



By appointment  
to HM The Queen  
motor car manufacturers  
Bentley Motors Limited  
Crewe Cheshire



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## Press Information

### **BENTLEY SETS OUT PATH TO SUSTAINABLE, RECYCLABLE ELECTRIC MOTORS**

- **Three-year research project aims to deliver breakthrough in rare earth magnet recycling**
- **New recycling process will provide a sustainable source of rare earth magnets for non-traction motor applications**
- **Funded by Office for Zero Emission Vehicles (OZEV) and delivered in partnership with Innovate UK**
- **The six-partner, UK based, collaborative R&D consortium is aiming for first application by 2026**
- **Supports Bentley's desire to lead sustainable luxury mobility**

**(Crewe, 18 February, 2021)** Bentley Motors today announces a three-year research study that aims to revolutionise the sustainability of electric motors. Supporting Bentley's commitment to offer only hybrid or electric vehicles by 2026, the result could see recycled rare-earth magnets used in selected ancillary motors for the very first time.

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The study, titled RaRE (Rare-earth Recycling for E-machines), intends to build on work completed at the University of Birmingham in devising a method of extracting magnets from waste electronics. Furthermore, the project will scale up this process and repurpose the extracted magnetic material into new recyclable magnets for use within bespoke ancillary motors.

Adding to the sustainability benefits that RaRE will provide, the bespoke motors created through this method promise to minimise complexity through manufacture while supporting the development of the UK supply chain for



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both mass production and low volume components.

Commenting on Bentley's research ambitions, Dr. Matthias Rabe, Member of the Board for Engineering, Bentley Motors, said:

"As we accelerate our journey to electrification, offering only hybrid or electric vehicles by 2026, and full electric by 2030, it is important that we focus on every aspect of vehicle sustainability, including sustainable methods of sourcing materials and components.

"RaRE promises a step-change in electrical recyclability, providing a source of truly bespoke, low voltage motors for a number of different applications and we are confident the results will provide a basis for fully sustainable electric drives."

This study will run in parallel to Bentley's OCTOPUS research programme which aims to deliver a breakthrough in e-axle electric powertrains, utilising a fully integrated, free from rare-earth magnet e-axle that supports electric vehicle architectures.

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As with OCTOPUS, RaRE is an OZEV funded project delivered in partnership with Innovate UK, which brings together the following partners with distinct roles and responsibilities:

**Bentley Motors** – will lead specification setting and test protocol development and support the design and manufacturing activities.



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**Hypromag** – will scale up the recycling processes developed at the University of Birmingham and convert the extracted powders to sintered magnets with properties designed around those required for the auxiliary motors.

**Unipart Powertrain Applications Ltd** – will lead the development of manufacturing scale up routes to ensure facilities and processes defined are suitable for volume automotive manufacture.

**Advanced Electric Machines Research Ltd** – will lead the design and development of the motors.

**Intelligent Lifecycle Solutions Ltd** – will pre-process computer hard disk drives to remove the rare earth magnet containing components from the waste which will be shipped to Hypromag for removal of the rare earth magnets.

**University of Birmingham** – UoB will provide cast alloys, which will be fed into Hypromag to blend with secondary materials in order to produce sintered magnets.

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Nick Mann, Operations General Manager at Hypromag, added: "RaRE is an exciting project and a fantastic opportunity to prove the importance and potential of short loop recycled magnetic material. HyProMag's recycling technologies allow us to produce NdFeB magnets with a much lower embedded carbon cost than using virgin supply and with independence from Chinese supply and we are working closely with our major shareholder Mkango Resources to further grow the business. We are proud to be working with established, innovative and renowned companies in the RaRE project with



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whom we can showcase the technologies of the RaRE project as a whole – recycled magnets being used for cutting edge products in a prestige application.”

Jon Bray, R&D Manager, OZEV: “We are excited to be supporting this innovative project as part of our ambition to put the UK at the forefront of the design, manufacture and use of zero emission vehicles.”

- ENDS -

### Notes to editors

Bentley Motors is the most sought-after luxury car brand in the world. The company's headquarters in Crewe is home to all of its operations including design, R&D, engineering and production of the company's three model lines, Bentayga, Continental and Flying Spur. The combination of fine craftsmanship, using skills that have been handed down through generations, alongside engineering expertise and cutting-edge technology is unique to UK luxury car brands such as Bentley. It is also an example of high-value British manufacturing at its best. Bentley employs around 4,000 people at Crewe.

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