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analyst view

Fuel Cells and China: New Energy Rises in the East

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Mercedes B-Class F-CELL driving across China (Source: eMercedesBenz)

China is the world's largest emitter of carbon dioxide, and has well-publicised problems with pollution and air quality. Negative headlines like this can be misleading though as the country's per capita emissions are significantly less than other industrialised nations and China is one of the biggest manufacturers of renewable energy in the world. It also has extensive installed capacity of renewable energy, and its research centres are heavily focused on developing domestic renewables, but where do fuel cells fit into this picture? I recently spent two weeks travelling in China, visiting research centres and fuel cell companies to gather data for a forthcoming report and I'd like to give you a taste of my findings here.

Government support, both local and national, has been key to the success of the fuel cell demonstrations to date, and these have been engineered to coincide with events of global interest, such as the 2008 Olympic Games and the 2010 World Expo. National funding is available through more than one agency, and runs in periods of five years; reviews are made during these periods to ensure projects are progressing as planned. During the past two five year plans, funding has focused heavily on automotive product development – primarily for use at the events mentioned above; however the push to produce transportation fuel cell systems may have come at a price, with development of the technology itself not advancing in line with the rest of the world.

The major Chinese automotive companies work in cooperation with foreign companies and these collaborations can be seen in local taxi fleets, with the majority of cars being the same make and model. This could work very well for fuel cell deployment when the technology reaches the market. Targeting fleet vehicles is widely recognised as one of the best opportunities for fuel cell electric vehicles (FCEV), but I doubt we will see large numbers of FCEV until much closer to 2020.

That said, the vehicles and fuelling stations seen thus far are being kept in service and moved to a district of Shanghai which already serves as an electric vehicle demonstration region. Expanding the range of vehicles to include both battery electric and fuel cells (both cars and buses) will allow the public to become more familiar with the technology and also allow the operators of the vehicles and fuelling stations to gather much needed data in advance of commercialisation.

Alongside the high profile vehicle demonstrations, other Chinese applications for fuel cells have been progressing more quietly. China has more than 1.2 million telecommunications base stations, with this number growing at a rate of 10,000-20,000 per year; traditionally backup power for these has been provided using lead-acid batteries. In the past year the country has closed more than 500 lead-acid battery manufacturing facilities for environmental reasons, leading to supply restrictions; as such alternative power sources are being sought. Fuel cells offer advantages in terms of longer runtimes and longer lifetimes than batteries, and considering the environmental benefits are becoming increasingly attractive to telecoms providers. A number of units are currently being tested and this is an application I believe has great potential in China.

Other stationary applications are also under investigation in the country; with its enormous installed capacity of renewable energy, China is increasingly encountering the difficulties associated with integrating these variable energy sources into its national grid. Many of the people I spoke to believed using this renewable energy to generate hydrogen for use as a fuel would be the best way to maximise the potential for renewable electricity, while at the same time addressing transportation emissions – something of high importance to the government.

Overall, China is well positioned for growth in fuel cell adoption in the next few years. Government funding in the current five year plan is now focusing on research and development, to advance domestic fuel cell technology. With fuel cell lifetimes and performance continuously improving, I would expect Chinese fuel cell companies to increasingly compete on the world stage over the coming decade.

The full report covering developments in China will be available on the website soon, so please check for updates regularly and download it once it goes live. We will be notifying our subscribers by e-mail, so please register if you would like to receive these notifications.

Dan Carter Manager
dancarter@fuelcelltoday.com
www.fuelcelltoday.com