Venturefest East

Matthew Lumsden, CEO
Connected Energy Limited
Summary

- **Energy storage solutions provider** – products, services, expertise and experience
- Manufacturer of a world leading E-STOR energy storage systems.
- Storage systems installed and working since 2014.
- We use 2nd life electric vehicle batteries.
- The E-STOR range is scalable from 60kW – 1MW+
- Full turnkey solutions from feasibility through to operation.
- Cloud based monitoring, management and reporting.
- Meeting the needs of industrial and commercial customers and National Grid
- Fully financed solution available.
Who we are...

- Connected Energy is an award winning UK company that provides world leading energy storage systems and services.
- Dedicated to the design, manufacture and operation of world class energy storage systems.
- A business underpinned by a management team with a diverse set of skills and experience from the automotive and energy sectors.

Hardware, software, design & integration  
Supply chain development  
Sales, operation and support
What we do...

- Provide expert assessment of site data by experienced team.
- Produce feasibility studies demonstrating key revenue streams.
- Develop and manufacture world leading energy storage systems.
- Install, commission and support systems using dedicated professionals.
- Remotely monitor, operate and optimise for best performance.
- Provide access to real time performance data and reports.
Company background

- Researching & developing energy storage opportunities
  - EVEREST £3.7m
  - Internally funded R&D
  - BOSS £1.2m
- Government contracts & grant funding
- Internal funding from consultancy
- Staff investment
- 2 rounds of EIS investment
- Strategic investors
The E-STOR energy storage system

- Installed, operational and proven technology
- Modular, flexible design for low cost scalability.
- E-STOR uses (second life) EV batteries.
- Integrates existing, reliable technologies.
- Operating system monitors performance and optimises system.
- Simple, low cost installation and maintenance.
- Lower cost than equivalent systems.
- Includes variants for niche applications
- Adds sustainability to the EV and energy value chains

The E-STOR range, scalable from 60kW – 1MW+
The energy storage hardware

An E-STOR unit in operation – the grid and solar panels charge the E-STOR and the E-STOR feeds the rapid charger which in turn charges the EV.

E-STOR products based on a common modular control architecture and configured to provide a range of power and energy characteristics. Designed to take advantage of a range of Renault battery types.
Hardware

- Integrates existing, reliable technologies.
- Fully self-contained system.
- Integral environmental control.
- Low maintenance.
- Built in metering and communications.
- Built under licence in UK by Parker SSD.
- Cloud based monitoring and management.
- Minimum site preparation.
Supply chain

- Supply contract with the Renault Europe for low cost second life EV batteries complying with Connected Energy specification.

- Appointed contract assembler – Parker providing competitive, scalable, global production capability

- UK distribution partner (EV charging) - APT – evolt

- Collaborative R&D – EDF, Ricardo, Parker, Renault Jaguar Land Rover, Warwick Manufacturing Group

- Key finance partner
The control and monitoring software

- Operating system enabling: site specific control parameters, operating regimes, performance tracking and multi site aggregation conditions.
- Control and monitoring at local and cloud level
Revenue Streams – Selling an E-STOR

There are multiple revenue streams that can be stacked and realised including:

**Demand Side Management**
- Time of Use management (DUoS)
- Connection charge management (Triad)
- Load shifting to match on-site renewables
- Resilience of supply

**Grid Services**
- Frequency Response
- Capacity Market
- Short Term Operating Reserve (STOR)
- Demand Side Response / Turn Up
Operating an E-STOR

- Configure to specific site conditions and provide optimised control of the E-STOR to improve energy use.
- Directly integrate to an aggregator or Virtual Power Plant to create new revenue streams by providing rapid response to grid conditions.
- Track or directly integrate with a metered source to provide real time grid load/constraint management.
- Provide resilient back up supply.
Service Support Desk

- Monitoring & reporting
  - Performance benchmarking
  - Trend analysis

- Active response
  - Parameter alteration
  - Hardware/software changes
  - Preventative maintenance

- Reactive response
  - Respond to automatic alerts
  - Hardware/software changes
  - Reactive maintenance

- Service response
  - Remote
  - Local
  - Approved, trained, equipped regional support team
  - Client/region/project specific SLAs

- Performance optimisation
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Thank you

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