

eRCVII

Diesel to Electric refuse collection vehicles



Alastair Black
Sheffield City Council

Sheffield City Council

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Background

The eRCVII is a £2.6m Innovate-UK funded project to demonstrate :-

- i) that the repowering of an RCV is commercially viable and scalable
- ii) the advantages of the technology are widespread, providing positive environmental and economic benefits
- iii) the social impacts including a reduction in noise and air pollution

Innovate UK

- Innovate UK describe themselves as UK's innovation agency and are part of the UK Research and Innovation (UKRI)
- The UKRI is the national funding agency investing in science and research across the whole of the UK with a combined budget of more than £6 billion
- Supported the project with £1.5m funding

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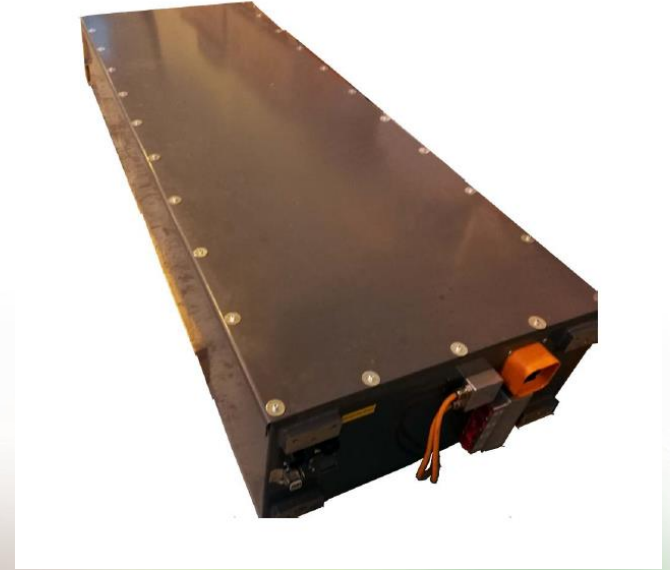
Innovate Partners

- Magtec (project lead)
- Sheffield City Council (2 vehicles)
- Westminster Council (2 vehicles)
- Veolia
- DG Cities
- Microlise



Magtec

Magtec were founded in 1992 and have 80+ employees in Engineering and Manufacturing. All work takes place at their facilities in Sheffield and Rotherham.



Magtec continued

Magtec EV and Hybrid Drive Systems(OEM)-In Service



150 CNG hybrid drive systems in buses in the US



350 EV trucks in the US



120 EV single deck buses in the UK



60 EV trucks/vans in Europe



11 EV trucks in the UK



2 Hybrid buses in India, 2 fully electric systems on test in the Himalayas

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- Located on 7 hills
- Home to Code De Jenkin Road hill climb
- Blake Street with a 16.6% incline
- Inner City and rural environments
- Energy Recovery Facility



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Veolia

- A leader in environmental solutions, Veolia provides a comprehensive range of waste, water and energy management services designed to build the circular economy and preserve scarce raw materials.
- Contracts with both Sheffield and Westminster
- Lead by national fleet team

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Westminster

- Westminster; part of one of the biggest cities in the world
- Bulk bins and sack collection
- Ultra urban 24 hour City
- ULEZ – Ultra Low Emission Zone



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DG Cities

- Urban innovation company specialising in the integration of 'smart city' technologies and approaches to maximise their benefits for cities and optimise the use of resources, infrastructure and services.
- Part of the eRCV1 Innovate funded project
- Focusing on dissemination of the project



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Microlise

- Specialise in telematics and technology solutions for fleet operators based in Eastwood Nottingham.
- Fitted telematics to existing diesel as a comparator
- Telematics fitted to all repowered vehicles to understand their performance



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Other Partners (unfunded)

- Dennis Eagle
- Sheffield University



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Donor Vehicle sourced by Veolia (2012- 26-tonne Dennis Elite 6X2 rear steer)



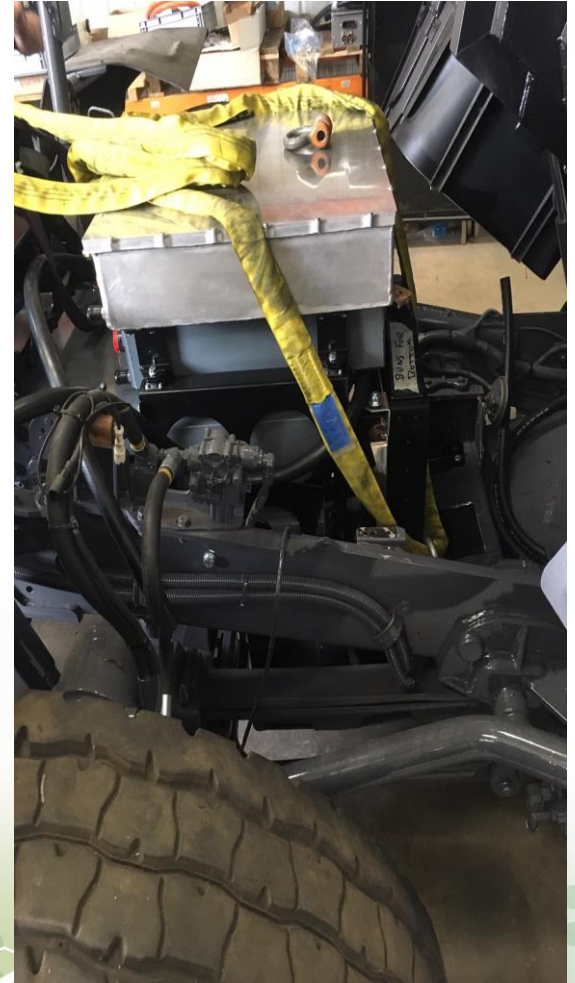
Chassis and cab work by Dennis Eagle



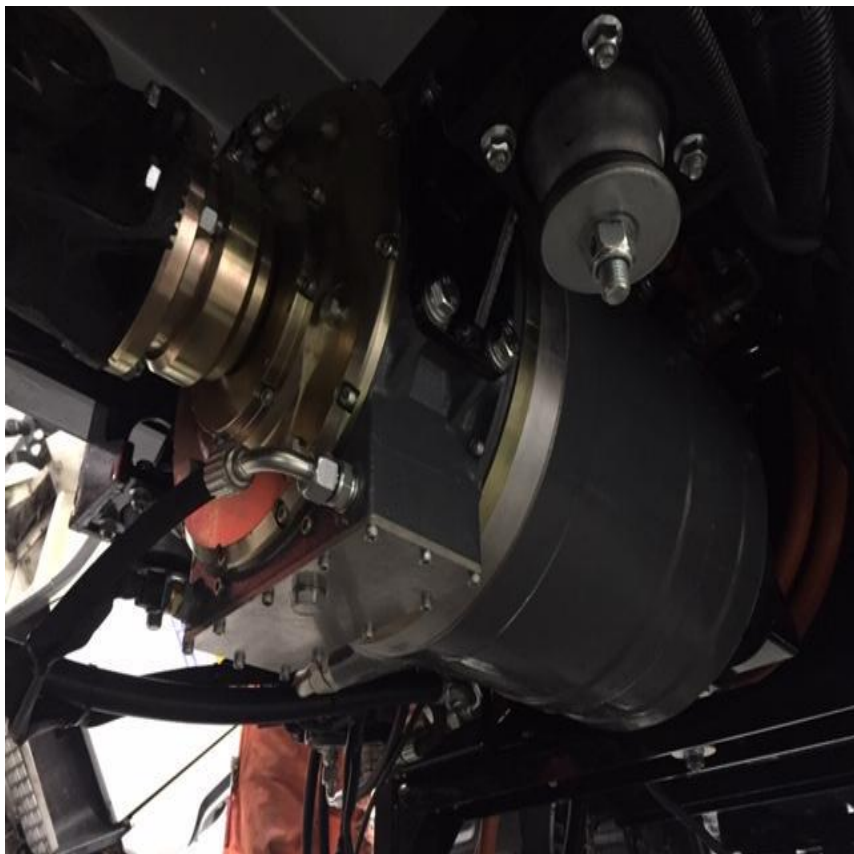
Chassis and cab work Completed



Over to Magtec!



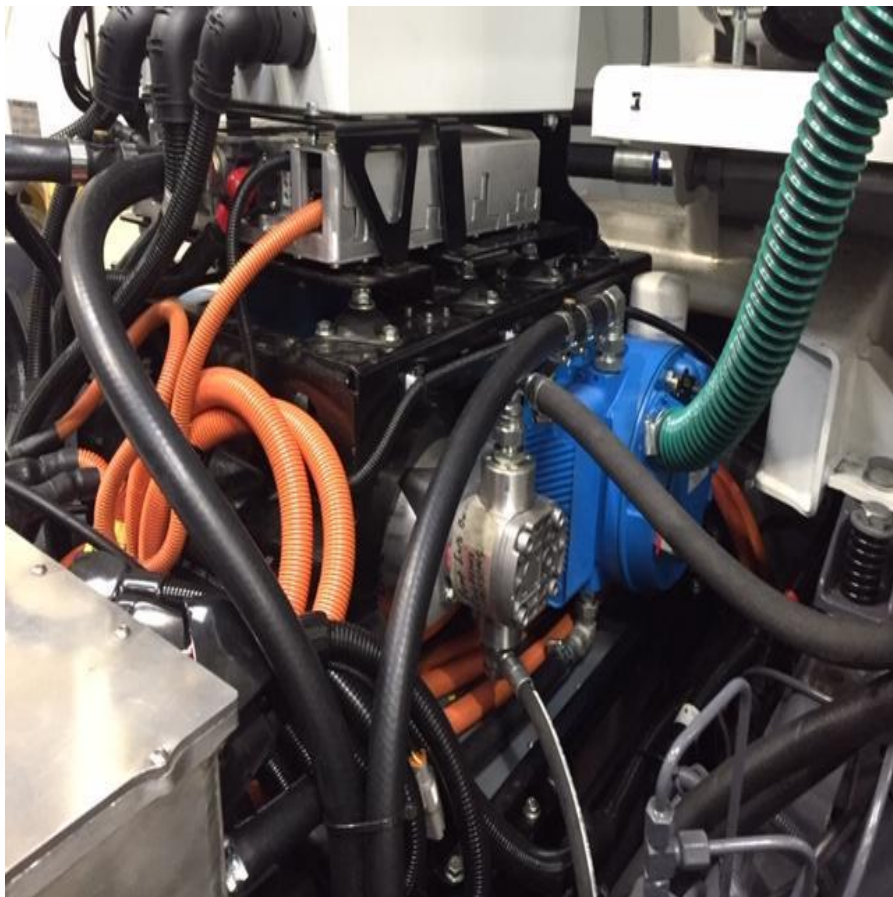
Drive Motor & Switchgear



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Compressor, PS Pump & LV Battery box



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Hydraulic pump & Drive motor



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Back to Dennis Eagle Leads



Charging infrastructure



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Completed Vehicle



Project Costs per vehicle

- * £40,000 - Used Chassis purchase and refurbishment
- * £40,000 - New Dennis Body
- * £20,000 - New Terberg Bin Lifts
- £100,000 - Battery packs
- * £50,000 - Drive system

**Rest of costs made up of Project Management,
Labour and R&D**

* all approximate costs

What's gone well

- Committed group of individuals, determined to succeed
- Experts in their field
- Proven technology
- Existing relationships
- One supplier



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What's not gone so well

- One supplier
- Experts in their field
- Too ambitious
- Expectations
- Priorities not shared by all



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Commercial Services



Communications



Legal Services



Finance

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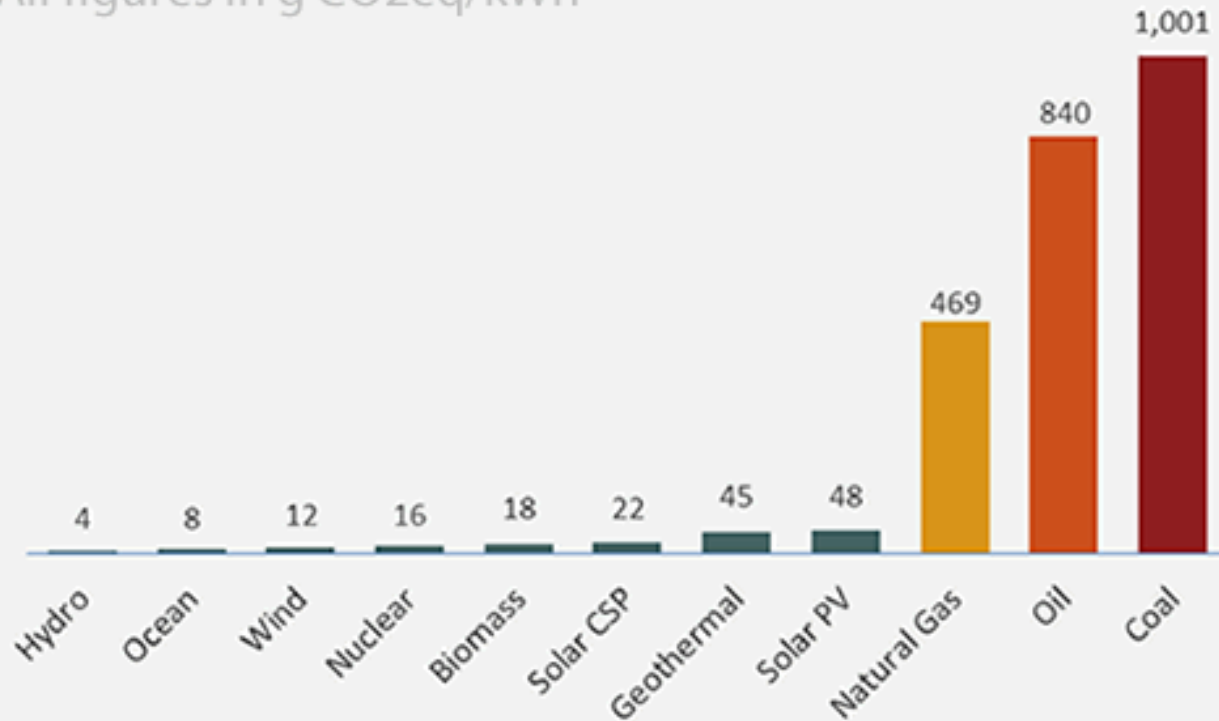
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Is it the answer?

The Carbon Intensity of Electricity Generation

All figures in g CO₂eq/kWh



Note: Data is the 50th percentile for each technology from a meta study of more than 50 papers
Source: IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation

shrinkthatfootprint.com

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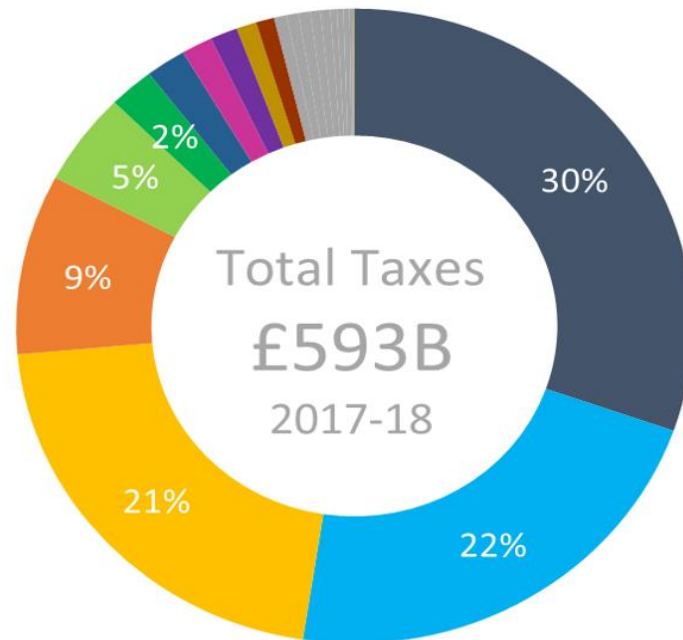


Is it the answer? Continued..

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Feb-19

Tax Receipts Breakdown



- Income Tax
- NICs
- VAT
- Corporation Tax (Onshore)
- Fuel duties
- Stamp Duty Land Tax

Top 3 = 73% of total
Top 6 = 89% of total

Source: HM Revenue & Customs. Table 2.8 Income Tax receipts, analysis by type. Published 31 August 2018.
www.gov.uk/government/statistics

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Questions



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