



Innovative nickel-rich battery material technology eLNO[®] to debut at COP26 in the world's first two-seater electric race car

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- Johnson Matthey's family of nickel rich battery cathode material eLNO[®] enable batteries to exhibit 20 percent higher energy density compared to today's materials, delivering greater EV range.
- Cells with eLNO cathodes have been installed in the world's first electric two-seater race car.
- Race car developed with Envision Virgin Racing will debut at COP26 in Glasgow, Scotland on 31 October.
- eLNO technology is on-track to help power the upcoming generation of premium EVs.

London, 18th October 2021 – The first full size lithium-ion battery cells featuring Johnson Matthey's advanced eLNO cathode technology are being installed in a unique high performance race car.

eLNO is a family of nickel-rich cathode materials that safely enables batteries to perform better and charge more quickly while retaining exceptional battery lifetime. The global leader in sustainable technologies partnered with the Envision Virgin Racing team to develop the race car. It will demonstrate the performance capabilities of eLNO-equipped battery cells. Believed to be the world's first two-seater electric racer, the car will be revealed at the COP26 climate change conference in Glasgow, Scotland on 31 October.

eLNO

A customisable family of nickel-rich cathode materials, eLNO will meet specific battery performance requirements for individual electric vehicle platforms. eLNO enables batteries around 20 percent greater energy density compared to today's typical NMC cathode material technology. It is ideal for use in cells powering a range of electric vehicles, particularly those with fast charging, high performance and long range requirements, such as larger premium passenger cars and premium SUVs.

Johnson Matthey scientists have enhanced the chemistry of the cathode material using a proprietary stabiliser package and surface modification, engineering the cathode material down to the atomic level. This enables the use of high nickel contents for increased driving range, as well as a reduction in the level of cobalt present, to sustain cycle life and stability.

Already in pilot production and being trialled by customers, eLNO will be supplied to customers in Europe from two new production facilities. The first facility in Poland is under construction and will be completed in 2022, for commercial production in 2024. A second eLNO plant is also planned in Finland. These facilities will operate sustainably as part of Johnson Matthey's commitment to overcoming climate change, circular manufacturing, and the responsible sourcing of materials.

The battery cells were developed and produced by EAS Batteries. The German specialist battery manufacturer is the first in Europe to produce large battery cells for an automotive application that feature nickel-rich eLNO cathode chemistry. The cylindrical 602030-format cells were manufactured using an almost dry coating process – which has a far lower carbon footprint than typical wet coating – with a non-toxic solvent, and less solvent waste than typical cell production processes.

The car

The race car will showcase production-representative eLNO technology in a challenging application, proving that Johnson Matthey's advanced cathode material technology is ready to be integrated into batteries powering the forthcoming generation of EVs. The race car was designed and engineered in partnership with the Envision Virgin Racing team and is being produced and assembled by Delta Cosworth.

The race car will make its full debut at COP26, the 2021 United Nations Climate Change Conference, which takes place in Glasgow, Scotland from 31 October – 12 November.

"Our eLNO technology will provide a step-change in battery energy density for electric vehicles going on sale in just a few years' time. It therefore supports the industry's commitment to fighting climate change," said Christian Günther, Battery Materials Sector Chief Executive, Johnson Matthey. "We are proud to have worked with Envision Virgin Racing to present eLNO in the exciting race car at the world's biggest climate change event. It represents an important step towards high volume production of the technology in Europe within the next few years."

ENDS

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

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