



• **Energy Storage SUPERGEN**

- Umbrella body for all storage activities
- June 2014 – June 2019



• **ESRN**

- Networking events (seminars, conferences, workshops)
- UKES2015 conference: 25-27<sup>th</sup> November 2015



• **Capital for Grid-scale Storage Facilities (EPSRC grants)**

- Low carbon grids (£14.3m)
- Research test-bed and demonstration (£4.9m)
- R&D facilities (£3.3m)
- Centre for Cryogenic Storage (£5.9m)
- ThermExs lab (£1.7m)



ScienceCentral  
CENTRAL TO NEWCASTLE SCIENCE CITY



The University  
Of  
Sheffield.



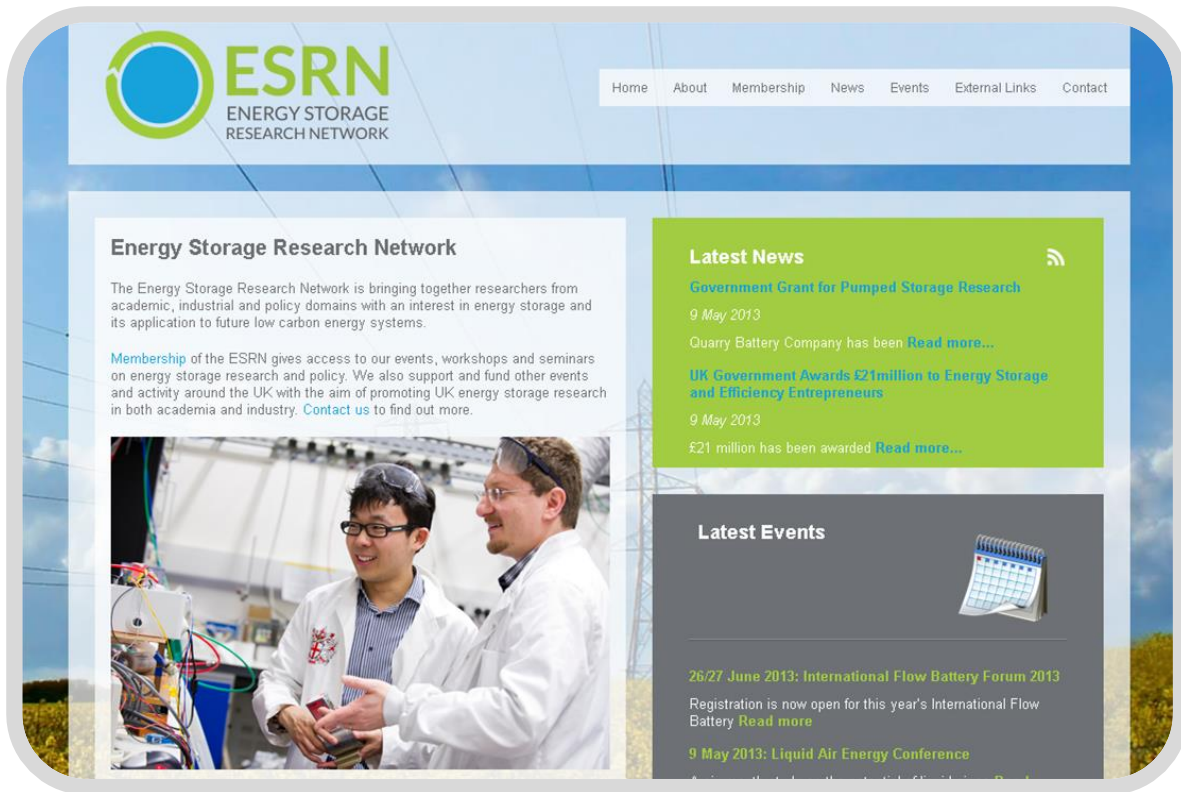
UNIVERSITY OF  
LIVERPOOL

UNIVERSITY OF  
BIRMINGHAM





# The networking arm of the Energy SUPERSTORE



@ukenergystorage



ESRN



esrnuk

Sign up for network membership at [esrn.co.uk/membership](http://esrn.co.uk/membership)



## ESRN runs Oct 2012 to Mar 2016

- Developing the UK research **community**
- **Sponsors** attendance at conferences
- **Acts** as a central contact point
- **Links** academia and industry
- **Hosts** workshops and events
- Monthly **newsletter**

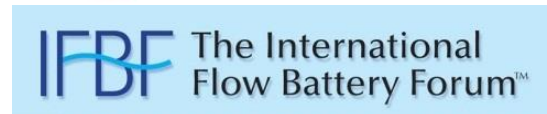




## Sponsored research student attendance at:

2013

- 12<sup>th</sup> Mar: *Energy Storage for Power Networks*
- 9<sup>th</sup> May: *Liquid Air Energy conference*
- 26<sup>th</sup> Jun: *International Flow Battery Forum (IFBF)*
- 6-7<sup>th</sup> Nov: *Hybrid and Electric Vehicles Conference (HEVC)*



2014

- 29<sup>th</sup> Jan: *Electricity Storage Network (ESN) annual event with ICE*
- 18-19<sup>th</sup> Mar: *Symposium on Fuel Cell and Battery Modeling and Experimental Validation (MODVAL) 11*
- Jun: *IFBF*
- Jul: *OffShore Energy Storage (OSES); Electrochemical Society (ECS 226)*



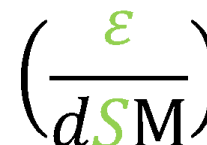
2015

- 4<sup>th</sup> Jun: *IET Seminar "Energy Storage: What's next for the Grid?"*
- 16-17<sup>th</sup> Jun: *IFBF*; 21<sup>st</sup>-26<sup>th</sup> Jun: *LiBD-7*
- 1-3<sup>rd</sup> Jul: *OSES*; 26<sup>th</sup>-31<sup>st</sup> Jul: *ECS with SOFC-XIV*
- 17<sup>th</sup> Sep: *EM:CS-2*
- 4-9<sup>th</sup> Oct: *WMG battery school*



## ESRN hosted and co-hosted events:

- **CAES workshop** – 24<sup>th</sup> Sep 2013, held at the University of Warwick.
- **Li Battery Degradation Workshop** – 22<sup>nd</sup> Nov 2013 with 80-90 attendees, Gordon style symposium focussing on degradation and failure in lithium batteries.
- **Future Powertrains Conference (FPC2014)** – 19/20<sup>th</sup> Feb 2014, 250 attendee conference on low emission vehicle technologies, in partnership with AVL
- **UK Energy Storage Conference (UKES2014)** – 25-27<sup>th</sup> Nov 2014, 300 attendees, 2-day conference to bring together UK research in energy storage for transport and grid applications, with leading international invited speakers.
- **Future Powertrains Conference (FPC2015)** – 19/20<sup>th</sup> Feb 2015, 300 attendee conference on low emission vehicle technologies, in partnership with AVL.
- **Mathematics Workshop** (MDSMES2015) – 1<sup>st</sup>/2<sup>nd</sup> June 2015, 77 attendees, held at Open University.

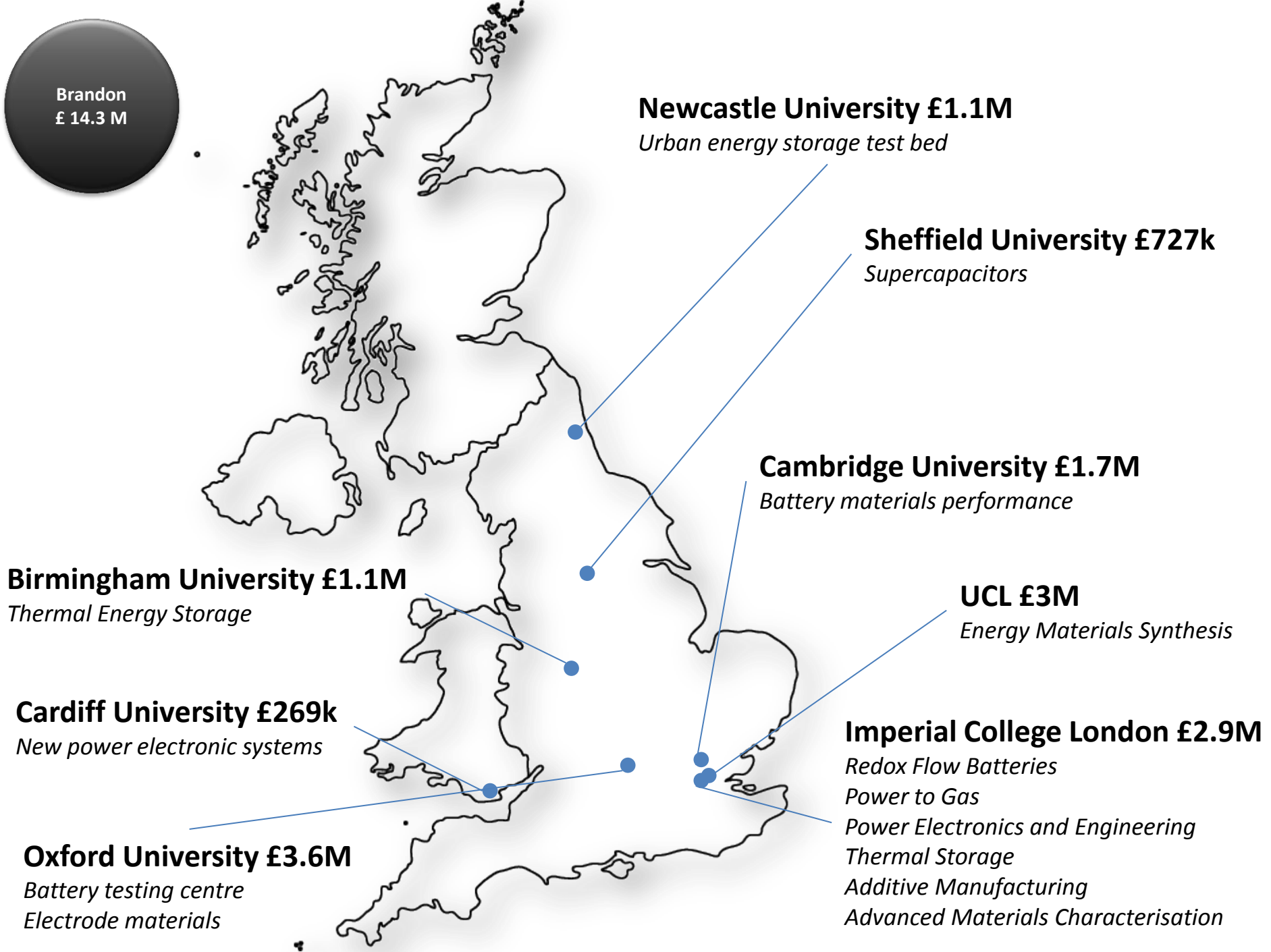


## ESRN upcoming:

- **Thermal ES workshop** – 10-11<sup>th</sup> Jun 2015, to be held at the University of Birmingham.
- **UK Energy Storage Conference (UKES2015)** – 25-27<sup>th</sup> Nov 2015, a major 2 day conference to bring together UK research in energy storage for transport and grid applications, with leading international invited speakers (JCESR, EERA). 350-400 delegates expected.
- **Li-S Batteries: Materials, Mechanisms and Modelling (LiSM<sup>3</sup>)** – 12<sup>th</sup> Feb 2016, 200 expected attendees, symposium focussing on lithium-sulphur batteries.
- **Future Powertrains Conference (FPC2016)** – 24/25<sup>th</sup> Feb 2016, 300+ attendee conference on low emission vehicle technologies, in partnership with AVL
- **Li/Na Battery Workshop** – 2016/17, Gordon style symposium focussing on all aspects of lithium and sodium batteries. International involvement from JCESR.



**Brandon**  
£ 14.3 M



**Newcastle University £1.1M**  
*Urban energy storage test bed*

**Sheffield University £727k**  
*Supercapacitors*

**Cambridge University £1.7M**  
*Battery materials performance*

**Birmingham University £1.1M**  
*Thermal Energy Storage*

**UCL £3M**  
*Energy Materials Synthesis*

**Cardiff University £269k**  
*New power electronic systems*

**Imperial College London £2.9M**  
*Redox Flow Batteries  
Power to Gas  
Power Electronics and Engineering  
Thermal Storage  
Additive Manufacturing  
Advanced Materials Characterisation*

**Oxford University £3.6M**  
*Battery testing centre  
Electrode materials*

# Capital for Great Technologies

£30 million EPSRC funding announced for grid-scale energy storage projects

## £14.3 million - Centre for Energy Storage for Low Carbon Grids

Imperial College  
London

UNIVERSITY OF  
CAMBRIDGE

Newcastle  
University

UNIVERSITY OF  
BIRMINGHAM

CARDIFF  
UNIVERSITY  
PRIFYSGOL  
CAERDYDD

UNIVERSITY OF  
OXFORD

University  
of  
St Andrews

The  
University  
Of  
Sheffield.

UCL

## £4.9 million - Grid Connected Energy Storage Research Demonstrator

The  
University  
Of  
Sheffield.

Aston University  
Birmingham

UNIVERSITY OF  
Southampton

## £3.3million - Advanced Grid-scale Energy Storage R&D facilities

MANCHESTER  
1824  
The University of Manchester

UNIVERSITY OF  
LIVERPOOL

## £5.9 million - Centre for Cryogenic Energy Storage

UNIVERSITY OF  
BIRMINGHAM

UNIVERSITY OF  
Hull

## £1.7 million - ThermExS Lab: Thermal Energy Storage Lab

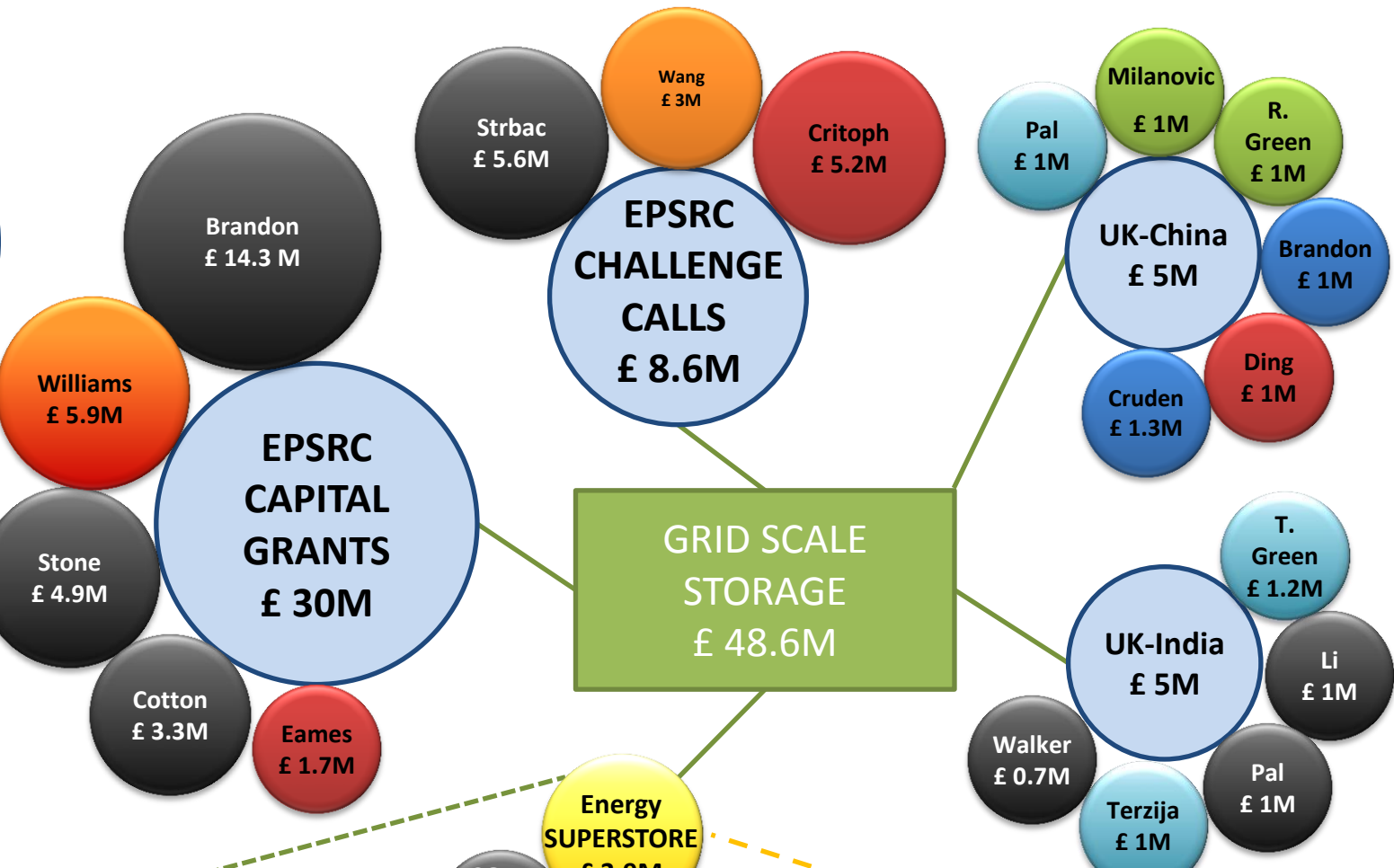
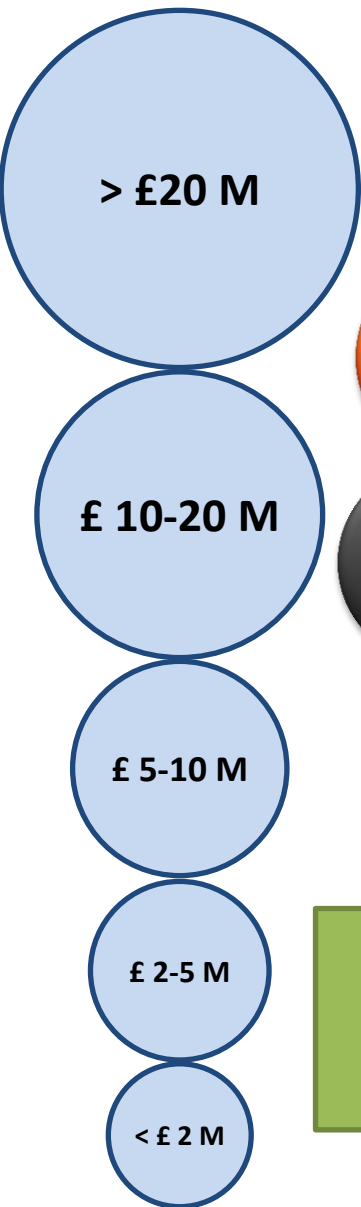
Loughborough  
University

The University of  
Nottingham

THE UNIVERSITY OF  
WARWICK



**SCALE KEY:**



**STORAGE FOR TRANSPORT**

**COLOUR KEY:**

