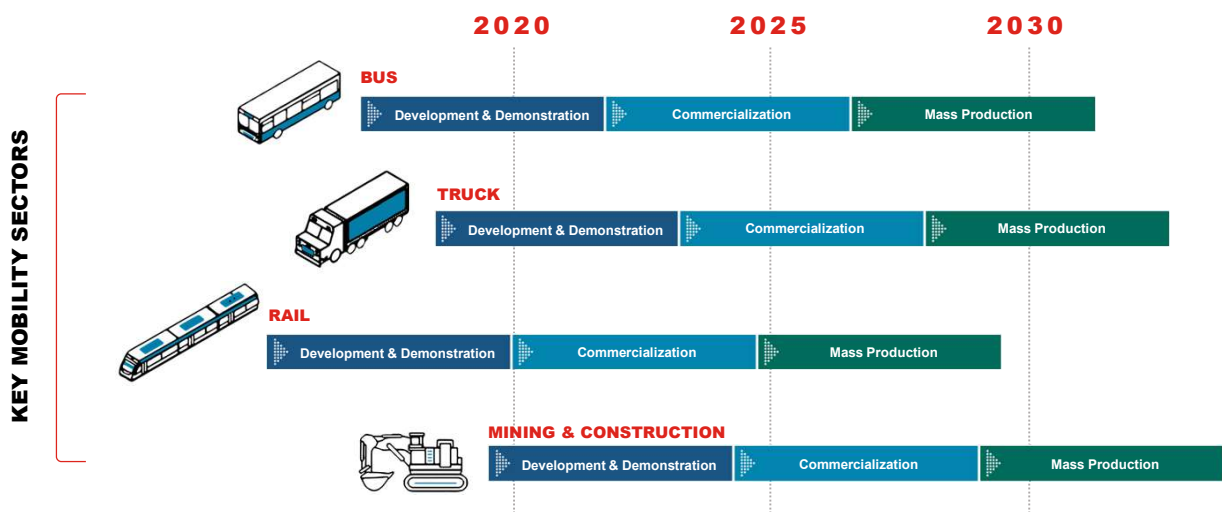
DECARBONIZING TRANSPORT - FCEV



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CUMMINS FUEL CELL ROADMAP

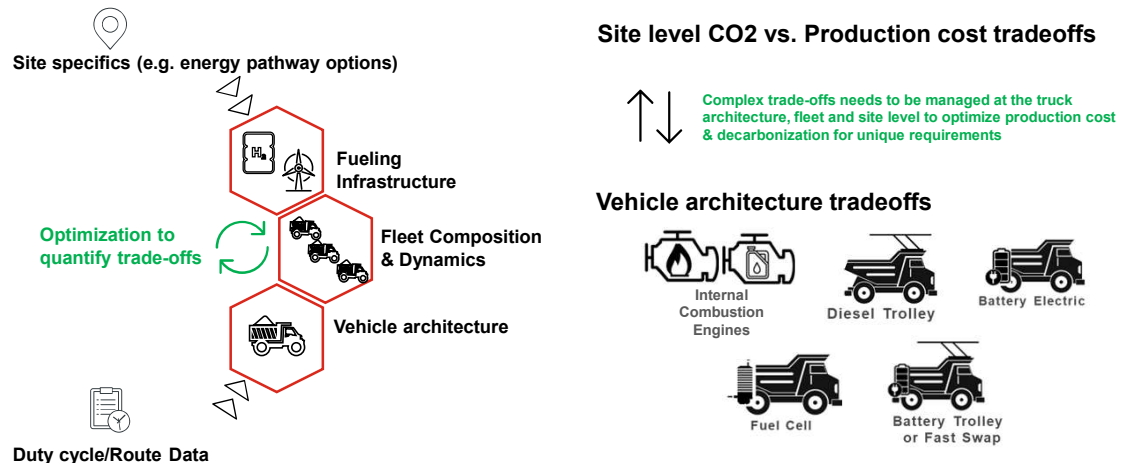


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Mining Decarbonization Solutions

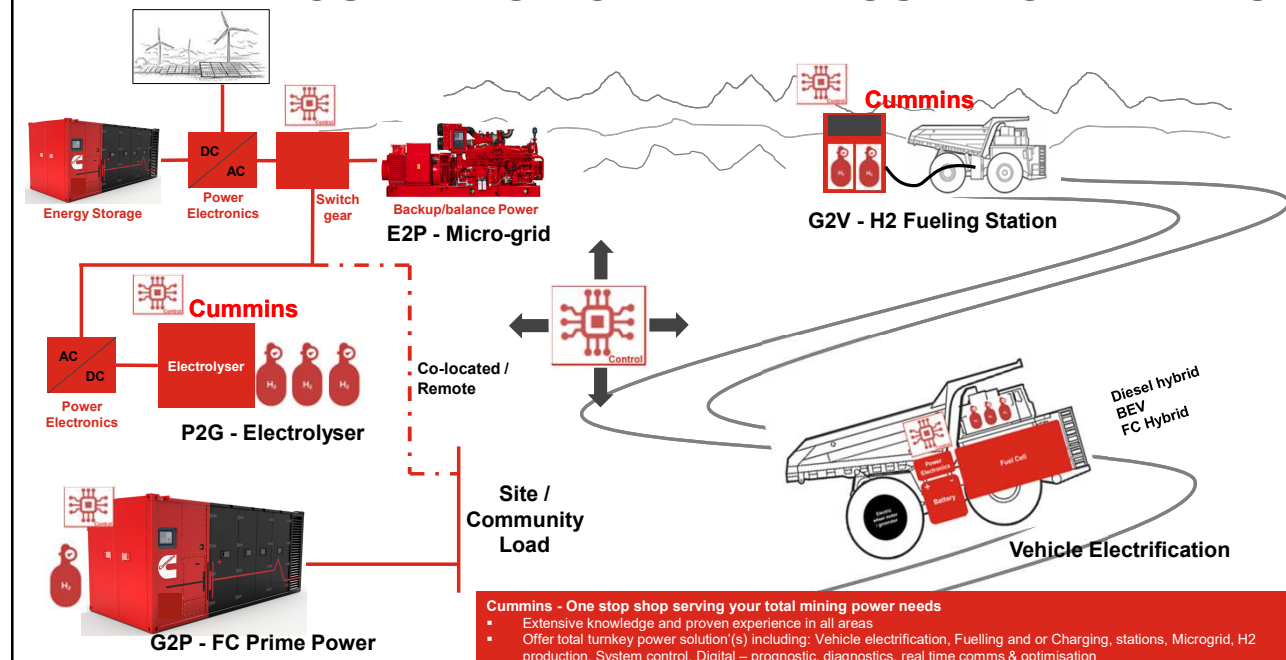
Complex analysis is critical to understand trade-offs and optimize solutions for every customer eco-systems



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CUMMINS ROAD MAP – SURFACE MINING



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COLLABORATION EXAMPLE KOMATSU – CUMMINS

- As a company, Komatsu is committed to minimizing environmental impact through its business, targeting a 50% reduction in CO2 emissions from use of its products and production of its equipment by 2030 (compared to 2010 levels) and a challenge target of achieving carbon neutrality by 2050.
- Komatsu also announced in 2021 the creation of its Greenhouse Gas (GHG) alliance with customers to actively collaborate on product planning, development, testing and deployment of the next generation of zero-emission mining equipment and infrastructure. The alliance's initial target is advancing Komatsu's power-agnostic truck concept, with a goal of commercial offering in 2030.
- The collaboration with Komatsu is part of Cummins' Destination Zero strategy to reduce the greenhouse gas (GHG) and air quality impacts of its products and reach net zero emissions by 2050.
- August 2021, Komatsu announced its power agnostic truck concept for a haulage vehicle that can run on a variety of power sources, including diesel electric, trolley, battery power and hydrogen fuel cells.
- June 28 2022, MOU was announced to collaborate on the development of zero-emissions haulage equipment. Initially focused on zero emissions power technologies including hydrogen fuel cell for large mining haul truck applications.


KOMATSU

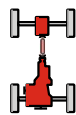

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THE CUMMINS DIFFERENCE



**One century of
powertrain innovation**



**Powertrain of
choice**



**Capabilities across
applications**



**Ability to achieve
scale**



**Security of
supply**



**Global footprint
for support**



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