

# Port Kembla Hydrogen Hub

**H2 Future  
Mobility Day**  
- 26 Nov 2020

# Mobility Matters

**Transport mobility matters.** It represents the part of the **hydrogen economy** the community can actually interact with and experience.

Riding to work, visiting family or friends on a **hydrogen powered commuter train or bus** is already happening in parts of the world.

These **experiences** provide an **opportunity to educate people** about the benefits of the hydrogen economy and help build **public awareness** and **trust**.

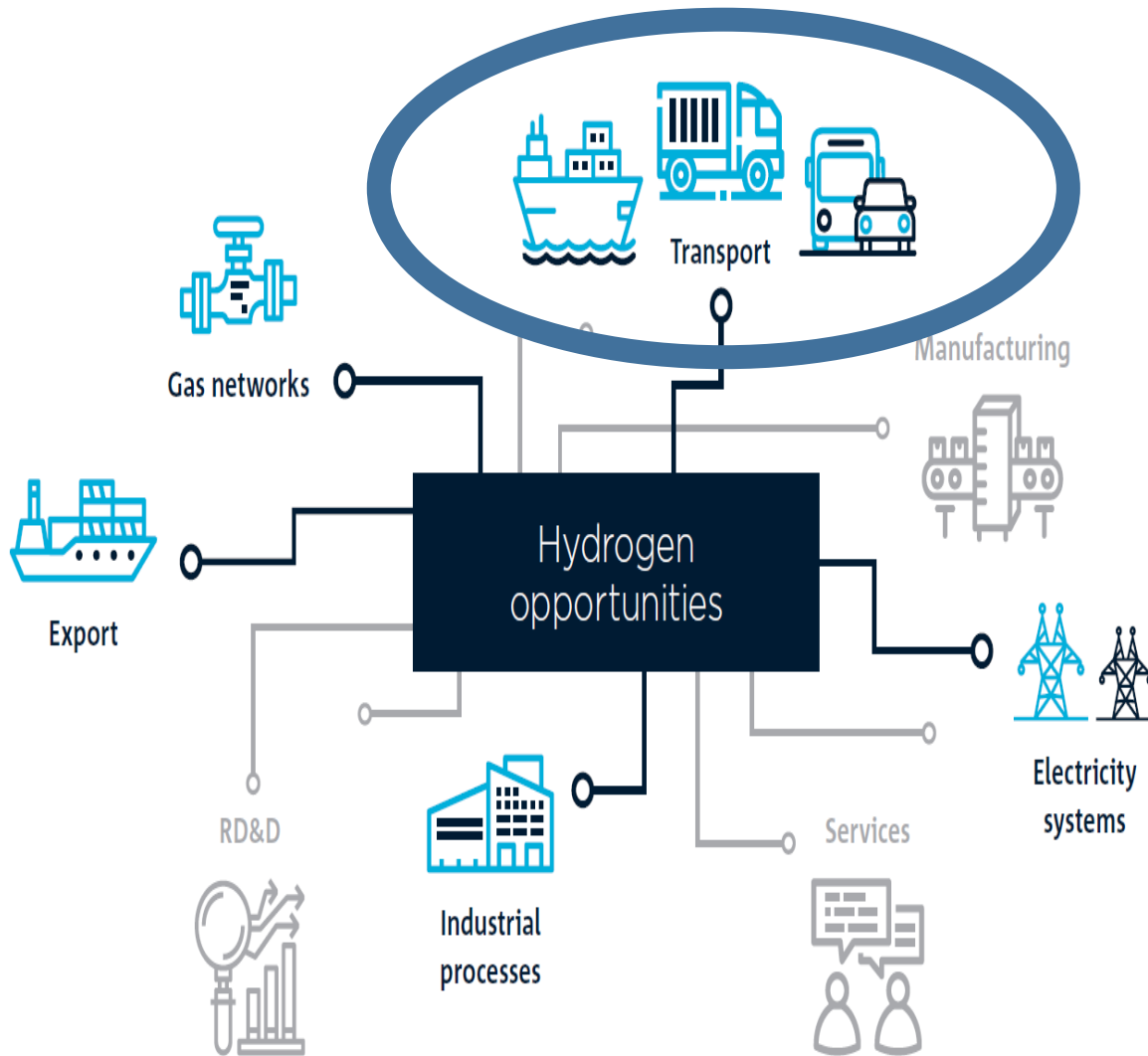


Image: Hydrogen Research, Development and Demonstration Report – CSIRO 2019

# Fuel Cell Technology

Powered by fossil fuels, the **Internal Combustion Engine (ICE)** has dominated **motive power systems** for the past century.

The transition to **electric mobility** is a **global mega trend**, driven by **decarbonisation** policies, **technology** improvements and **consumer demand**.

**Hybrid, Battery Electric Vehicles (BEV)** and **Fuel Cell Electric Vehicles (FCEV)** share similar electric drivetrain technologies.

Hydrogen **Fuel Cell Technology** has **many advantages**, especially for trains, trucks and buses.

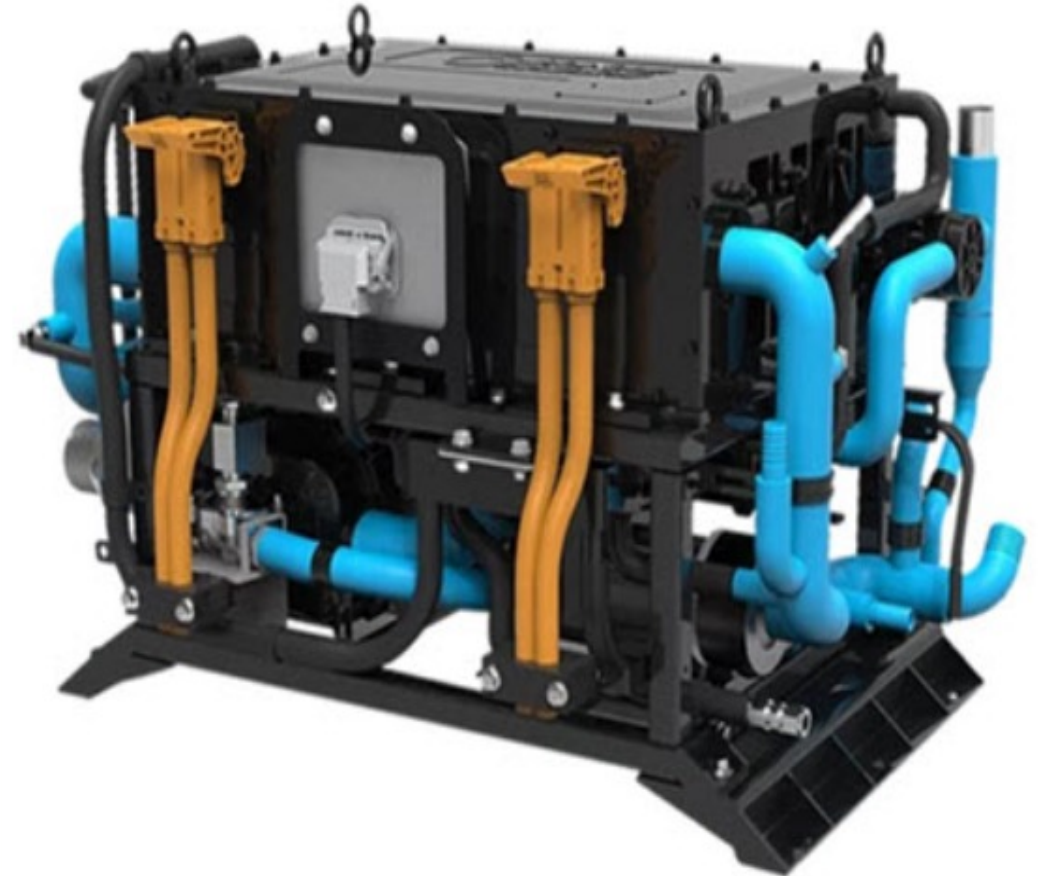


Image: Hyzon 100KW liquid cooled heavy vehicle fuel cell

# Trains

Nigel  
McKinnon  
- DRNSW



# Trucks

Wodek  
Jakubik  
- Coregas





- Industrial gas company
- Part of Wesfarmers
- Operations in Australia & NZ
- 30+ years of hydrogen experience
  
- Port Kembla plant
  - > Opened in 1989
  - > Range of gases produced at site
  - > Steam methane reformer technology
  - > 2,000kg/day hydrogen capacity
  - > Range of purities up to 99.999%
  - > Distribution by pipeline and road

# Coregas Vision

- NSW bulk distribution fleet - transition from diesel to hydrogen fuel cell electric vehicles
- 60 vehicle fleet
  - > 42 tonne prime movers
  - > 30 tonne rigid trucks
  - > Port Kembla/Sydney route
  - > Ave 400kms/day





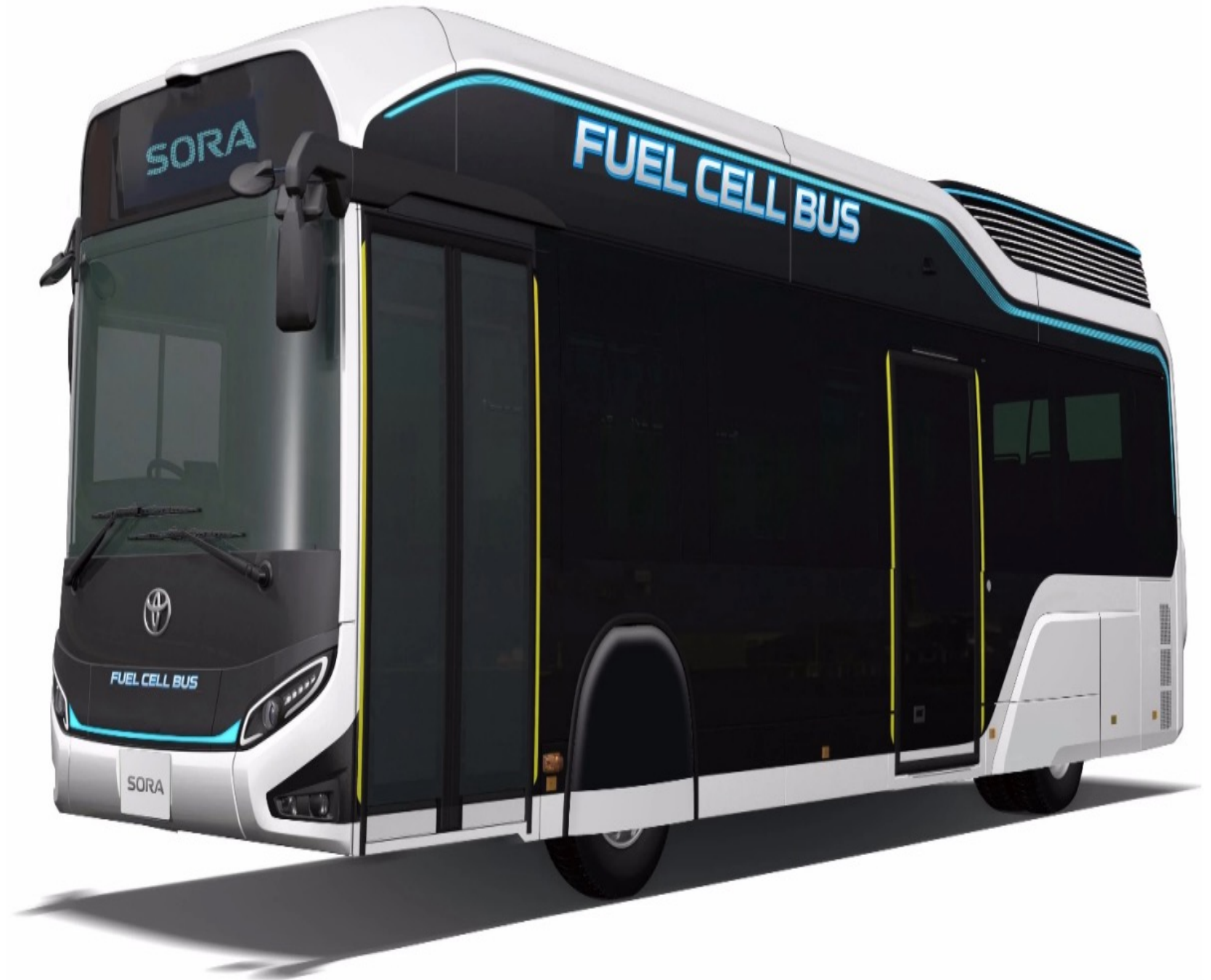
# Technology Demonstration Project

- **Heavy Road Transport Trial**
  - > First in Australia - start second half 2021
  - > Carbon emissions halved initially
  - > Key data/metrics for fleet operators
- **Port Kembla Refueller**
  - > Located beside existing plant
  - > 400kg/day capacity @ 350 bar
  - > Utilise existing hydrogen supply
- **FCEV Prime Movers**
  - > 2 X Hyzon prime movers
  - > Initial cost = 2X diesel equivalent
  - > Similar 15 minute refuelling time
  - > 450 km range
  - > Lower maintenance costs
  - > Lower hydrogen fuel costs



# Buses

Greg Able  
- Premier  
Group





# Premier Group



- Established 1929
  - > NSW and QLD operations
  - > 370 buses, 580 employees
- Unanderra Depot
  - > 189 buses, 300 employees
  - > 10 million kms/year
  - > 4 million litres diesel/year
- Electric bus trial - 2019
  - > First in NSW
  - > Slow recharging times
  - > Recharging draw @ depot
  - > Not scalable for large fleets

# Hydrogen Advantage

- High energy density
  - > proven fuel cell technology
  - > longer range
- Refuelling times
  - > comparable to diesel
  - > faster than electric
- Hydrogen refueller
  - > footprint similar to diesel
  - > scalable, run whole fleet





# Premier Vision

- Hydrogen fuel cell electric buses are the future
- Experience with electric buses from 2019 trial
- Gong Shuttle Opportunity
  - > 10 buses - scale, relevant
  - > 600,000 kms/year - data
  - > 3 million + experiences/year
  - > high profile, seen by everyone

# Future Mobility

The purpose of **Future Mobility** events is to showcase **hydrogen fuel cell technology** as a key enabler of **zero emission transport**.

**Future Mobility** events will be held regularly in **2021** as part of a **Community Education Program**.

A **Hyundai Nexo** fuel cell electric vehicle will be used to **demonstrate** the benefits of **hydrogen mobility**.

**Future Mobility** events will be held at the **Inside Industry Visitor Centre**.



Refuelling time of 3-5 minutes



World's best fuel cell efficiency, safety and driving range



Ability to power external devices



Zero CO<sub>2</sub> and noxious emissions



Filters and purifies the air as it drives



Emits nothing but water vapour



Quiet operation (no noise pollution)