



The
University
Of
Sheffield.

Shift2Rail H2020

Having a UK university partner can enhance your proposal, in the area of transport the UK has a 30% success rate. The University of Sheffield is No.1 in the UK for engineering research income and investment (2019).

UK is still eligible for H2020 projects

- **Prof David Stone – Power electronics and battery energy storage**

– +44 (0)114 2225046 / d.a.stone@sheffield.ac.uk



Principle areas of research interest include:

- **2MW / 1MWhr 11kV connected energy storage test facility – ‘Li’ based chemistry**
- **H2020 funded 1MW Flywheel installed with Battery**
- **Battery lifetime modelling / validation**
- **Grid interfacing / power electronics**
- **Second life vehicle battery usage / V2G applications**
- **Energy modelling in transport application**
- **Road to rail energy exchange**

Key projects:

- **EU Horizon 2020 – AdD Hystor. Flywheel based energy storage system - £570k**
- **EPSRC – MANIFEST. Multiscale analysis for facilities for energy storage - £520k**
- **EPSRC – Road to Rail Energy Exchange (R2REE) - £1.5M**
- **EPSRC – Vehicle to Grid (Joint NSFC Project). EP/L001004/1 - £250k**
- **EPSRC – Capital for great technologies - £4.9M**

- **Dr Erica Ballantyne - Sheffield University Management School**

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Principle areas of research interest include:

- **Efficient & sustainable transport with EVs and transport applications for energy storage**
- **Freight Transport planning & policy making**
- **Urban Logistics and freight transport operations**
- **Supply chain management**

Key projects:

- **EU Commission, EU-India collaboration project - “Investigating opportunities for sustainable freight transport (REINVEST)” (2015-2018).**
- **EU H2020-MCSA-RISE-2016 Scheme - “Promoting Sustainable Freight Transport in urban context: Policy & Decision-making Approaches (ProSFeT)” (2017-2019).**



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Ideas:

1. Energy Storage on DC rail systems / trams
Using vehicles to provide the energy storage – Road to Rail (R2R) instead of V2G
2. Energy modelling of fleet vehicles
Based on commercial vehicle route mapping – acceleration profiles

Innovation:

- R2R operation – first demonstrator
- Fleet energy use optimisation
- Efficient interface electronics
- Battery management

The opportunity:

- Real-time commercial scale tests
- Readily available test and demonstration facilities
- High efficiency power electronics
- Battery management expertise

What partners do we need:

- Industrial based – Innovate Projects!
- Partners giving easy access to tram systems
- Partners needing system control / stability analysis / simulation
- Partners needing V2G / R2R expertise
- Partner fleets to model (refuse collection / delivery etc)