Energy Harvesting
An EPSRC Funded Network
www.eh-network.org

EPSRC
Engineering and Physical Sciences Research Council

Energy Harvesting 2012

Prof Steve Beeby
University of Southampton
28th March 2012

Knowledge Transfer Network
Materials

Knowledge Transfer Network
Electronics, Sensors, Photonics

Introduction

- Network Background
- Membership
- Objectives and Activities
- EH open access vibration database
- Today's event

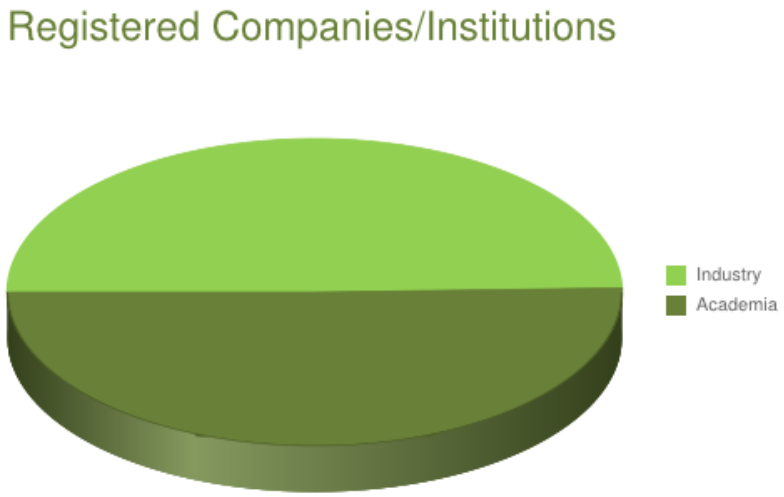
Network Background

- Motivated by a strong background in Energy Harvesting in the UK/Europe, the potential for new applications and the need to identify new research challenges identified by bringing the community together
- Started 01 March 2010, funded by EPSRC for 3 years
- Managed on behalf of the community by Southampton University (PI Steve Beeby, CI Geoff Merrett, Kai Yang) plus Simon Aliwell and Costis Kompis
- Steering Board in place
- Link established with the Materials and Electronics, Photonics and Sensors KTN's

Membership

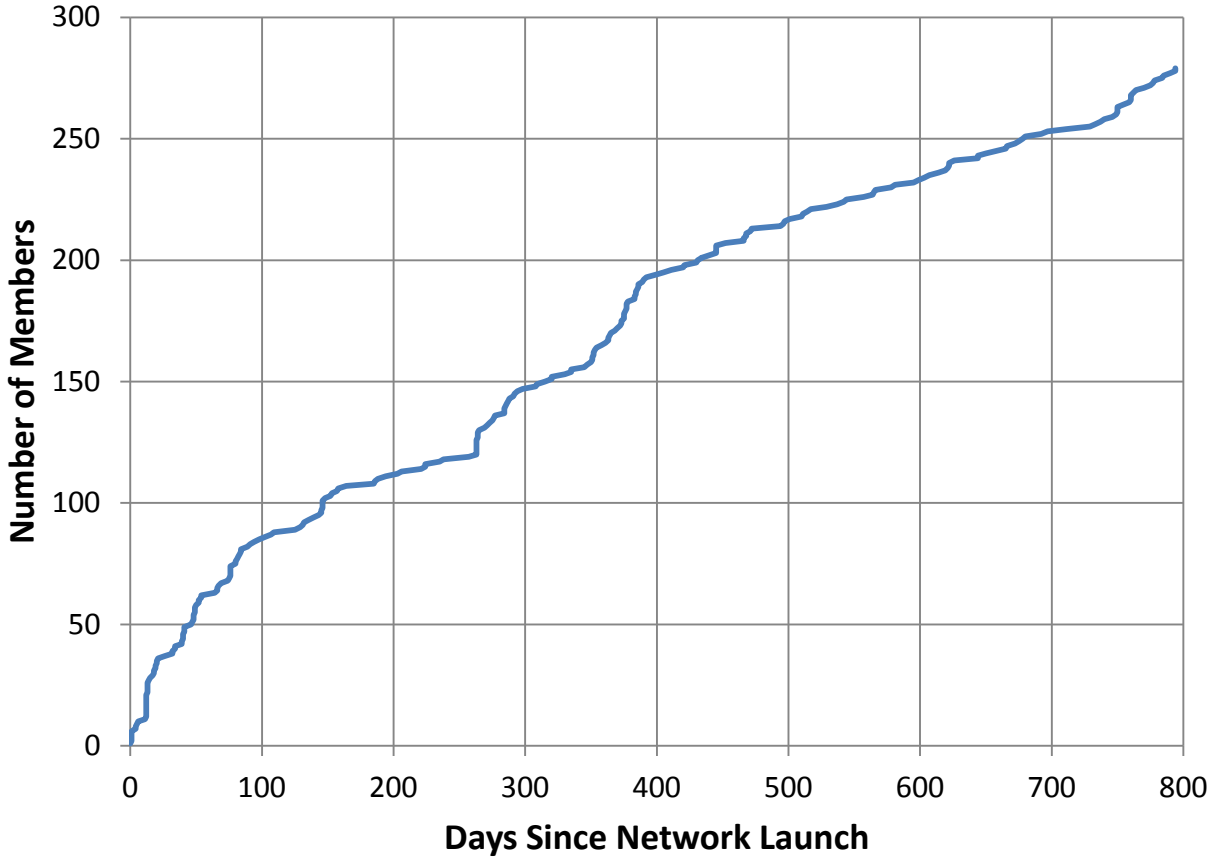
- Open to all with an interest in energy harvesting
- 283 people from 228 companies and institutions

104 industrial and 179 academic members

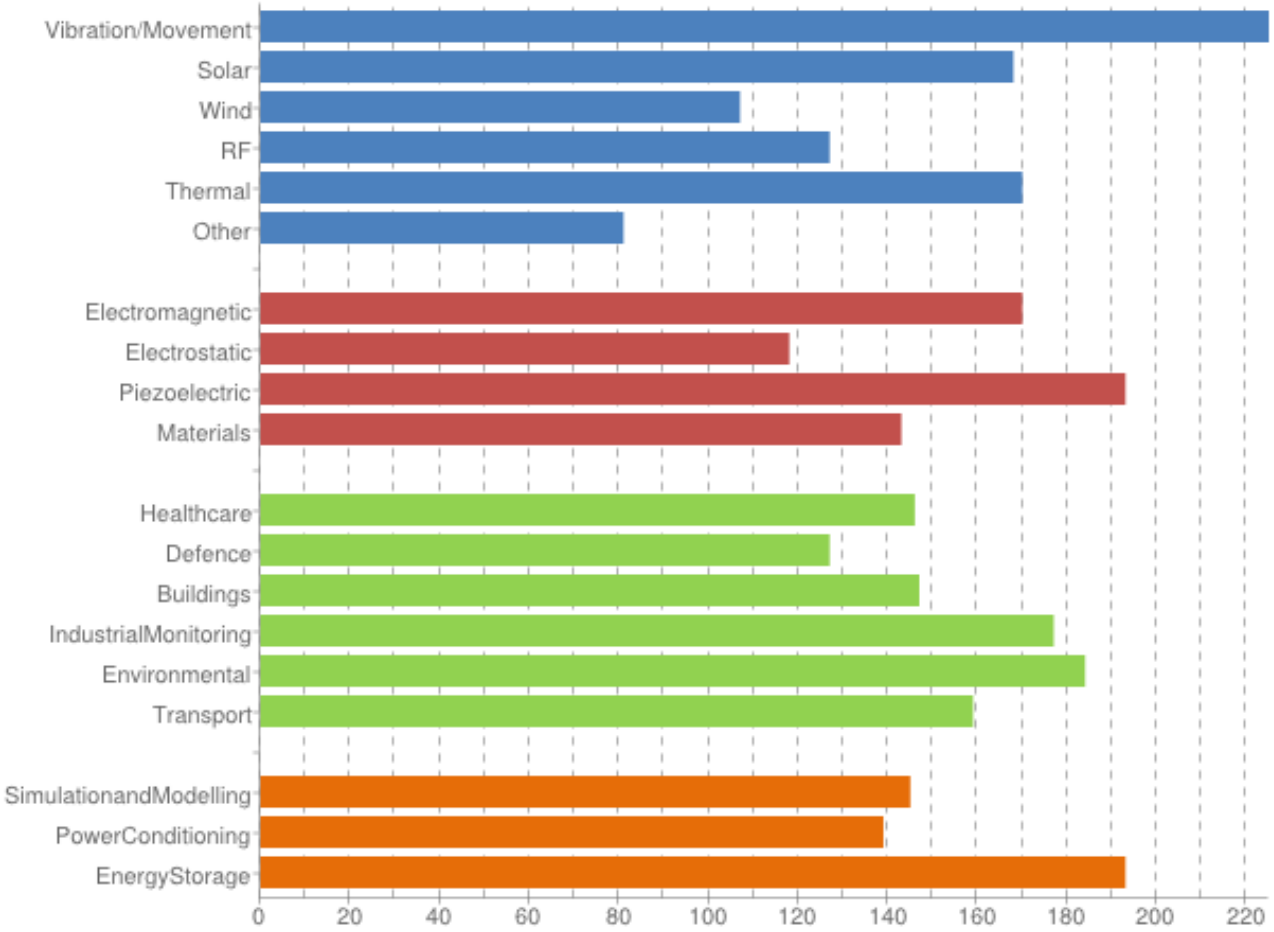


113 industrial companies and 115 academic institutions

Membership


300
250
200
150
100
50
0
Number of Members
0
100
200
300
400
500
600
700
800
Days Since Network Launch

Member interests



Network Activities

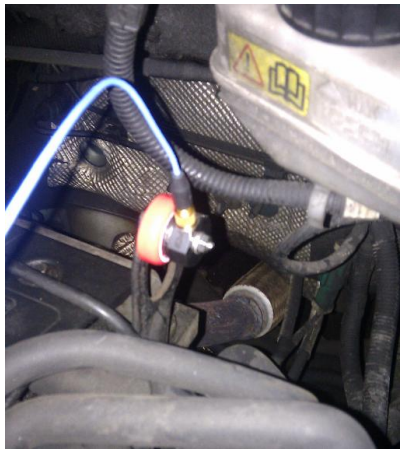
- The aim of the network is to define the future research challenges, help promote new collaborations involving new players and disseminate developments.
- Organised 3 focused workshops to develop roadmaps for specific topics
  - Workshop 1, EH from Human Power
  - Workshop 2, EH for Structural Monitoring
  - Workshop 3, MEMS/NEMS Energy Harvesting
- Annual dissemination events and regular newsletters
- Host database on energy availability from different applications

EH Network Database

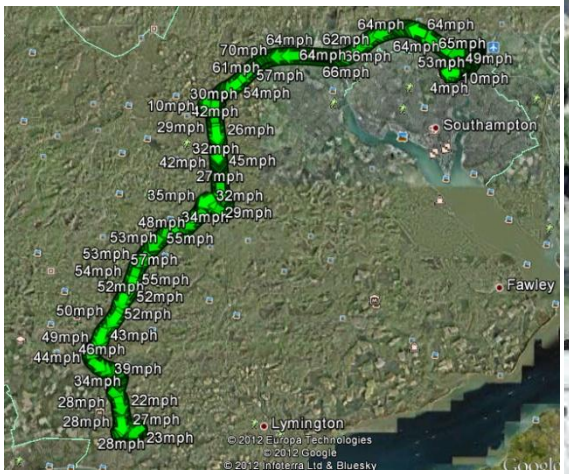
- An open access vibration database for researchers to download real time vibration data.
- Collected by researchers at Southampton and Bristol
- Each set of data accompanied by a data sheet describing sampling conditions, application environment and highlighting features.
- Wide range of data collected: cars, CHP pump, building, white goods, bridges etc.
- Visit: http://eh-network.org/data/index.php

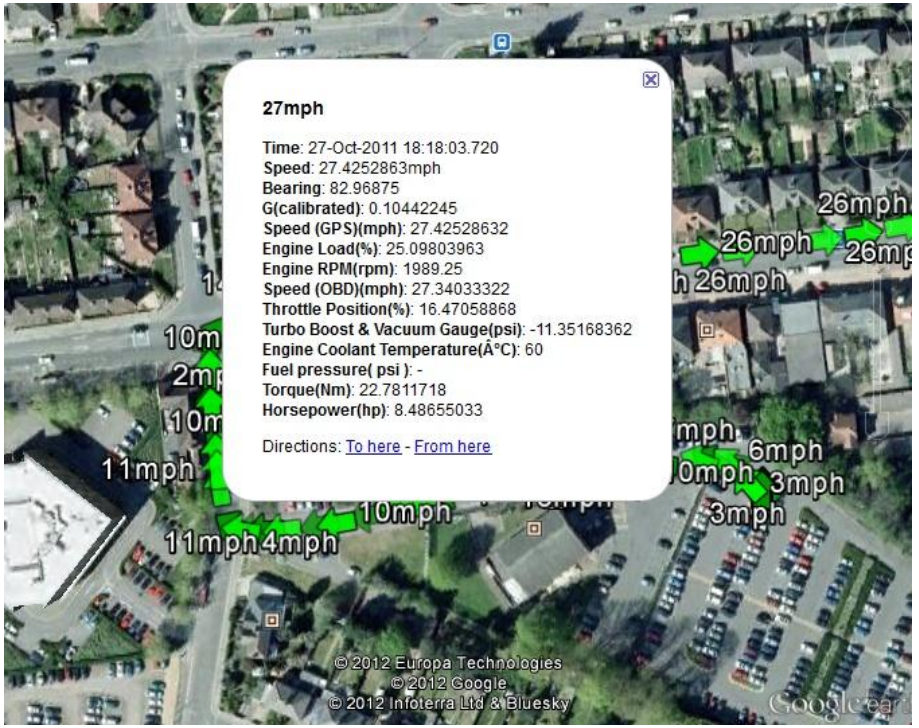
Example Data – Ford Focus

Vibration gathered on a commuter journey from Southampton. Vehicle data collected and correlated to results



Accelerometer mounting

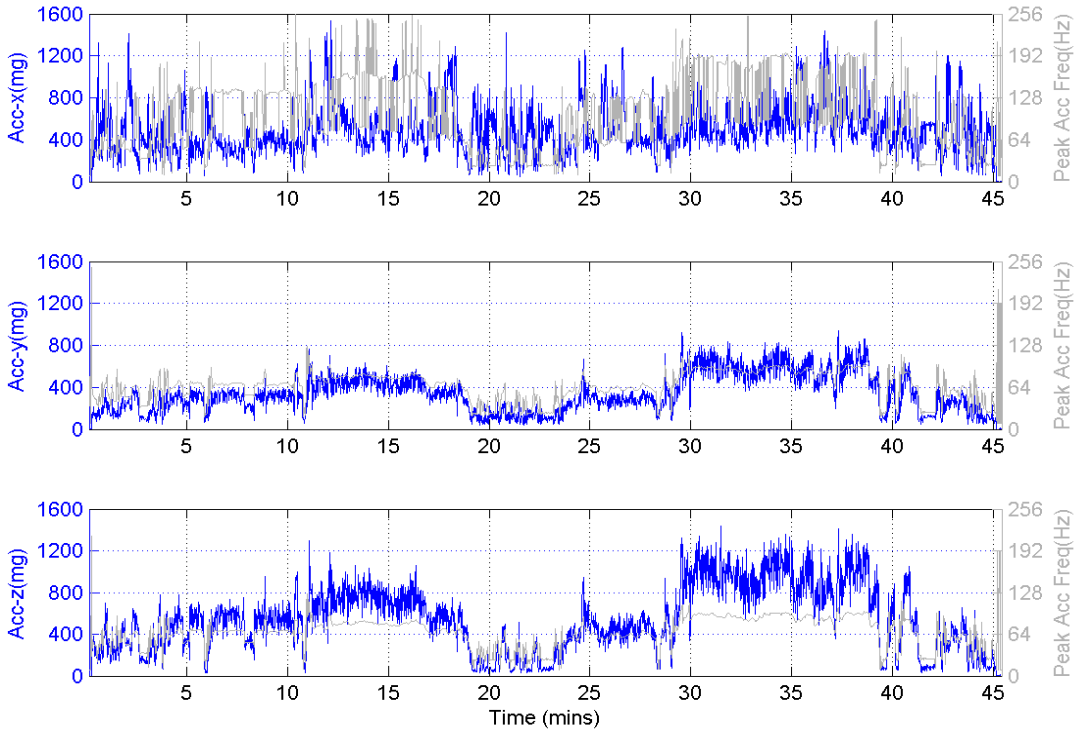




Google earth images – data points available for the whole journey

Vibration Data

- Raw data in time domain available as .csv file.
- Processed data also available and details summarised in datasheet.



Agenda: AM

9:15	**Arrival, Registration and Coffee**
9:45	Introduction: The Energy Harvesting Network *Prof. Steve Beeby (University of Southampton, UK)*
9.50	Keynote: Micro Energy Harvesting: From Basic Research to Practical Application *Prof. Peter Woias (IMTEK, Germany)*
10.20	Energy Harvesting in Practical Applications *Roy Freeland (Perpetuum)*
10.40	Designing Next-Generation Thermoelectric Materials for Energy Harvesting *Prof. Anthony Powell (Herriot Watt University, UK)*
11.00	**Coffee Break and Networking**
11:20	Smart Materials for Energy Regeneration *Prof. Elias Siores (University of Bolton, UK)*
11.40	'Elevator Pitches' from Companies with Stands at this Event *Agilent, Techni Measure, IDTechEx*
11.55	Student posters: Flash presentations (2 minutes each) *PhD Students with Posters at the Event*
12:20	**Lunch and Poster Session**

Agenda: PM

12:20	**Lunch and Poster Session**
13:40	Keynote: Miniaturising Motion Energy Harvesters: Limits and Ways Around Them *Prof. Eric Yeatman (Imperial College, London)*
14.10	Energy Harvesting Radio Sensors for Building and Industrial Automation *Frank Schmidt (CTO Enocean)*
14:30	Preliminary Manufacturing Analysis of EH Applications *Carlos Huggins, Electronics, Sensors Photonics KTN*
14:50	**Best Poster Award, Coffee Break and Networking**
15:10	Keynote: Vibration Energy Harvesting using Multi-Frequency and Nonlinear Piezoelectric Converters *Prof Vittorio Ferrari (University of Brescia, Italy)*
15:40	Piezoelectric Thick Film Based Energy Harvesting Micro-Generators *Tomasz Zawada (Meggitt Sensing Systems)*
16:00	Technology Strategy Board support for Energy Harvesting *Myrddin Jones (Technology Strategy Board)*
16:20	**End of Event**

Thanks for your attention

- To find out more or to register as a member:

www.eh-network.org

- To join the Energy Harvesting subgroup of the Electronics, Sensors, Photonics KTN

https://ktn.innovateuk.org/web/eh1