



ALL-ENERGY 2022 ETP & LESSIN

Supporting Innovation in Scotland
12th May 2022, 13:00 – 13:30



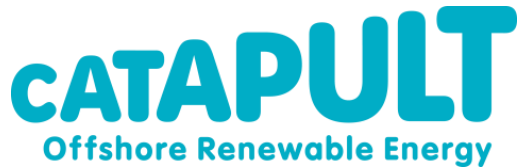
EUROPE & SCOTLAND
European Regional Development Fund
Investing in a Smart, Sustainable and Inclusive Future



ETP Innovation Support Partners



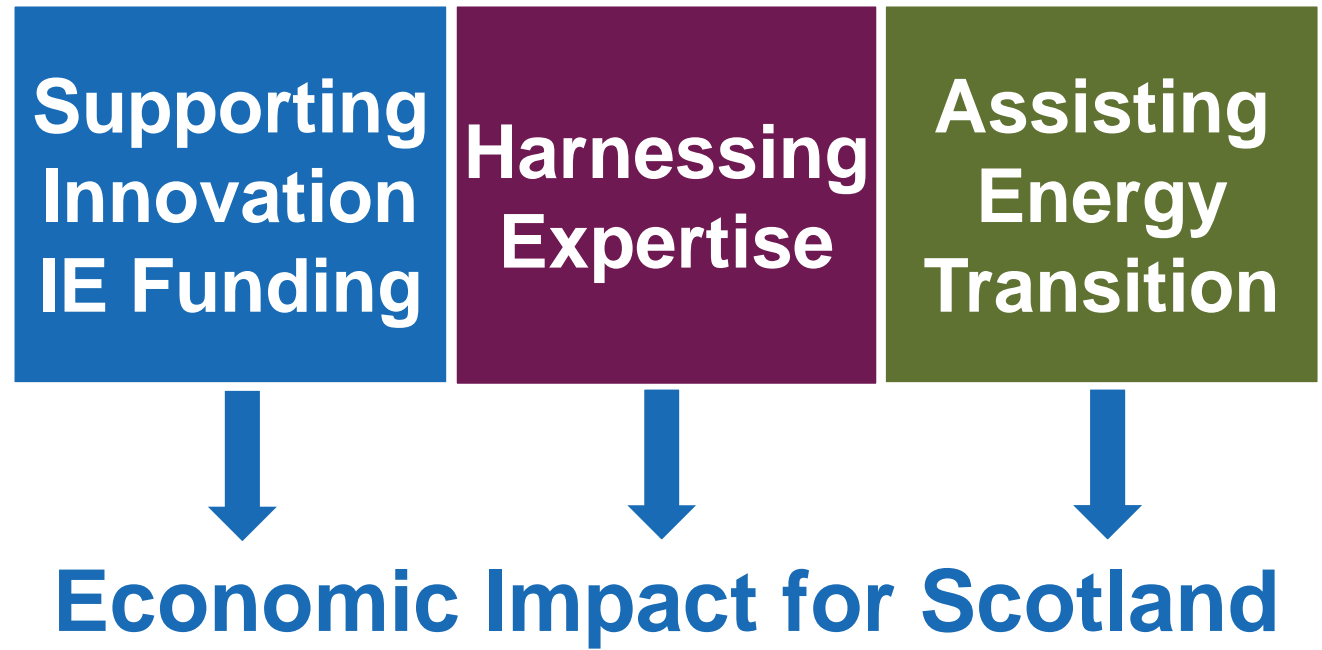
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ETP's Knowledge Exchange Network (KEN) Mission & Aims

- Support the Scottish Government in meeting its targets for the energy sector
- Increase the innovation capacity of SMEs in low carbon
- Improve industry access to academic capability



ETP is an alliance of 14 Scottish HEIs and facilities engaged in world-class energy-related RD&D



ETP Energy Themes (H₂ New)



Bioenergy



Marine Energy



Oil & Gas



Carbon Capture & Storage (CCS)



Heat Energy



Solar PV



Energy Conversion & Storage (ECS)



Energy Distribution & Infrastructure (EDI)



Wind Energy



Energy Efficiency in Buildings (EUB)



Energy Policy, People & Society (EPPS)

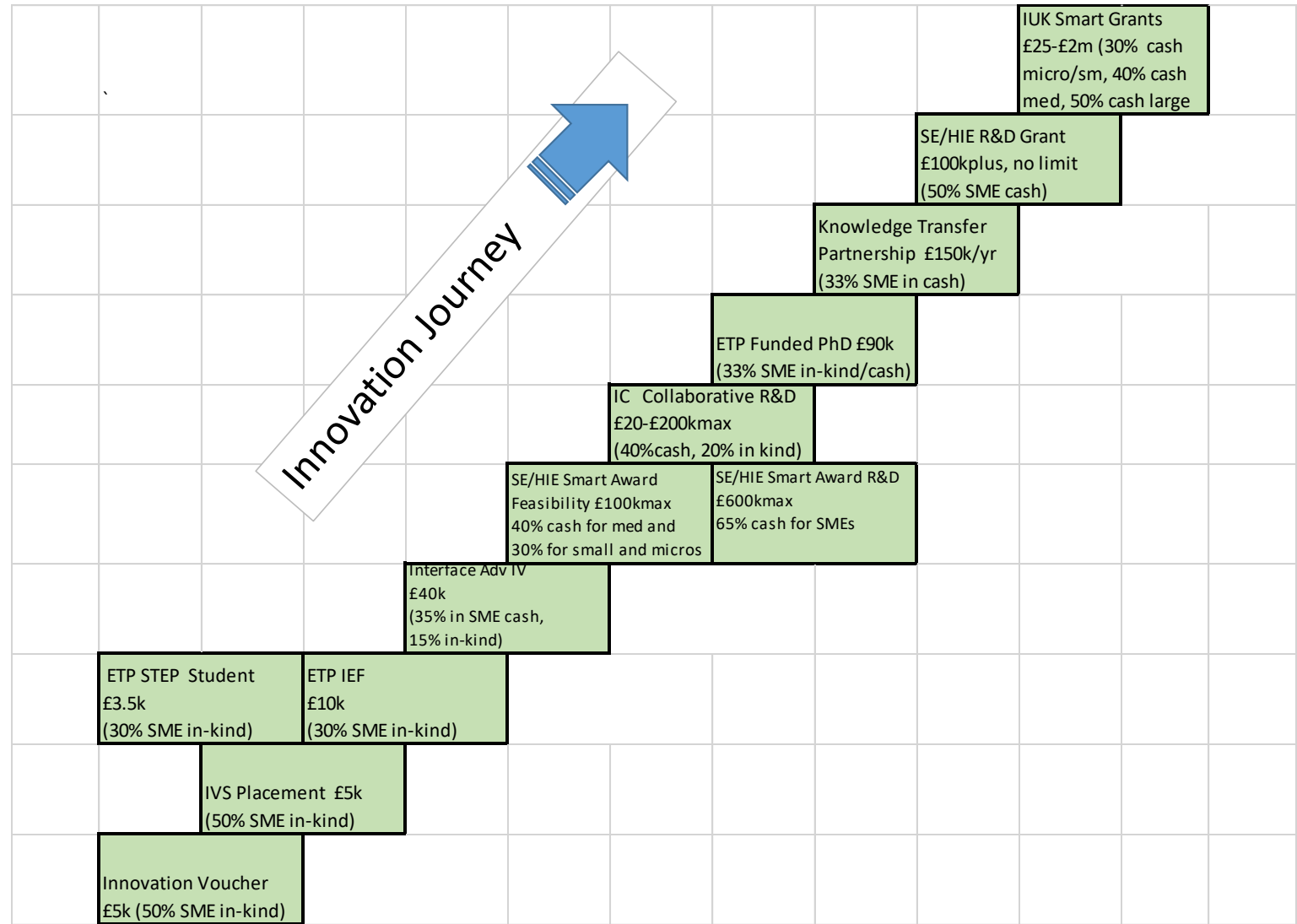


Transport





The Innovation Journey Funding Escalator



LESSIN ACTIVITIES



Harmonising
Innovation
Support

Funding
Brokerage &
Consortia
Development

Establish
Collaborations
& LES
Initiatives

Helping Local Energy Systems
Sector Flourish through Mutual
Support and Collaboration in Scotland

Building
Networks &
Knowledge
Exchange

Activities &
Engagement
Programme

Provide
Specialist
Business
Development
Support



LESSIN in Context

- LES has been on the Scottish economic development radar for a long time
- 2017 Scottish Government Energy Strategy was a major milestone
- LES Stakeholder group was established in 2018
- LESSIN was officially launched at the beginning of 2021 to:
 - Join dots, encourage collaboration
 - Help companies navigate support
 - Provide support for innovation, commercialisation and growth
 - Provide targeted dissemination of lessons learned
 - Link companies to projects & investments



LESSIN Priorities

- Explore opportunities like energy flexibility , digitalisation , hydrogen , Zero Emission Mobility, Low CO² buildings, Marine Energy and more.
- Greater engagement with project developers & facilitating project initiation
- Focus on innovation linked to the integration of energy vectors
- Focus on the benefits of a whole systems approach
- Broaden and build LESSIN membership
- Help inform future development of a Local Energy Systems Network



- Welcome Page
- Live feed
- News
- Organisations
- People
- Events
- Groups
- Knowledge Centre
- Support
- Feedback



Welcome to the LESSIN Community!

LESSIN will develop local energy activity as well as create opportunities for businesses in the supply chain to connect with each other and with stakeholders to build the Scottish low carbon economy.

We look forward to connecting with you.



Complete your profile



Join interesting relevant groups



Chat, Network and Learn



Search for active people



- Welcome Page
- Live feed
- News
- Organisations
- People
- Events
- Groups**
- Knowledge Centre
- Support
- Feedback



Batteries and Solar - managed by etp

12 members · United Kingdom



Digital and Data

13 members · United Kingdom



Funding & Investment

14 members · United Kingdom



Heating and Cooling - managed by etp

11 members



Hydrogen

13 members · United Kingdom



Net Zero

7 members · United Kingdom



Zero Emission Mobility (ZEM)

10 members · United Kingdom

LESSIN May 2022 Snapshot

- LESSIN Collaboration Portal – **206** Members
- LESSIN Scotland LinkedIn - **182** followers
- 16 LESSIN events - **154** (84 SMEs) organisations attended
- Specialist 1-2-1 support – **25** Scottish SMEs





Supporting Innovator Journeys

OnGen Presentation

Chris Trigg - Co-founder/CEO

12 May 2022



Supporting the transition to net zero



The OnGen Service Offering

Identify costed energy efficiency and onsite renewable energy interventions that contribute to ensuring a property's energy demand is carbon free.

For grid supplied energy, engage with energy suppliers through a reverse auction to win the supply contract.

On**Efficiency**

Reduce energy consumption

On**Gen Expert**

Generate renewable energy onsite

On**Supply**

Purchase green energy

A one stop shop for zero carbon energy solutions



The OnGen Leadership Team

Co-Founders



Chris Trigg ACA

Big 4 Chartered Accountant
Founding shareholder and CFO at Spark
Energy
Retail energy supply expert



Andrew Bright

Chartered Environmentalist
Co-founder and Director of ITP Energised
Director – WSP Environmental

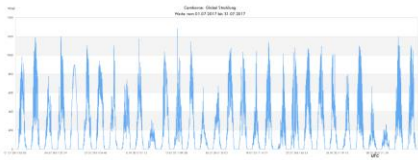
Advisors

Name	Background
Ian Marchant	<ul style="list-style-type: none">Former CEO of SSE plc
Nigel Ellis	<ul style="list-style-type: none">Former Head of Innovation at SSE plc
Niall Burns	<ul style="list-style-type: none">CTO Symphonic
Jonny Clark	<ul style="list-style-type: none">Co-founder and MD of ITP EnergisedDirector – WSP Future EnergyDirector – WSP Environment & Energy
Judith Halkerston (NED/Chair)	<ul style="list-style-type: none">Former VP BT Global ServicesFormer Managing Director, Energy, Utilities & Telecoms Logica

Private & Confidential

The OnGen Expert Service

Geophysical Data



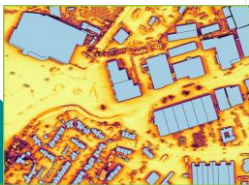
Energy consumption data

Year	Month	Consumption (kWh)
2018	Jan	12000
2018	Feb	11500
2018	Mar	13000
2018	Apr	14000
2018	May	15000
2018	Jun	16000
2018	Jul	17000
2018	Aug	16000
2018	Sep	15000
2018	Oct	14000
2018	Nov	13000
2018	Dec	12000

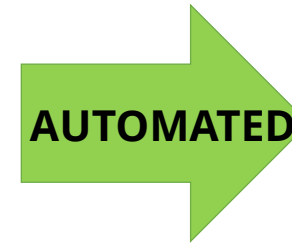
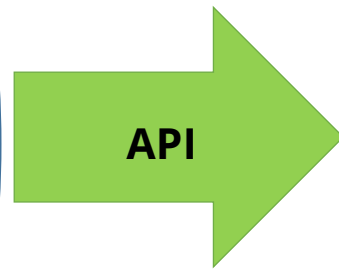
Tariff data



GIS mapping data



- Automated data entry
- Multiple technology optimisation



- Assessments in 30 seconds
- 10 technologies



Renewable energy assessment report



ETP Funded Projects



Heriot Watt University

- Battery Optimisation
- 2016
- Load shifting
- Peak shaving



Napier University

- ASHP Sizing
- Scottish Energy Centre
- 2020
- Identification of constraints
- Financial analysis



Heriot Watt University

- Battery Optimisation
- 2021
- Modelling of sophisticated battery management systems

ASHP OnGen Expert Output

Feasibility Summary



Your site is moderately constrained and further assessment may be required to determine whether this site is suitable to accommodate an air source heat pump.

The main constraints to development are the following:

- Space heating specifications
- Other space heating modes

Show details

Topic	Answer
Situation of the site in relation to a designated area	✓
Proximity to site boundary	—
Building orientation	—
Roof specifications	—
Impact of wind loads	✓
Proximity to residential properties	✓
Fabric efficiency	✓
Space heating specifications	✗
Space heating temperature	✓
Other space heating modes	✗
Hot water requirement	—

Site Summary | Edit Site Details | Questionnaire | Assessment | Download Financial Breakdown

Air Source Heat Results

Summary		CO ₂ Emissions Reduction	
Primary Heating Fuel Displaced Unit Size	Natural Gas 168 kW	Average Annual tCO ₂ saved	53 tCO ₂ e/year
		Percentage CO ₂ reduction	61%
		Percentage Contribution to CO ₂ emissions reduction target	304%

Assumptions

Heat Pump Availability	100%
Efficiency of Boiler Replaced	80%

Generation Potential

All figures here are estimates. Detailed analysis is needed for the technology to be deployed.

Peak Heat Demand	155 kW
Heat Pump Size	168 kW
Heat Generation	255,694 kWh
Percentage of Generation Usable on Site	100%
Annual heat pump electricity usage	64,708 kWh
Annual boiler fuel in	0 kWh

Commercials

Heat Pump Unit Cost	£100,740
Additional cost of installation	£11,193
Total Capital Investment	£111,933
RHI	£0.0000

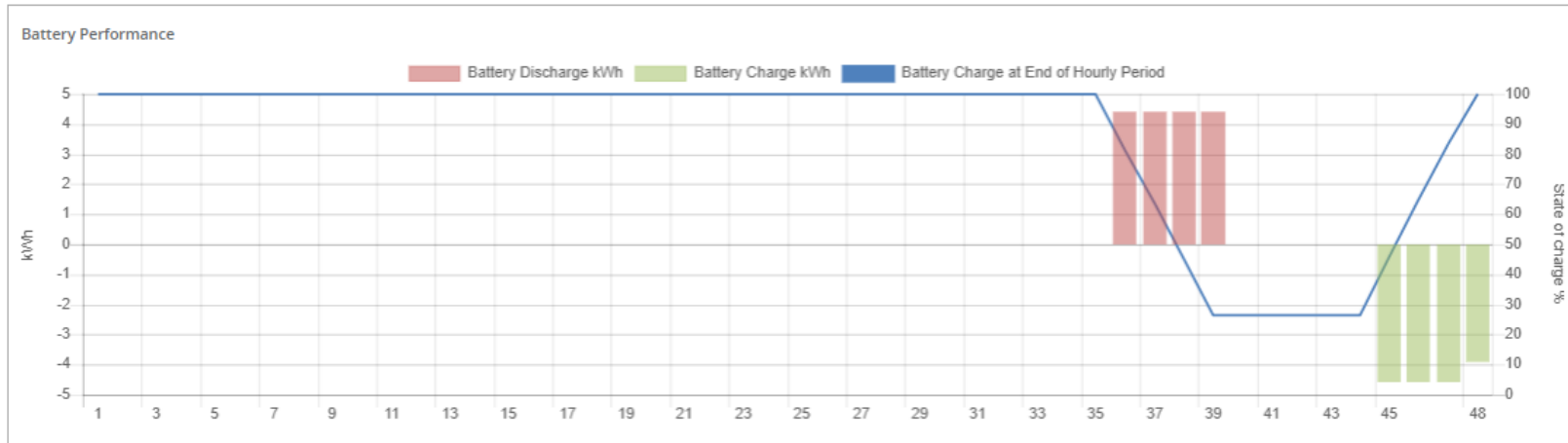
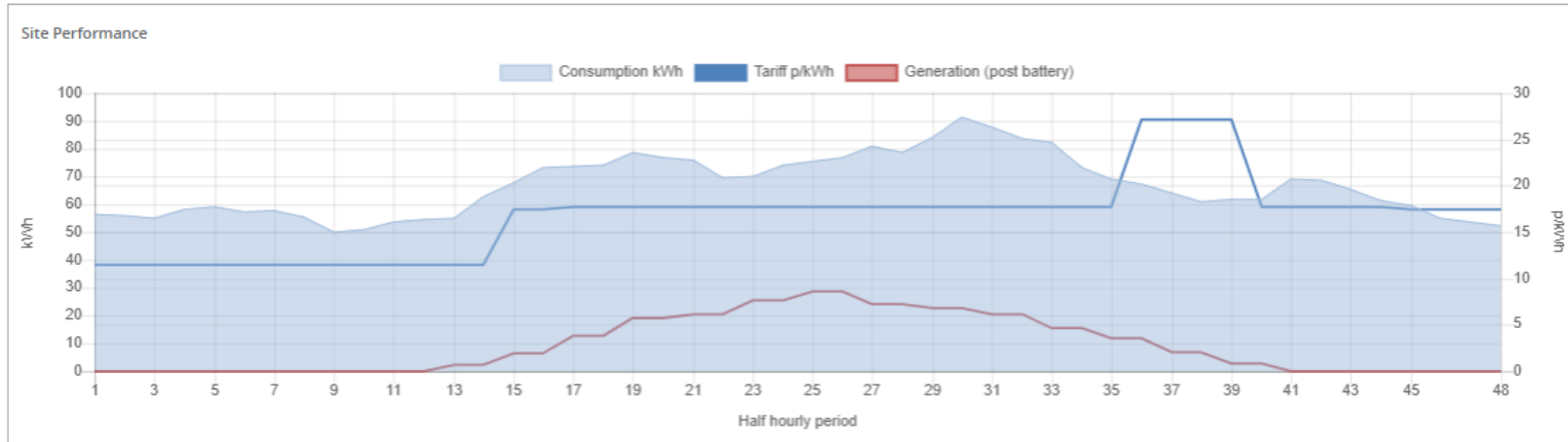
First Year:

RHI Revenue	£0
Value of Fuel Saved	£19,177
Cost of additional electricity to run heat pump	£14,926
Operation and Maintenance	£1,119

Battery OnGen Expert Output

Select Date (DD/MM/YYYY):

18/05/2018



- OnGen Expert algorithms choose correctly sized battery to correlate with generation and demand
- Provides detailed cashflows and reports

Case Study



The outputs from the pilot have been a huge success, with public bodies identifying investable, decarbonisation schemes where they have not had the tools and expertise to do so before. The intelligence delivered from The OnGen Expert means that public money is being maximised in delivering carbon saving schemes and directed in areas that provide maximum financial return. – Paul Taylor, Hub Manager

Phase 1 Case Study

<https://www.neynetzerohub.com/projects-and-events/case-studies/ongen-in-the-north-east/>

Contact Details



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www.ongen.co.uk



@OnGenLtd



Private & Confidential





We are Katrick Technologies

Founded in 2016 to commercialise a decade of research in wave and oscillating energy

We are a green energy IP business

- In a world-first, we designed a disruptive, patented technology to capture and convert energy from waste heat and wind into oscillations, producing profitable zero carbon electricity.
- Our technologies realise two, as yet unrealised and highly profitable, gaps in the market

We deliver profitable solutions utilising licencing agreements with OEMs

- Commercial structure benefits all parties involved, including end-users
- Realises speed to market while enabling global decarbonisation
- Enables us to focus on our core

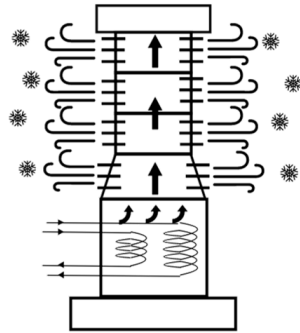


Partnering with

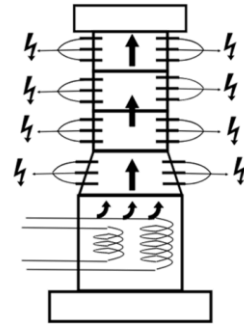


Endless technological opportunities

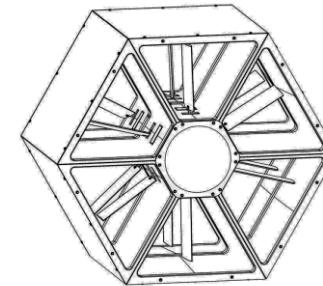
CORE AREAS



Passive Cooling

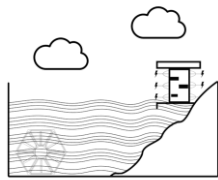


Heat Recovery

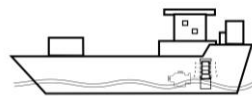


Wind

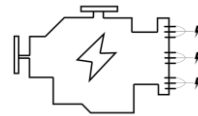
FUTURE PROJECTS



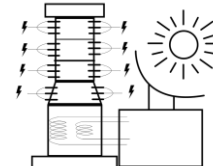
Wave & Tidal



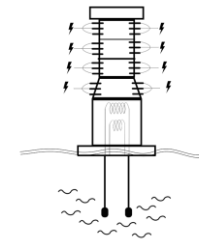
Marine



Engines



Solar Thermal



Geothermal



Aeroengines

Flexible, modular wind panels

- Optimising wind generation
- Highly reliable ground-effect wind generation device
- Uses multiple independent aerofoil fins
- Captures kinetic energy from wind
- Converts to mechanical oscillations, then zero carbon electricity
- Can be used as an auxiliary UPS for data centres
- TRL 3



Flexible



Scalable



Unobtrusive



Small footprint



Cost saving



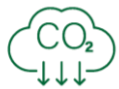
Complementary



Sound-deadening

A world first in passive cooling

- In a world-first we created an innovative new refrigeration system using mechanical oscillations without the need for any additional power
- Passively dissipates unwanted heat, maintaining required cooling temperature
- Being tested & validated at UK data centre, Iomart DC1 in Glasgow
- Initial studies demonstrate our system saves up to 70% of cooling power
- 25 units will service a 5MW data centre, saving up to 2,500 tonnes of CO₂ and 12GWh of electricity p.a.



Carbon Reduction



Cost saving



Re-routing energy



Reduced maintenance



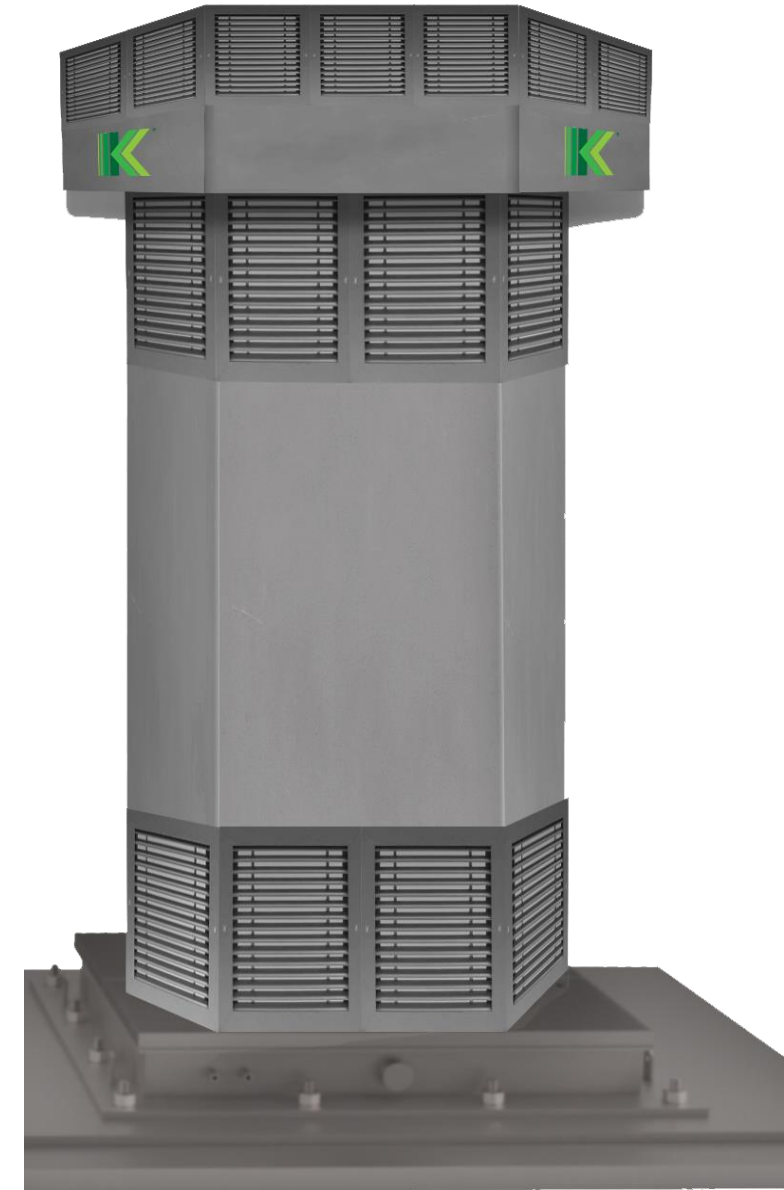
Cost avoidance



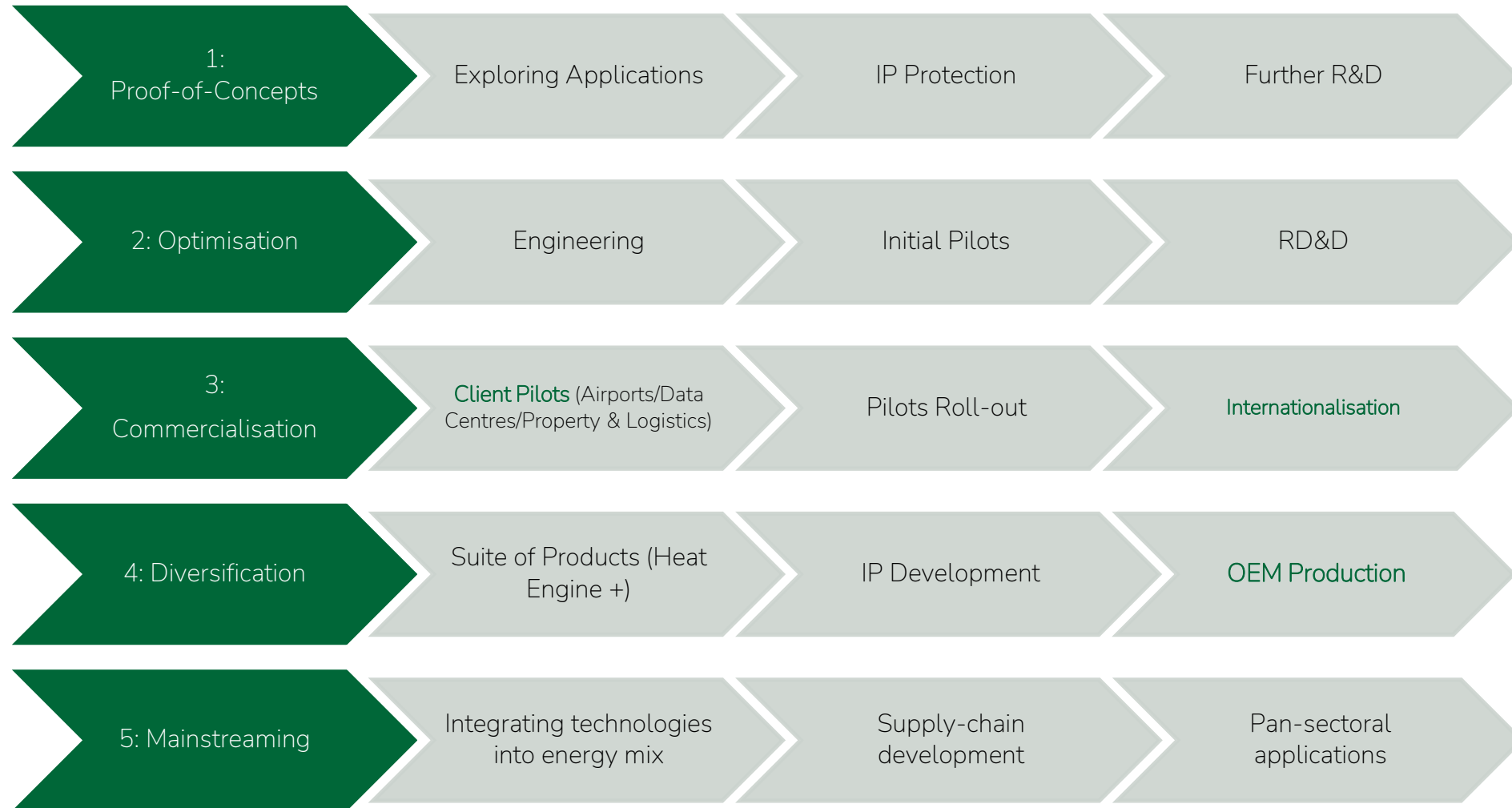
Levy avoidance



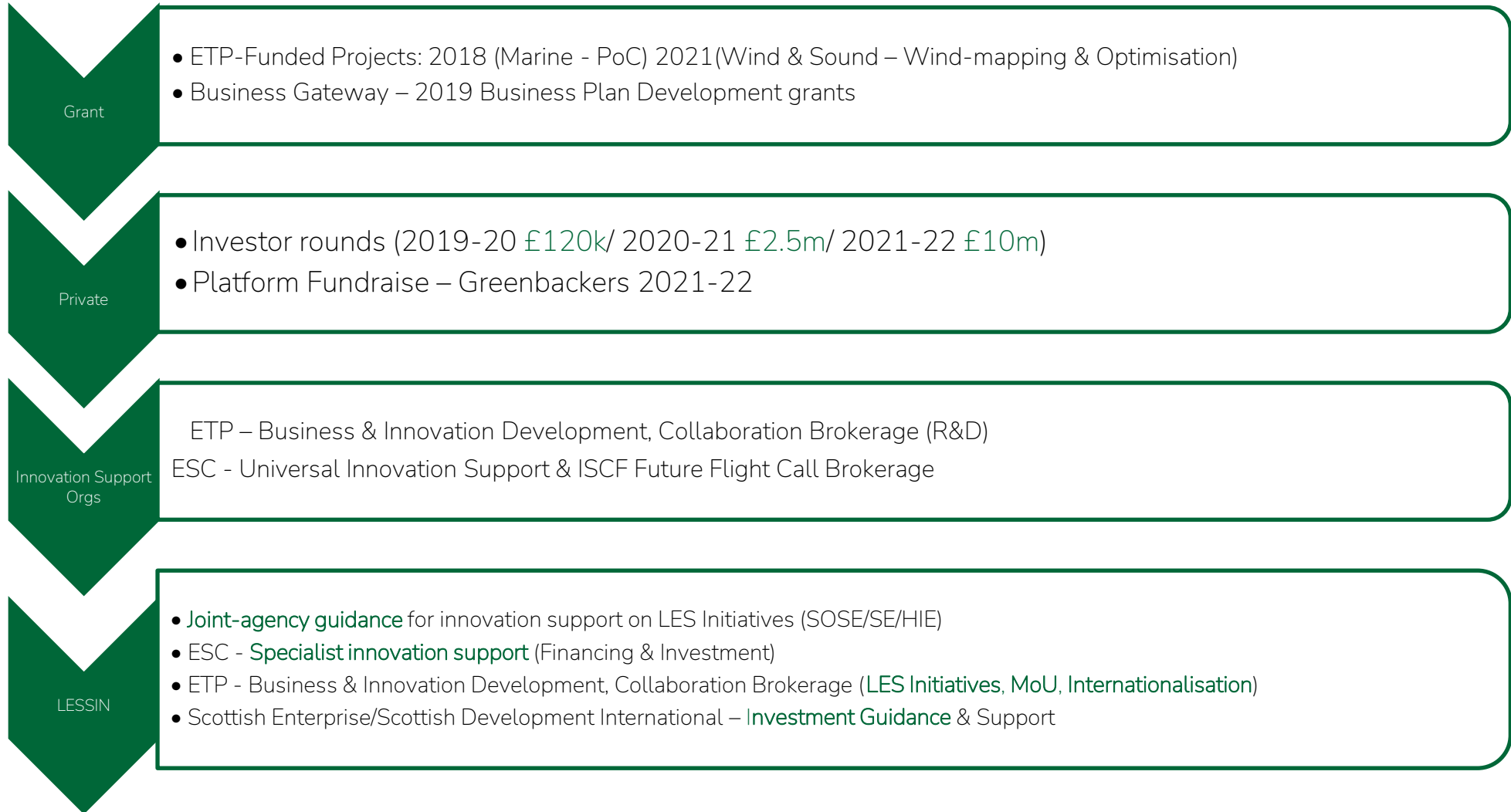
Strong ROI



Current Development Stages



Innovation Support Mix



Market engagement & stimulation

Market Stimulation by Sector

Data Centre



Transportation



Energy Providers



Retail / Construction



Logistics



Government



Universities





Thank You

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