As renewable generation capacity expands, with both existing and emerging generation technologies, **Energy Conversion and Storage** is one of the major challenges facing the energy sector.

Many renewable sources are intermittent in nature. Being able to convert and store electricity during excess production is essential for reaching the 20% ceiling of total generation capacity. Without storage, excess generation is wasted and a large back-up generator required.

Electricity is not readily stored and so effective storage strategies involve either the conversion of electricity physically (such as pumped storage, flywheels and compressed air), or chemical storage. This ETP theme addresses this urgent need.

High performance batteries represent a form of chemical storage. Scotland can claim both world-leading research and commercial activities in this area - including the world’s first Li-ion battery production facility.

- Chemical industry second largest contributor to Scotland’s GDP
- It also represents 40% of commercial R&D spending
- Scotland is home to world class academic energy storage research

From the discovery of coal-gas in the 1790s through to modern exploitation of natural gas reserves, Scotland also has leading-edge knowledge, heritage and expertise in strategic-scale energy storage in the form of gases.

Scotland’s academic research demonstrates outstanding capability in several areas of this next-generation strategic and local-scale energy storage technology.

ETP’s Energy Conversion and Storage theme embraces a wide range of academic and industrial expertise, combining their respective capabilities to deliver new and innovative energy technologies.
Expertise
The expertise of researchers within ETP spans a wide-range, including:

- Chemical and materials synthesis
- Chemical and materials characterisation
- Electrochemistry
- Heterogeneous catalysis
- Surface characterisation
- Systems design
- Computer simulation and modeling
- Process engineering

Supporting Scottish SMEs
Through the Knowledge Exchange Network (KEN), ETP increases SME capability in low carbon technical innovation and makes it easier for SMEs and universities to connect. KEN continues to offer Scottish SMEs access to resources including project funding to work with Scottish Universities on low-carbon innovation projects.

Requirements

A simple application process
Grant funding is available through the ETP Industry Engagement Fund. The fund is accessible to SMEs based in Scotland and provides a unique opportunity to tap into academic expertise and state of the art facilities in Scotland.

Connectivity
ETP researchers are engaged in a number of collaborative programs involving academics and industry from across the UK and beyond, including: Supergen, SHFCA, Energy Academy, Energy Super Store and ScotChem.

The Scottish Energy Laboratory (SEL)
Energy sector test facilities have been brought together under the Scottish Energy Laboratory (SEL) umbrella. Facilities of particular relevance to energy conversion and storage are:

- St Andrews’ Centre for Advanced Materials
- Urban and micro renewables test facility
- Integrated energy materials processing and characterisation facilities
- The Hydrogen Office
- Centre for Advanced Energy Storage and Recovery (CAESAR)

For more details visit www.scottishenergylaboratory.com

For further information please email: energyconversion@etp-scotland.ac.uk

Energy Technology Partnership www.etp-scotland.ac.uk