

## **londrive Signs its Second Agreement in the EU**

### **Highlights**

- **londrive has signed a non-binding Memorandum of Understanding (MOU) with TNO to accelerate commercialisation of its sustainable battery recycling technology.**
- **TNO is, as a large Research & Technology Organisation located in the Netherlands, renowned for its expertise and research in sustainable technologies, playing a crucial role in advancing the energy transition and battery ecosystem in the Netherlands<sup>1</sup>**
- **The collaboration aims to contribute to a robust supply chain for battery materials and enhance production capabilities in the Netherlands and the EU.**
- **Joint efforts will focus on validating londrive's technology, a vital step towards large-scale commercial deployment.**
- **A key objective of the MoU is to establish industry partnerships and commercialisation opportunities.**
- **This MoU with TNO, follows on from the recently announced Collaboration Agreement with Production Engineering of E-Mobility Components at RWTH Aachen University and PEM Motion GmbH, based in Germany (12 August 2024).**
- **londrive's Pre-Feasibility Study is on track for completion in October 2024.**

**londrive Limited (ASX: ION) ("londrive" or the "Company")** is pleased to announce the signing of a MOU with TNO (Netherlands Organisation for Applied Scientific Research) to collaborate on the development and commercialisation of its sustainable battery recycling technology. This partnership aims to leverage TNO's expertise and global network to accelerate the validation and deployment of londrive's proprietary process, positioning the Company as a leader in the global battery recycling market. The collaboration aims to establish a scalable supply chain for critical battery materials and enhance the capacity to meet growing industry demand for sustainable solutions in the Netherlands and Northwestern Europe.

### **londrive Limited Dr CEO Ebbe Dommissé commented:**

*This partnership with TNO marks a pivotal moment for londrive as we collaborate to accelerate the commercialisation of our battery recycling technology in Europe. The timing is ideal, with Europe advancing its sustainable battery initiatives under the European Green Deal and new Batteries Regulation, which mandates high recovery levels for critical materials like cobalt, lithium, and nickel starting from 2025.*

*TNO's deep expertise in sustainable innovation and its strategic position, for instance within the Battery Competence Cluster NL, will bolster our efforts to establish a robust supply chain for recycled battery materials. This partnership in the Netherlands not only enhances our*

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<sup>1</sup> <https://www.tno.nl/en/>

*technological capabilities but also strengthens our foothold in the European market, complementing our partnership with PEM in Germany as a pan-European drive where regionalising battery recycling is crucial for maximising both environmental and economic benefits.*

**TNO commented:**

*The signing of a Memorandum of Understanding (MoU) between TNO and Iondrive is an illustration of the desired impact of our work. TNO aims to shorten time-to-market of technology by harnessing its technology position, understanding of policy making and business acumen. We look forward to this MoU leading to concrete initiatives and impactful developments in battery recycling across Northwestern Europe. For instance, by validating technologies ourselves, or by undertaking joint projects with other leading European players in battery technology.*

*There is a clear economic and societal need for the Netherlands and neighboring countries to get its battery supply-chain organised, linking all lifecycle stages of the battery. This is exemplified by the network of the Battery Competence Cluster NL. A policy driver like the requirement of the battery passport after 2027 signifies a development that offers new prospects to battery recycling. Offering an opportunity to Iondrive to deploy novel material technologies therefore makes much sense, as we have no time to lose. We can't just wait for the future.*

**About TNO<sup>1</sup>**

TNO is an independent research organisation, located in various locations in the Netherlands, with over 3,000 employees, focussing on applying scientific knowledge to enhance societal well-being and sustainability. They work on diverse areas including sustainable energy, health, digital innovations, and national security. TNO collaborates with businesses, government bodies, and other organisations to create practical solutions for complex challenges. Their mission is to drive innovations that contribute to the sustainable welfare and prosperity of society.

TNO is actively engaged in advancing battery recycling technologies to support the energy transition and sustainability goals. TNO's efforts include developing innovative recycling processes to recover critical materials from used batteries, which are essential for manufacturing new batteries. This approach helps reduce dependence on raw materials and supports the creation of a circular economy.

One example of a recent significant TNO initiative is the Battery Competence Cluster – NL, which aims to position the Netherlands as a leader in the global battery market (<https://www.raivereniging.nl/en/sections/rai-automotive-industry-nl/projects/battery-competence-cluster-nl/>). This program, comprising business, research and public agencies with legal mandates, focuses on the development of cutting-edge battery technologies and recycling methods to ensure a stable supply of critical materials and create a robust battery ecosystem.

### Iondrive's DES Battery Recycling

Iondrive utilises Deep Eutectic Solvents and benign, biodegradable organic solvents in a nontoxic, closed-loop process. This eco-friendly method avoids toxic mineral acid leaching, ensuring a minimal environmental footprint. Currently, most battery recycling processes involve pre-treating and shredding waste batteries to create a substance known as black mass. Black mass is a powdered mixture of the shredded anodes and cathodes containing various critical minerals, including lithium, cobalt, nickel, and manganese. This material is then typically exported to Asia for further processing to extract these critical minerals and then refining to battery-grade materials for reuse. The prevailing methods for processing black mass are energy-intensive pyrometallurgical processes, which involve high-temperature smelting, and hydrometallurgical processes, which use acid leaching. These methods are predominantly used in Asia, where most of the world's battery recycling capacity is currently located.

Scale-up testing has shown that Iondrive's DES Battery Recycling Technology can efficiently process larger volumes of black mass, achieving high recovery rates for critical minerals such as nickel, cobalt, and manganese. The successful large-scale trials, conducted at 1,000 times the initial small-scale volume, demonstrated the process's scalability and economic viability with minimal solvent losses. Independent verification by IMO further confirmed these results, providing a solid foundation for the next stage of development.

Iondrive is now focused on completing the Pre-Feasibility Study (PFS), scheduled for release in October, which will detail the design, cost estimates, and operational plan for a commercial-scale plant. Following the PFS, Iondrive plans to commence construction of a pilot plant in 2025 to further validate the technology at scale and prepare for commercial deployment. This will position the Company to meet the growing demand for sustainable battery recycling solutions in the target markets of the EU, US, and Australia.

*Authorised for release by the Board of Iondrive Limited.*

### Further Information

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