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GEIC partner NERD boosted by Arup and Black Swan deals on Concretene

The [Graphene Engineering Innovation Centre](#)'s growing commercial ecosystem around advanced materials has been strengthened by equity deals between GEIC Tier 1 partner Nationwide Engineering Research & Development (NERD), global engineering consultancy [Arup](#) and international graphene supplier - and fellow GEIC partner - [Black Swan Graphene](#).

NERD's key technological advance is Concretene - a graphene-enhanced admixture for concrete that has demonstrated the ability to [reduce CO2 emissions](#) by around 30%. The product has been developed in partnership with The University of Manchester.

Arup provides design, engineering, architecture, planning and advisory services across all aspects of the built environment. Its extensive global portfolio of engineering achievements includes Paris's Pompidou Centre, London's Shard and New York's Second Avenue Subway. The deal with Arup provides 4.2% equity in NERD in exchange for collaboration and expertise towards global roll-out of the technology.

Black Swan Graphene is a producer of low-cost and high-performance graphene powders, derived from graphite, ideally suited for the concrete industry. Black Swan's graphene

technology was originally developed by [Thomas Swan & Co. Ltd](#) and advanced internally until the launch of Black Swan in 2021.

Black Swan, a Tier 2 partner of the GEIC, intends to increase its graphene production significantly within the graphite production facility of [Nouveau Monde Graphite Inc.](#), currently in operation in Quebec, Canada, thereby creating an integrated facility from graphite ore in the ground to finished graphene products.

At the core of the partnership between Black Swan and NERD is the completion of an equity swap where each company will own approximately 5% of the outstanding shares of the other (the “Equity Swap”), and the execution of a supply agreement between the two companies (the “Supply Agreement”) under which NERD will be sourcing its graphene requirements from Black Swan.

Rob Hibberd, CEO of Nationwide Engineering Research & Development, commented: *“We are delighted to formalise these partnerships with Black Swan and Arup as part of NERD and we look forward to combining our skillsets to deliver Concretene to the construction industry in our drive to reduce global CO2 emissions.*

“This is further enhanced by our unique, long-term research collaboration with The University of Manchester to further understand the complex world of nanomaterial technology. We see Concretene as the first product of many that this partnership will develop, with progress in paints, polymers and asphalt already in advanced stages as well.”

James Baker, CEO of Graphene@Manchester said: *“Concretene is a great example of what Graphene@Manchester is seeking to achieve: using our expertise in the GEIC and broader UoM capabilities to develop innovative ideas around graphene and 2D materials with industrial partners, attracting investment - such as these deals with Arup and Black Swan - and ultimately accelerating the bringing of products and applications to market.*

“Graphene-enhanced concrete is a potential game-changer for sustainability in the construction sector.”

Matt Lovell, Director at Arup, said: *“Continued innovation in the production of concrete can drive the construction industry’s journey towards net zero carbon emissions. Supporting that transformative change with our NERD partnership furthers Arup’s goal of shaping a better, more sustainable world.*

“We look forward to using our commercial know-how and deep expertise in the built environment to help NERD’s innovators realise the full potential of Concretene.”

Simon Marcotte, President and CEO of Black Swan, commented: *“The partnerships announced today are poised to have far-reaching implications for the global concrete industry. By leveraging the exceptional performance of the NERD process and Arup's expertise, reach and*

leadership, this integrated supply chain can provide a turnkey solution and revolutionize the concrete industry on a global scale.

“Considering that concrete is the second-most-utilized material on Earth, surpassed only by water, it is difficult to imagine a more exciting opportunity. I am very optimistic about the impact of this collaboration and its potential to catalyse sustainable and innovative practices in the industry.”

In late December 2022, NERD announced an £8 million raise of funding from [LocalGlobe](#), EMEA’s most successful investor in unicorns at SEED stage. The company has since confirmed [Tier 1 membership of the GEIC](#) – a three-year deal to collaborate on R&D projects – and made a multi-million-pound commitment to sponsoring a new senior leadership role at The University of Manchester.

The new Chair of Construction Materials will specialise in research into cementitious materials and the potential for advanced materials such as graphene to make a game-changing difference to the sustainability of our built environment.

NERD envisages a three-year journey to full commercial roll-out of Concretene to the wider construction industry, alongside project partners including Heathrow and Manchester Airports, Network Rail, National Highways and the Nuclear Decommissioning Authority.

These early adopters will see immediate benefits through reductions in embodied carbon, while assisting in the programme of laboratory work and large-scale field trials that will ultimately prove the reliability, reproducibility and cost profile needed for successful commercial deployment of the technology.

(l-r) Matt Lovell, Director at Arup; Dr Craig Dawson, Chief Scientific Officer, NERD; Alex McDermott, Co-founder, NERD; Rob Hibberd, Co-founder, NERD; Michael Edwards, Chief Operating Officer, Black Swan Graphene