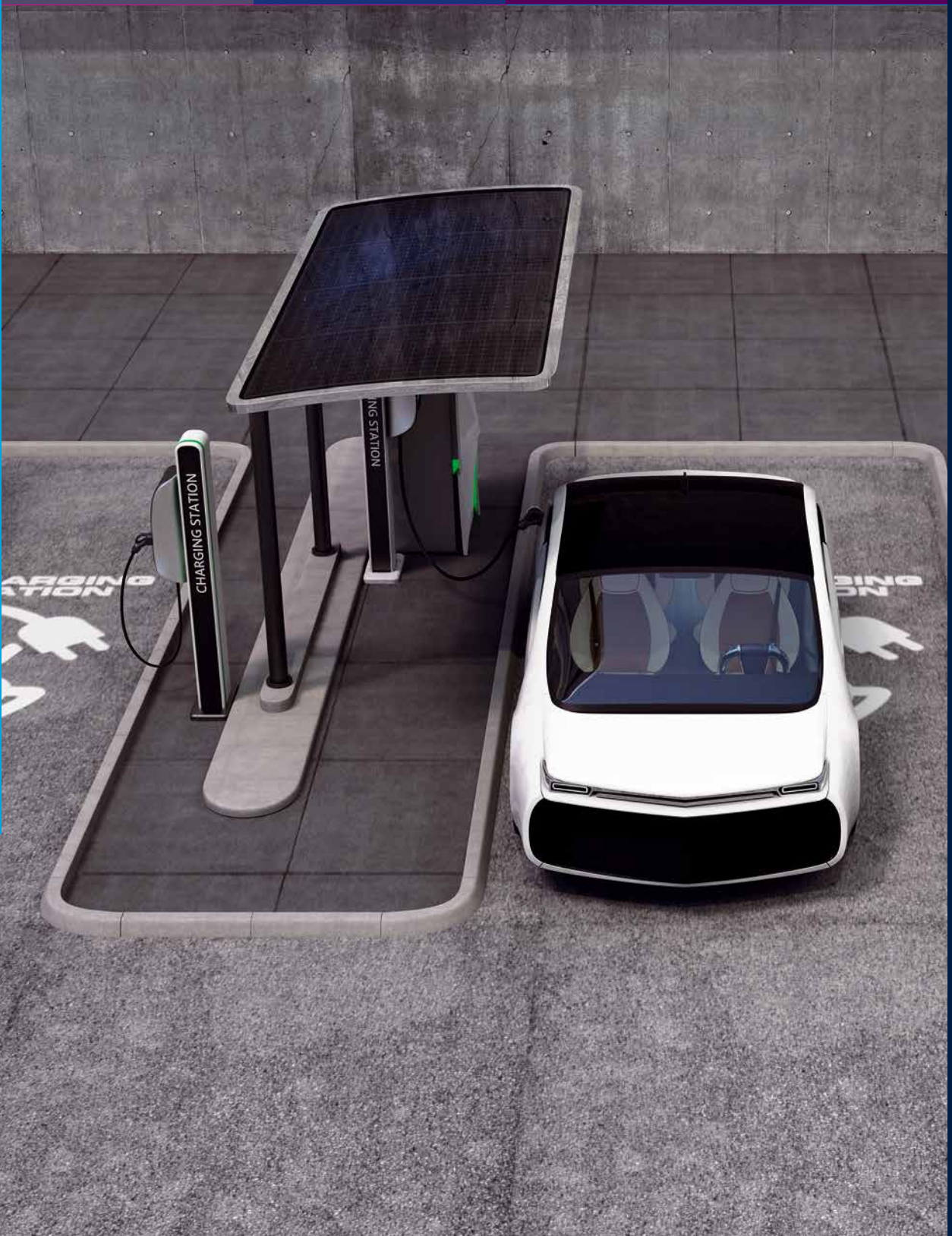
ENERGY RESEARCH ACCELERATOR

# BATTERY INNOVATION

## THE ENERGY INNOVATION CENTRE



# BATTERY INNOVATION

**£20m of funding**
from the Energy Research Accelerator (ERA)

The Energy Innovation Centre was set up almost a decade ago at Warwick Manufacturing Group at the University of Warwick to focus on battery manufacturing and material development from the production of cells through to testing drive trains.

**The Energy Innovation Centre is a world-class facility for battery research across the R&D process from materials and electrochemistry through to application integration and recycling / re-use. The facilities support test, development and scale up of new battery chemistries from concept through to full proven traction batteries, produced in sufficient quantities for detailed industrial evaluation in target applications.**

## WHAT ERA IS DOING

ERA is investing in new equipment and facilities at the Energy Innovation Centre in order to drive the development, integration and adoption of new, innovative battery technologies.

ERA's investment supports the following:

- **Cell materials and characterisation:** A programme of tests takes place on commercially available battery technologies from cell to pack level, from ageing tests to thermal testing, abuse and vibration testing. The team regularly tear down commercial battery packs to identify failure mechanisms which need to be addressed in next generation battery pack designs.
- **Modelling and simulation:** The Energy Innovation Centre allows prediction of battery performance across a wide range of conditions and applications. They are intended for use at vehicle level through to component level to gain an understanding of basic electrochemical phenomena affecting ageing.
- **Second life battery use:** Even when a battery has deteriorated to a point where it is no longer useful in a vehicle, it can still be adapted for many other purposes including in houses and for other domestic uses. The Energy Innovation Centre is investigating the potential for the re-use of vehicle batteries.
- **Electro-mechanical testing:** As batteries become more of a structural feature in vehicles, it is vitally important to understand how they behave when they are damaged in accidents. The Energy Innovation Centre is able to test batteries to destruction in order to simulate the effects of stress and damage on them.
- **Inductive charging:** Inductive (or wireless) charging is a rapidly growing technology area. The Energy Innovation Centre is looking at ways in which the process can be made more efficient and cost-effective and applied to a variety of uses.
- **Hardware in the loop laboratory:** This involves a series of computers simulating and modelling scenarios such as connecting vehicles to the grid to store and supply electricity and the impact that may have on battery life.
- **Facility upgrades:** ERA is investing in improvements to facilities and is also enabling new facilities to be built at the Energy Innovation Centre. These include laboratories and a dry room for cell assembly lines.
- **Ionic liquids for electroplating of materials:** This is an ERA investment based at the University of Leicester, which is examining the potential use of ionic liquids in battery production to improve energy efficiency and reduce chemical emissions. The work links in with the research being conducted at the Energy Innovation Centre.

## THE IMPACT

ERA's investment in the centre means that businesses in the midlands have the potential to access leading edge battery research technology under one roof. Over 20 companies work with the Energy Innovation Centre at any time, including most of the battery manufacturers in the UK. This is helping to keep British companies at the heart of battery technology development.

The Energy Innovation Centre provides policy advice to the UK government and research organisations and to many overseas governments. It also works closely with the Health and Safety Executive to establish safety standards for batteries.

The Centre is an exemplar of how universities work with businesses, and as such hosts many high profile, national and international, visits to show the impact that can be created. ERA's investment in facilities also assisted the centre in its successful bid to play a significant role in a new national battery research initiative – the Faraday Battery Institute, which will accelerate fundamental research in developing battery technologies.

ERA's investment played a significant role in the University of Warwick becoming part of the national Faraday Battery Institute.

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# ERA
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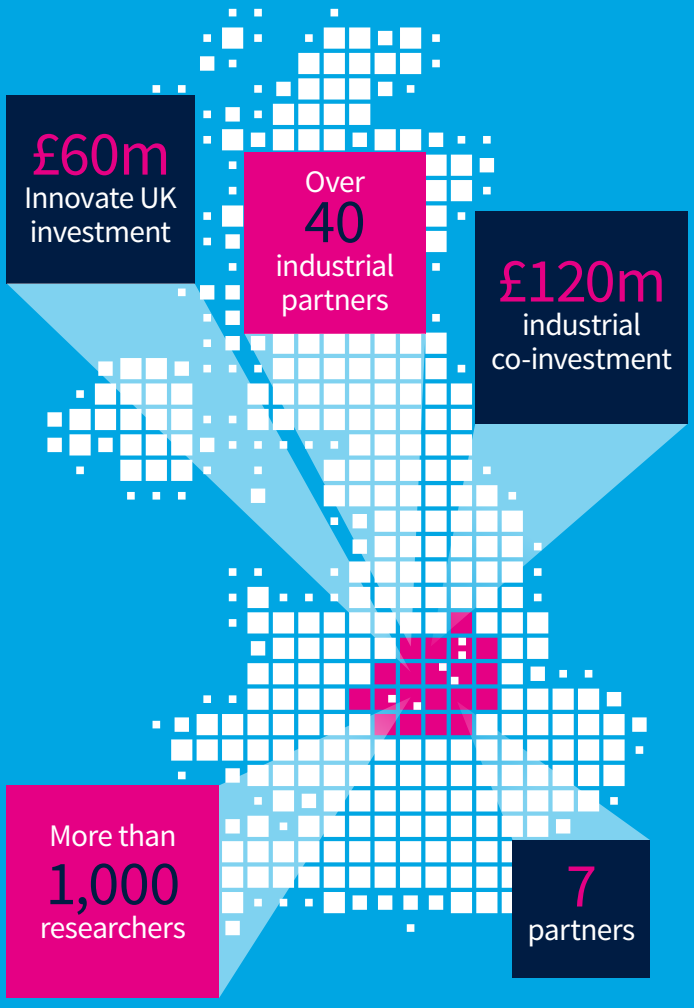
## ABOUT US

ERA is an Innovate UK funded programme within Midlands Innovation. ERA involves a consortium of six midlands based research intensive universities, together with the British Geological Survey, who are harnessing the Midlands' combined research excellence and industry expertise to play a critical role in tackling some of the biggest energy challenges facing the UK.




Find out more at **era.ac.uk**

## CONTACT US

ERA welcomes engagement with research, industry and policy-makers across the energy sector.

For more information visit:

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