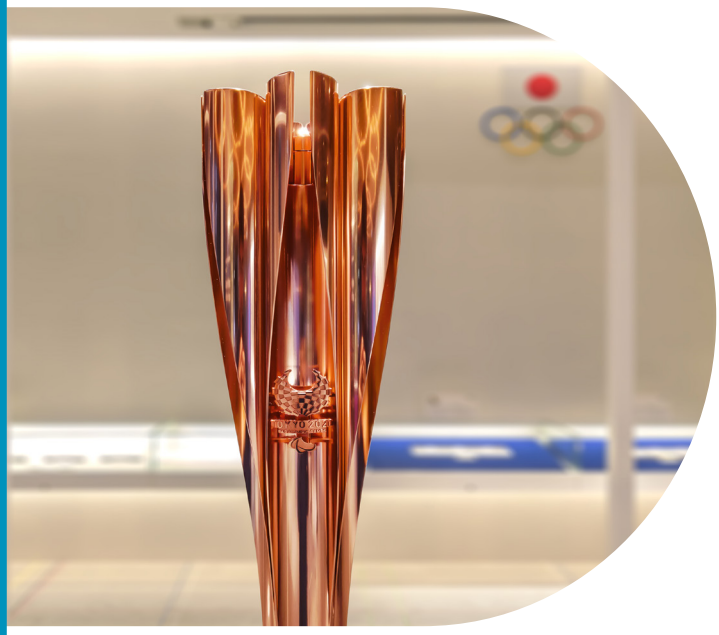

OLYMPIC PLATINUM

Platinum-based hydrogen technologies showcased at Tokyo 2020 underline Japan's commitment to the sector

Japan is committed to achieving net zero by 2050, with a recently-announced ¥2 trillion (US$18.2 billion) government spending package created to back green innovation projects, including ¥370bn (US$3.4bn) to support hydrogen technology development over the next ten years.

The country is already at the forefront of hydrogen technological development and it has taken the opportunity to showcase its expertise at Tokyo 2020, in line with its vision of 'staging the most innovative Games in history and bringing positive legacy to future generations'.

For the first time, the Olympic flame is fuelled by emissions-free green hydrogen rather than propane, while the Olympic village has been equipped with a hydrogen refuelling station and a hydrogen pipeline to serve the platinum-based fuel cell electric vehicle (FCEV) buses and cars that are being deployed to transport the athletes

Had spectators been allowed to attend the Games, a fleet of FCEV buses was also intended to transport them around Tokyo, however this is no longer necessary due to the pandemic.

Toyota is supporting Tokyo 2020 with a large number of zero-emission FCEVs, including the Mirai, for official use. Picture credit: Toyota Motor Corporation (copyright IOC/Philippe Woods)

Global leader

Beyond the Olympics, Japan's Toyota Motor Corporation, a global leader in fuel cell technology, believes that hydrogen is positioned to be one of the most viable clean energy sources of the future. It currently has two projects underway exploring the utilisation and application of hydrogen energy. At its prototype city of the future located at the base of Mount Fuji in Shizuoka Prefecture, Woven City, Toyota is working with Eneos, a leading operator of hydrogen refuelling stations, to create an integrated hydrogen society.

Described as a 'living laboratory' the 175-acre Woven City site will serve as a home to full-time residents and researchers who will be able to test and develop technologies such as autonomy, robotics, personal mobility, smart homes and artificial intelligence in a real-world environment. It will be populated by 2,000 Toyota Motor Corporation employees and their families, retired couples, retailers, visiting scientists, and industry partners. Plans include the promotion of hydrogen-powered FCEVs and the construction of green hydrogen refuelling facilities.

Toyota is also building another hydrogen-powered city of the future, set to be located in Fukushima Prefecture. The intention is to create an implementation model for hydrogen-based deliveries at supermarkets and convenience stores, which, in Japan, play a role both as essential urban infrastructure and as evacuation areas in times of disaster.

The implementation model will make use of hydrogen produced at multiple sites in the prefecture, including green hydrogen from Fukushima Hydrogen Energy Research Field (FH2R), introduce several fuel cell trucks for deliveries, optimise operational management and hydrogen refilling schedules through the use of connected technologies, and carry out energy management that caters to the prevailing local conditions.

Meanwhile, in the maritime sector Kawasaki Heavy Industries, Yanmar Power Technology and Japan Engine Corporation have formed a consortium of Japanese engine manufacturers to pursue the joint development of hydrogen-fuelled marine engines for ocean-going and coastal vessels with a view to establishing a world-leading position in hydrogen engine technologies.

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