ETP

ETP is an independent partnership of 14 Scottish universities, engaged in world-class energy research and innovation and are the largest academic energy research partnership in Europe. ETP foster collaboration between universities and industry to deliver R&I across a range of energy technologies – hydrogen is one of the 13 research themes. They also provide funding for PhD students researching within the energy sector. ETP play a broad role in many hydrogen innovation programmes across Scotland (MSIP, WESA etc.) and therefore span full value chain capability, however this document focusses purely on ETP's additional/specific programmes.

Key Capabilities / Centres	Descriptions
Hydrogen Innovation Programme (HIP)	The Hydrogen Innovation Programme offers Scottish companies access to resources including project funding to work with Scottish universities on innovation projects to develop technologies in support of the hydrogen economy. Eligibility covers the entire hydrogen value chain.
Hydro Nation Energy Innovation Programme	Innovation in areas that address the reduction of carbon emissions in the water supply and treatment sector are eligible to participate in this programme. Funding up to £10,000 is available to support collaborative research and innovation projects with a Scottish university.
Energy Industry Doctorate Programme	This programme addresses the strategic demands of industry/government for 'industry-ready', post-doctoral researchers to enhance energy industry innovation and knowledge exchange effectiveness. Funding up to £30k per student.

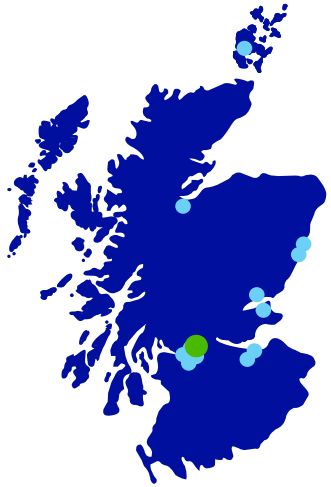
Collaboration opportunities

ETP's hydrogen focussed programmes, including the Hydrogen Innovation Programme, provide opportunities for companies looking to base their businesses in Scotland.

These programmes aid technologies that will support a green hydrogen economy, including:

- Heating; Industrial processes; Fuel cells; Hydrogen propulsion systems; Energy storage; Hydrogen as an energy vector; Hydrogen transmission & distribution; Production of green hydrogen; Hydrogen derivatives e.g. ammonia & methanol.

Centre location



= ETP main site

= ETP linked universities/sites

Value Chain Areas	Testing & validation	Pilot manufacturing	Digital tools & simulation	Open innovation spaces	Skills development
Production	✓	✓	✓	✓	✓
Networks	✓	✓	✓	✓	✓
Storage	✓	✓	✓	✓	✓
Transport	✓	✓	✓	✓	✓
Industry	✓	✓	✓	✓	✓
Power	✓	✓	✓	✓	✓
Heat	✓	✓	✓	✓	✓

*Tick = yes, O = potential, X = no

Hydrogen case studies

- **Flexergy,** a hydrogen compression company, has worked with ETP on two grant funded projects. The first, under the Hydrogen Innovation Programme, was a £10k project with the University of Strathclyde to analyse the thermodynamics of the system. It confirmed that Flexergy's technology is 30% more energy efficient than the current market technology. The second, a first-of-its-kind £30k project with the University of St. Andrews, identified ideal fluids, structural materials, and engineering designs for large-scale, low-cost, ultra-efficient hydrogen compression. Both projects provided the external validation needed for investors and collaborators to make firm commitments to Flexergy.
- **Cascade Technologies:** Cascade Technologies, a manufacturer of high-technology laser-based gas analysers were identified as a Scottish SME who would benefit for ETP support. Cascade had already identified hydrogen fuel and CCS as key areas where new markets might emerge. ETP made introductions to relevant academic and business contacts and provided support with the successful application. The final consortium consisted of BOC and ITM Power.

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Scottish Enterprise