

# 170 zero emission heavy duty fuel cell vehicles powered by REFIRE and Johnson Matthey technology hit China's roads

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- In the last six months, 170 new heavy duty fuel cell electric vehicles (FCEV) hit China's roads powered by REFIRE and Johnson Matthey technology
- Johnson Matthey and REFIRE's ongoing partnership will produce enough fuel cell systems to power up to 280 heavy duty FCEVs
- The rise of the delivery-based society and the supply chains that support it, highlights the case for sustainable, zero emission commercial transportation
- China leads the world in the number of commercial FCEVs on its roads

During the last 6 months, 170 zero emission heavy duty fuel cell electric vehicles (FCEV) hit China's roads, powered by Shanghai REFIRE Technology Ltd (REFIRE), a leading supplier of hydrogen fuel cell technologies, and Johnson Matthey (JM), a global leader in sustainable technologies. Building on this success, REFIRE and JM's continued collaboration will see this number increase to 280 heavy duty FCEVs over the coming months.

On November 11th, 2021, better known both as China's 'Singles Day' and 'Double 11', an event like Black Friday or Cyber Monday in Europe and North America, billions of parcels were shipped after a record-breaking US\$139 billion online shopping spree across China's major e-commerce platforms. Against the backdrop of the global climate imperatives highlighted at the COP26 summit, such retail events represent a growing conundrum: how to make this delivery-based society, and the supply chains that support it, environmentally sustainable.

Fuel cell technology, as an alternative to diesel, provides compelling benefits in many regards; fast refuelling ensures round-the-clock operability, and fuel cell powered drive trains offer all the advantages of electric vehicles such as torque, comfort, low noise, cleaner mechanics, and better maintenance management. In short, commercial FCEVs can pick up where more polluting drivetrains leave off and become the favoured solution for decarbonising supply chains.

Hydrogen fuel cells are electrochemical devices that combine hydrogen and oxygen to generate electricity on demand, with only pure water as the by-product; FCEVs emit zero CO<sub>2</sub> or other pollutants. JM provides membrane electrode assemblies (MEAs), a

performance-driving component that sits at the heart of the fuel cell, to REFIRE. In turn, REFIRE produces fuel cell systems that are integrated into commercial FCEVs.

REFIRE has already deployed systems powering over 2,700 commercial FCEVs across China during the past six years, which represents around 40% of the total market. The real-world experience gained by the deployment of vehicles from light-duty and smaller trucks up to 49 tonne heavy-duty freightliners, is proving the value of FCEVs. With Europe now poised to accelerate its own transition to hydrogen energy, attention is increasingly turning to the experience gained in China.

Commenting on the partnership with JM, REFIRE VP Marketing & International Business, Audrey Ma said: "Today, FCEVs represent an immediate and viable solution to climate disruption through the decarbonisation of logistical mobility. With the largest number of commercial vehicles in the world, China has become a leading and solid proof point for this technology."

"REFIRE's vision is to accelerate mass adoption of zero-emission fuel cell mobility and power globally by offering products and services that create sustainable value for our users, so the world can breathe easy. JM has been a long-term believer in fuel cell technology, and we're delighted to partner with them. They enabled the 2020 launch of our highly anticipated Prisma series of fuel cell systems, designed and built for the rigorous driving conditions of buses and trucks. The latest delivery to OEMs of 170 integrated fuel cell systems marks a milestone in our ongoing collaboration. The majority of these systems are powering 30- and 49-tonne heavy-duty trucks in real-world conditions, setting a new bar for the industry. With partners like JM, we are gaining confidence that we can meet local and global emissions directives by delivering zero emissions fuel cell solutions."

Jo Godden, Managing Director, Johnson Matthey, commented: "With their long range, low weight, and fast refuelling, it is becoming evident that FCEVs are ideally suited to decarbonising logistics and mass transit transportation. To deliver these applications at scale, we have focused our efforts on optimising the critical fuel cell components to improve power output and efficiency in the stack. This is where the lab meets the road. Our tight working relationship with REFIRE has enabled us to accelerate development and ensure that the scientific advances we are making translate into tested end user benefits. The recent opening of our dedicated MEA manufacturing facility in Shanghai, demonstrates our commitment to supporting local supply chains in China and for growing the market for FCEVs globally. We look forward to the continued collaboration with REFIRE and thereby delivering on our vision for a cleaner, healthier world."

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Notes to editors

Johnson Matthey is a global leader in sustainable technologies that enable a cleaner and healthier world. With over 200 years of sustained commitment to innovation and technological breakthroughs, we improve the performance, function and safety of our customers' products. Our science has a global impact in areas such as low emission transport, pharmaceuticals, chemical processing and making the most efficient use of the planet's natural resources. Today about 15,000 Johnson Matthey professionals collaborate with our network of customers and partners to make a real difference to the world around us. For more information, visit [www.matthey.com](http://www.matthey.com)

#### About REFIRE

Headquartered in Shanghai, REFIRE is the world's leading deployer of commercial hydrogen fuel cell zero-emissions technologies. The company specialises in the design, testing, prototyping, application engineering, and production of integrated fuel cell systems for buses, trucks, specialised vehicles, and marine applications.

As of November 1st 2021, REFIRE fuel cell technologies and products are powering over 2,700 fuel cell vehicles (FCVs) in daily use in 17 cities across China, as well as various projects in five other countries. Combined vehicle mileage exceeds 80 million kilometres.

#### **For further information, please contact**

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