

The Pure Experience!

Ross Gazey *Engineering Director*

&

Elizabeth Johnson *Business Development Manager*

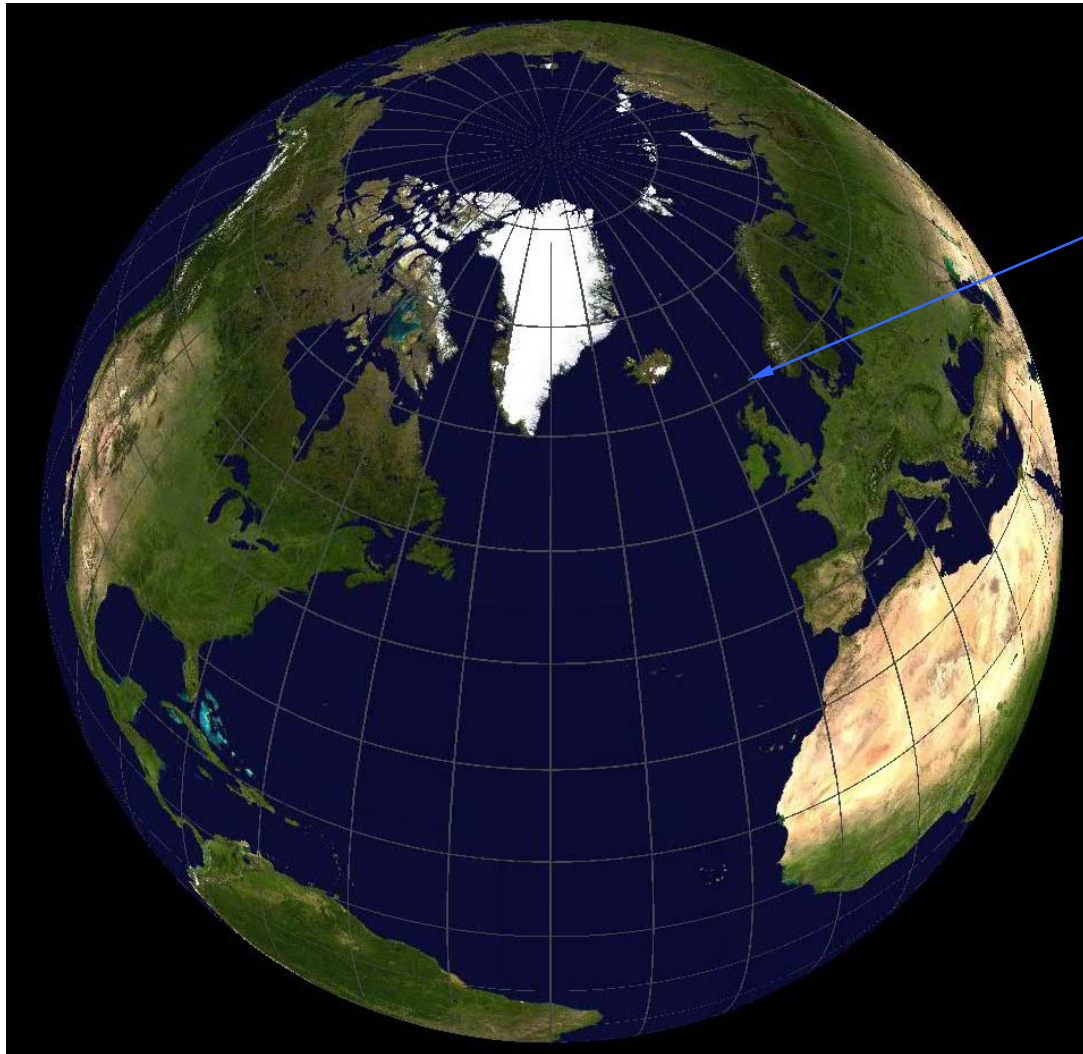


Our mission is to enable our customers throughout the world,
to deliver reliable, long lasting, Pure Energy™ solutions

Overview

- Background
 - Shetland, The PURE Project & Getting Started
- The Pure Energy Centre
- Summary

Background - The PURE Project



Shetland Islands

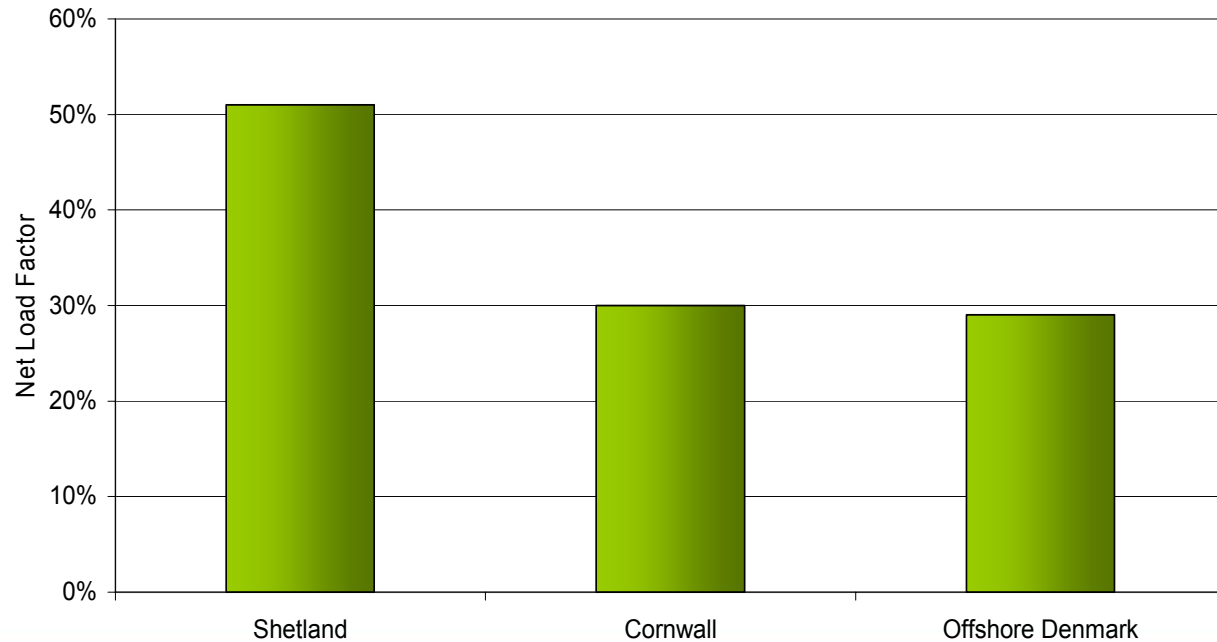


Background – Shetland Islands



- Population of 22,000
- Grid-locked Island Energy Network
- End of consumer fossil fuel supply chain
- Best wind resource in Europe

Garrad Hassan and Partners Ltd.
Wind Farm Net Load Factor Comparison



Issues that led to the PURE Project



- High Dependency on Fuel
- Highest fuel prices in UK
- Petrol = 125.9pppl (12.19DKKpl)
- More than ½ the islanders spend over 20% of their household income on energy
- Declining Population

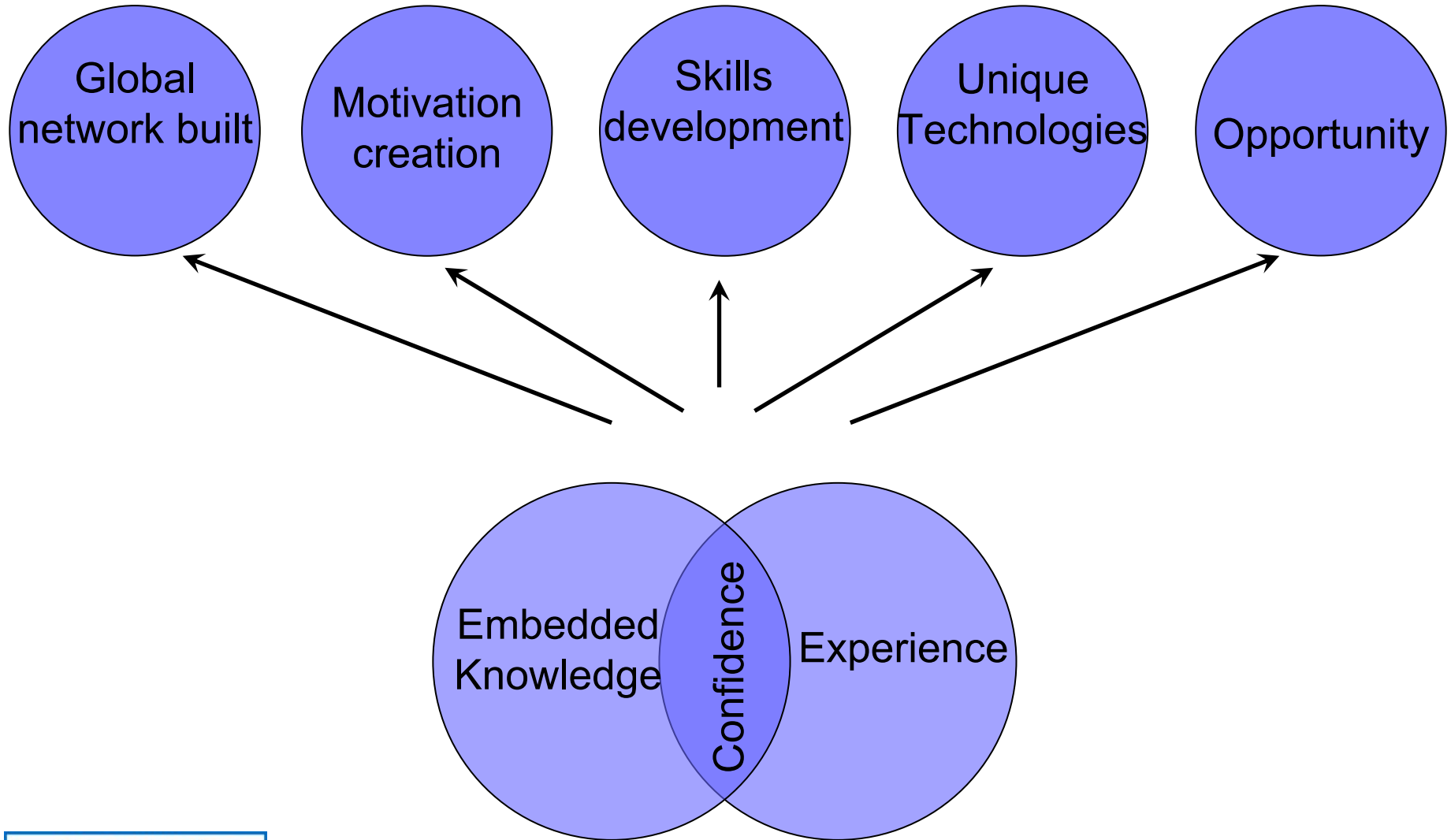
Getting Started - The PURE Project

- Forward thinking Community development organisation identified an opportunity for the island to investigate alternative Energy
- The PURE Project began
 - High quality jobs created
 - Knowledge gained
 - Infrastructure created
 - Profile raised

Getting Started - The Process

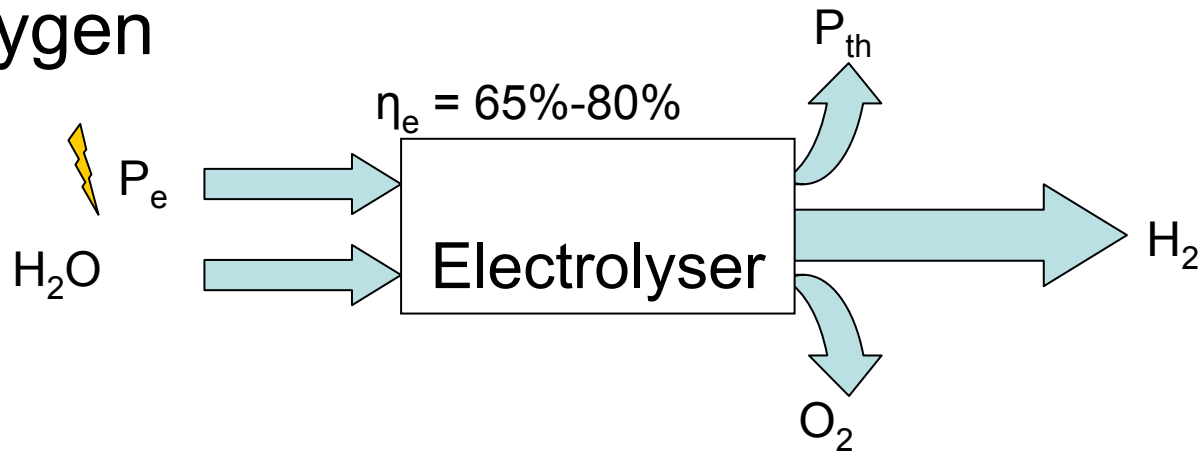


Getting Started - The Focus



PURE System - What Is An Electrolyser ?

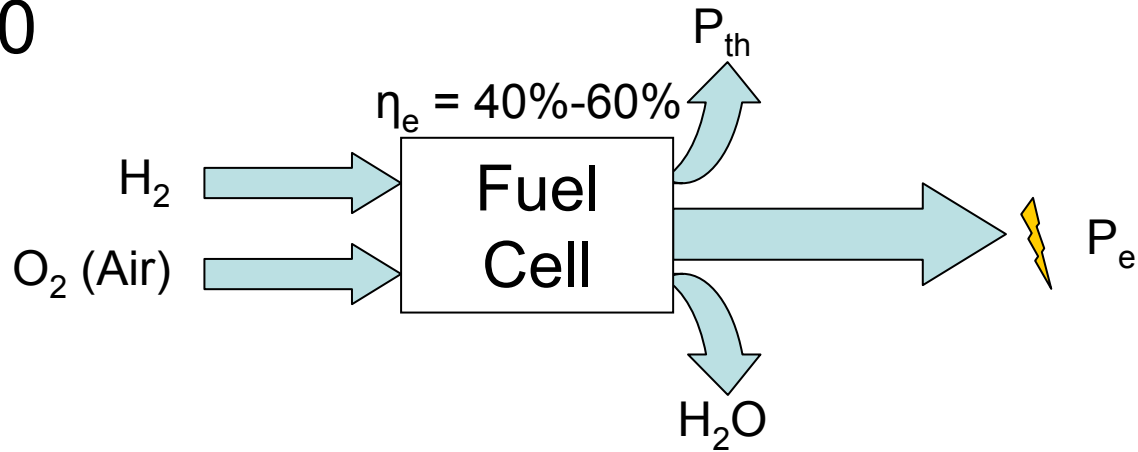
- Electrochemical device that converts electrical energy into hydrogen.
- The by-products are:
 - waste heat
 - pure oxygen



- Production Efficiency Between 65% - 80%

PURE System - What Is A Fuel Cell ?

- Electrochemical device that converts chemical energy into electrical energy.
- The by-products are:
 - waste heat
 - pure H₂O



- Electrical Efficiency Between 40% - 60%

The PURE Energy System



Electric Heating

DC/AC



Heating



The PURE Project

- Initial Community Project Outcomes (2005)
 - attracted £400,000 of inward investment
 - trained 4 Graduate engineers in Shetland
 - world's first community owned renewable hydrogen facility created
 - secured the only road licensed hydrogen fuel cell car in the UK
 - 150 bookings in local accommodation from interested parties visiting the project
 - New business created

Pure Energy Centre Background

- Based on the lessons and information learnt the PURE project team formed the Pure Energy Centre to capitalise on the knowledge gained
 - Renewable Hydrogen Systems
 - R & D Facility
 - Consultancy
 - Training
 - Project Management

The Pure Energy Centre

- Business Established February 2006
- Highly skilled international team specialising in hydrogen and renewable energy technologies
- 18 years collective experience in hydrogen and renewable energy systems

The Pure Energy Centre

- Delivered specialist training in hydrogen and fuel cell technologies to over 230 students from more than 20 countries
- Developed active R&D that has provided opportunities up to MSc level.
- Awarded Research Institute (RI) status
- Contracted to deliver several Hydrogen systems over the next 10 months

Moving Forward

- PEC collaborating on projects in 5 continents including:
 - Innovative energy systems (CHP, Hydrogen Production Systems)
 - Educational programmes
 - Automotive and marine renewable applications
 - Knowledge transfer and Capacity building

Summary

- Pro-Active community group enabled the establishment of a forward looking, innovative and globally renowned business at the forefront of its field which is based in Unst.
- Delivered unique employment opportunities and stimulated the inward migration of skilled labour into unst.

Community Engagement is essential to project success

info@pure.shetland.co.uk
www.pure.shetland.co.uk

