LCR INNOVATIONS

# Case Study
## Quantum Science

Delivery Partner

VEC

### Background

Based in Sci-Tech Daresbury, Quantum Science Ltd develop infrared colloidal quantum dot materials and inks for advanced imaging and sensing, whilst their high-performance technology is due to considerable research.

Its proprietary INFIQ® platform combines infrared quantum dots, ink formulation and device integration expertise to help customers develop next generation infrared sensing products.

### Challenge

Infrared quantum dots are very sensitive to oxygen, moisture and contaminants, all of which can impact performance, ink stability and batch consistency.

Quantum Science has recognised that controlled-atmosphere facilities have become a bottleneck from the simultaneous use of the same equipment for scale-up processes, formulation, and quality testing.

One potential solution is to outsource this process; however, this raises concerns about core process knowledge and intellectual property being located outside the company, particularly in such a competitive and highly regulated industry.

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LIVERPOOL CITY REGION COMBINED AUTHORITY

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### Solution

The VEC collaborated closely with Quantum Science to investigate the potential for creating dedicated work zones and better controlled scheduling to facilitate the sharing of specialised systems.

Additionally, the VEC played a key role in the research, installation, and commissioning of a larger inert-atmosphere production glove box. This serves as a sealed chamber, allowing technicians and engineers to safely handle materials.

The investment supports an additional inert-atmosphere glovebox system for quantum dot scale-up, ink formulation and quality control. This enables closely linked activities to remain in-house, protecting proprietary know-how and supporting repeatable manufacturing processes.

As a result, Quantum Science can enhance its capacity while ensuring that its proprietary technology remains in-house.

### Impact

The investment in the production glove box will enable Quantum Science to facilitate larger, more frequent production batches and shorten testing cycles whilst reducing their in-house waste and material usage for greater sustainability

This improved supply could significantly aid existing and potentially new customers in sectors like defence, improving the UK's advanced infrared materials capabilities.

More consistent and responsive material supply is expected to help customers progress from evaluation towards product integration, supporting applications in industrial inspection, mobility, security, and scientific imaging.

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