



Investor Open Day 2017

The Olde House, Cornwall, 25 October 2017

Scott McGregor, Chief Executive Officer

redT energy storage machines

- Develops and Manufactures **Liquid Energy Storage** Machines for **Commercial & Industrial** Applications
- **UK-Based, Public** Company (red:L), Office locations in UK, EU and Africa
- **17 years** of development, now proven technology in the field
- **> 4MWh machines** across UK, EU, Australia & Africa
- **Lowest Cost (<\$500/kWh)** Vanadium Energy Storage Machines available globally.



100% Depth of Discharge



Long Lifespan



Modular & Scalable



Low Levelised Cost of Ownership



Safe



Low Maintenance



Remote Monitoring



Environmentally Friendly

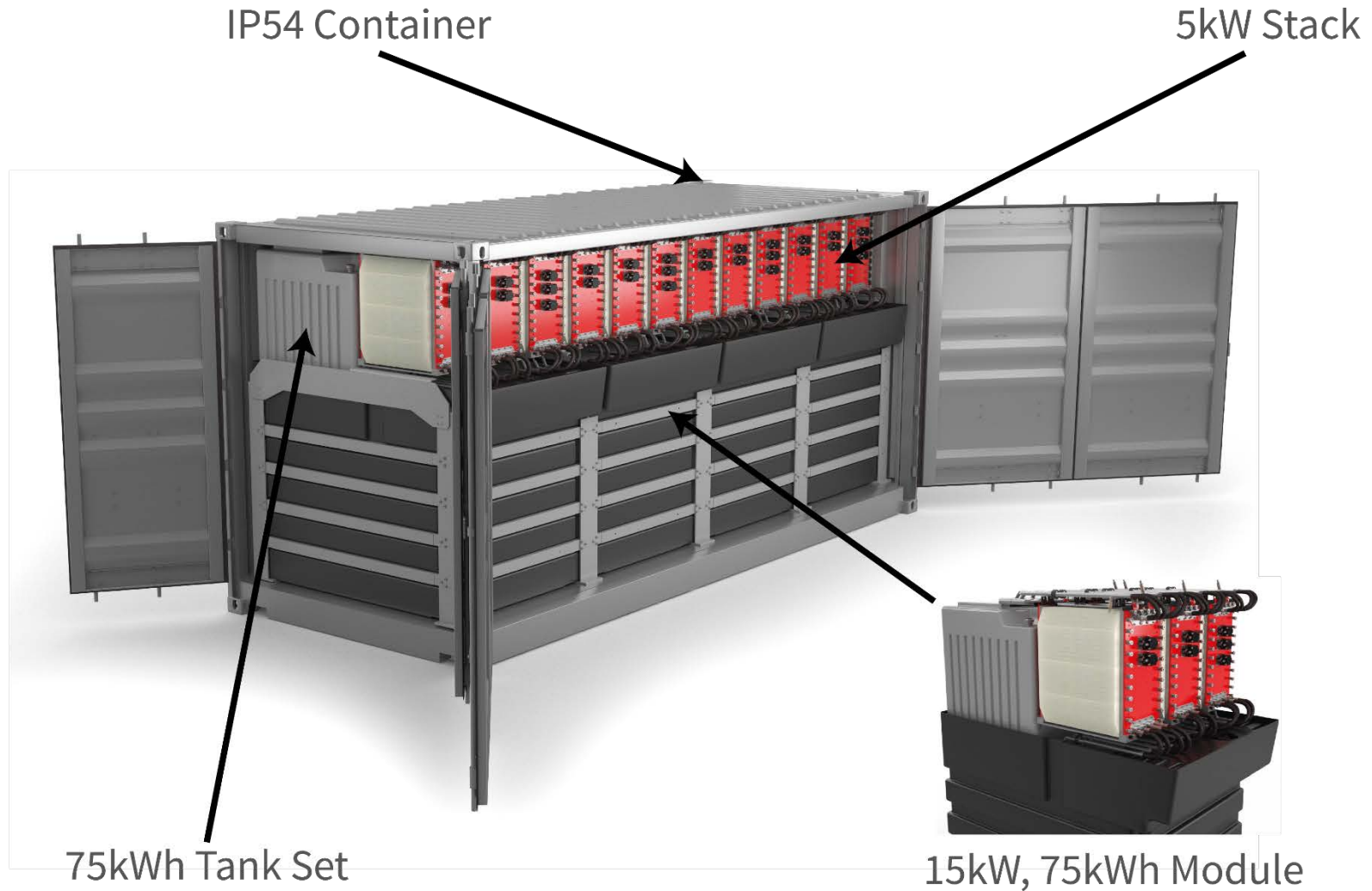
JABIL



Jabil Circuit inc. has approx. x7 the global manufacturing floorspace of Tesla's Gigafactory

redT
energy storage

redT Energy Storage Machine



Changing Perceptions in the Energy Storage Market

- The wider market is only beginning to understand power vs energy from a use case perspective

High Power



Short Duration



High Energy



Long Duration

- Incumbent technologies (Lead, Lithium) are power-centric. Lots of power for a short period of time.
- Flow machines are energy-centric. Provide power over a sustained period in line with your use case

It's a Machine! Not a B*****!

Battery



10-20% Utilisation



Single service

Occasional Managed Usage

Power Focussed

Ideal for:

Frequency Response Tenders – Good return in short run, but not sustainable long term

Machine



60-100% Utilisation



Multiple, Stacked Services

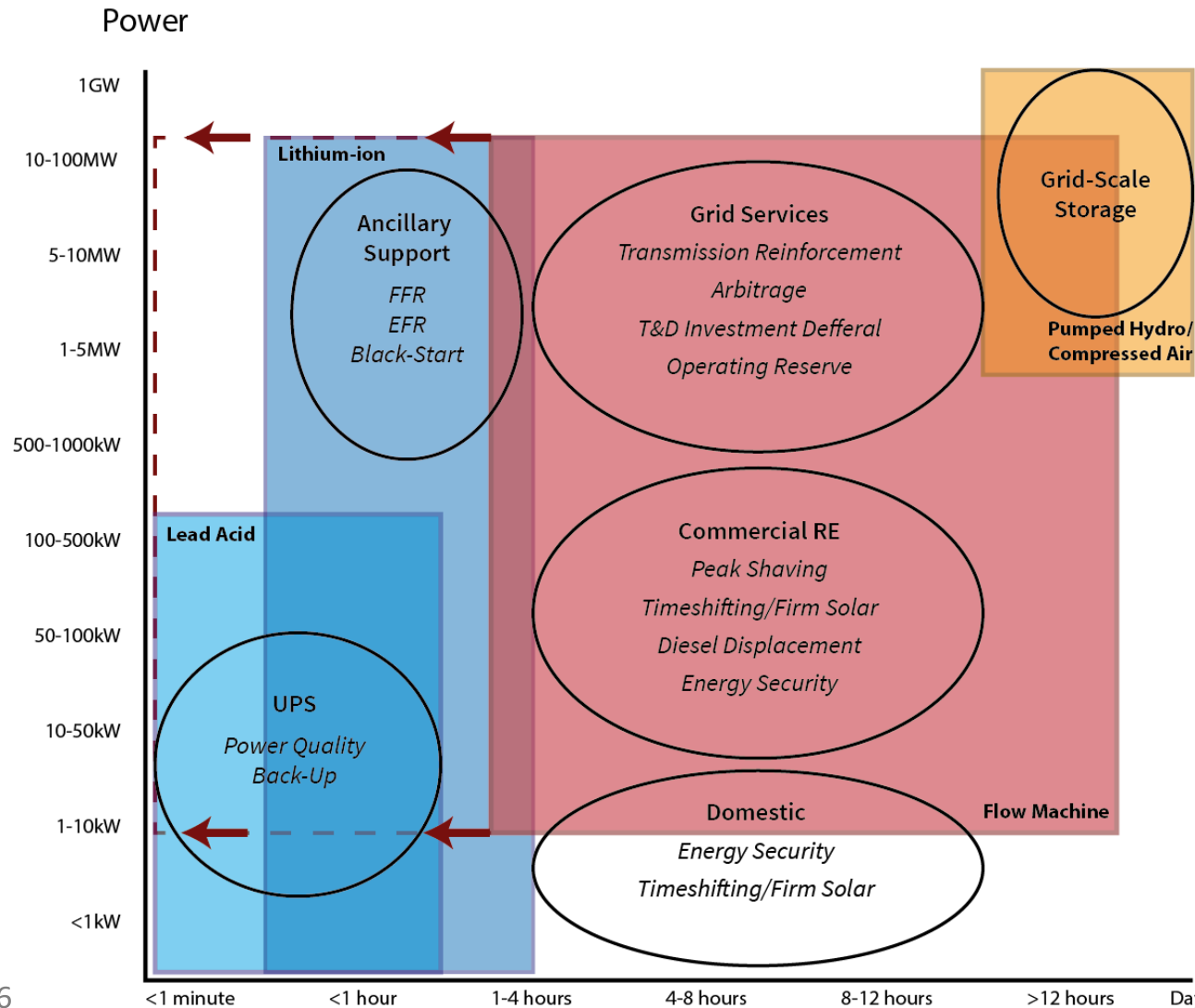
Daily, Heavy Usage

Energy-Focussed

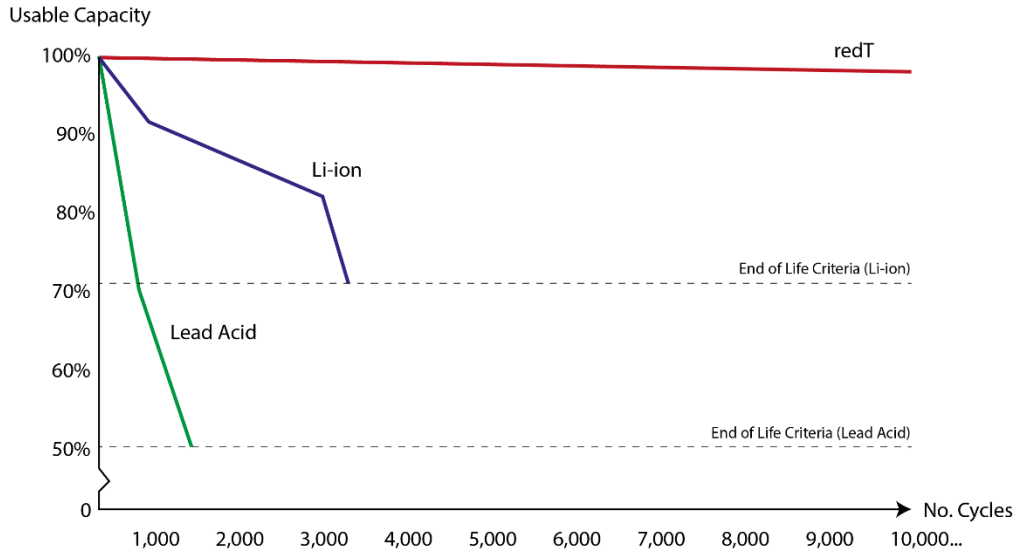
Ideal for:

Multiple, stacked services – Financeable, Infrastructure Asset with good long term returns

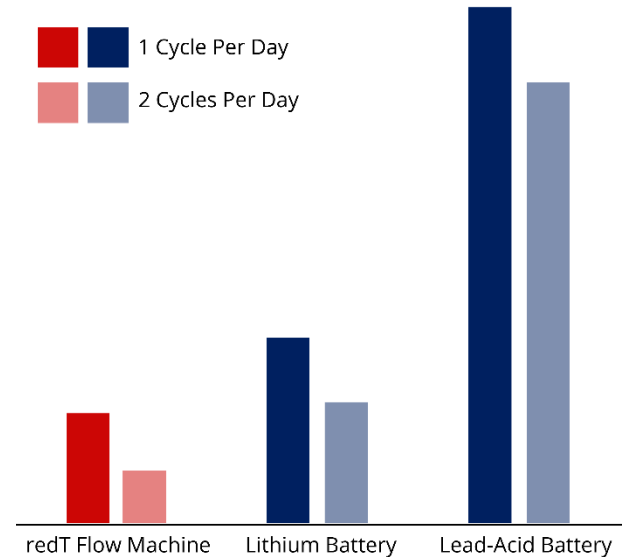
The Energy Storage Market



Non-Degrading Energy Storage

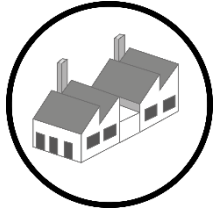


Levelised Cost of Storage (\$/kWh)

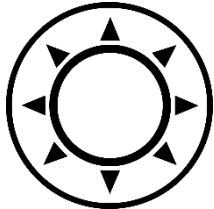


- Technology does not degrade like conventional lithium or lead-acid batteries
- Machine can be cycled heavily every day without significant capacity fade
- As such, redT machines operate for >25 years – matching the life of your project
- This gives market-leading LCOS results for energy infrastructure

Grid Connected Renewables: C&I Base Case



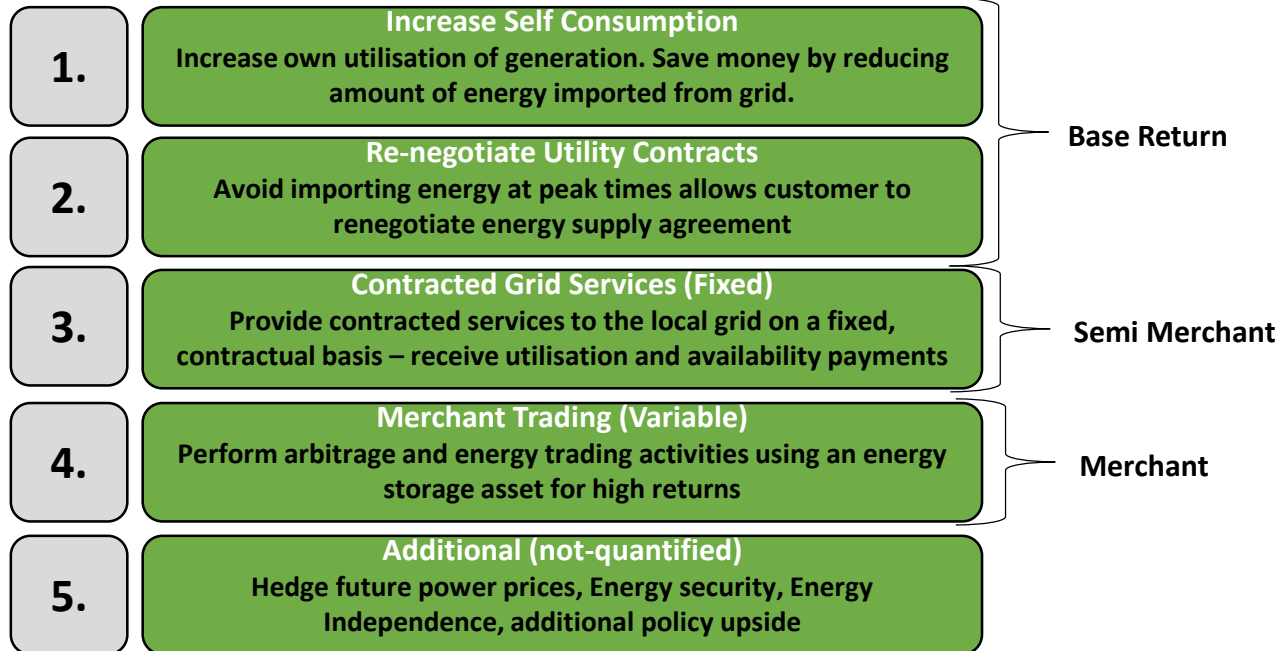
UK C&I Min. 100kW
Peak Demand



Min. 150kWp Solar
Grid-Connected



60kW, 300kWh
Machine



Key Project Financials

7-10 Years

Project
Payback

10-17%

Internal Rate of Return
(Unlevered)

54MWh/Year

Additional PV
Generation Utilised

Demand for redT in the market

There is strong market demand now.....



Grid Connected C&I – Renewables + Storage – >10% IRR

Certain geographies now economic; UK, Australia, Germany, USA ...Time-shifting for self consumption, contracted services and merchant revenues

Market Size

\$65-103bn



Off-Grid & Weak Grid – ~30% IRR , 3-5 year payback

Diesel energy production cost \$0.50 to \$1 per kWh. Solar desired in off-grid, doesn't work without industrial heavy cycling storage, solar + flow machine cost \$0.20-0.30 per kWh (figures indicative of South African market)

>\$27bn



Renewables + Storage Grid Projects – Private wire PPA

Decentralised, large scale renewables projects (Solar, Wind, Tidal etc.) supported by large scale, flexible energy storage platform asset.

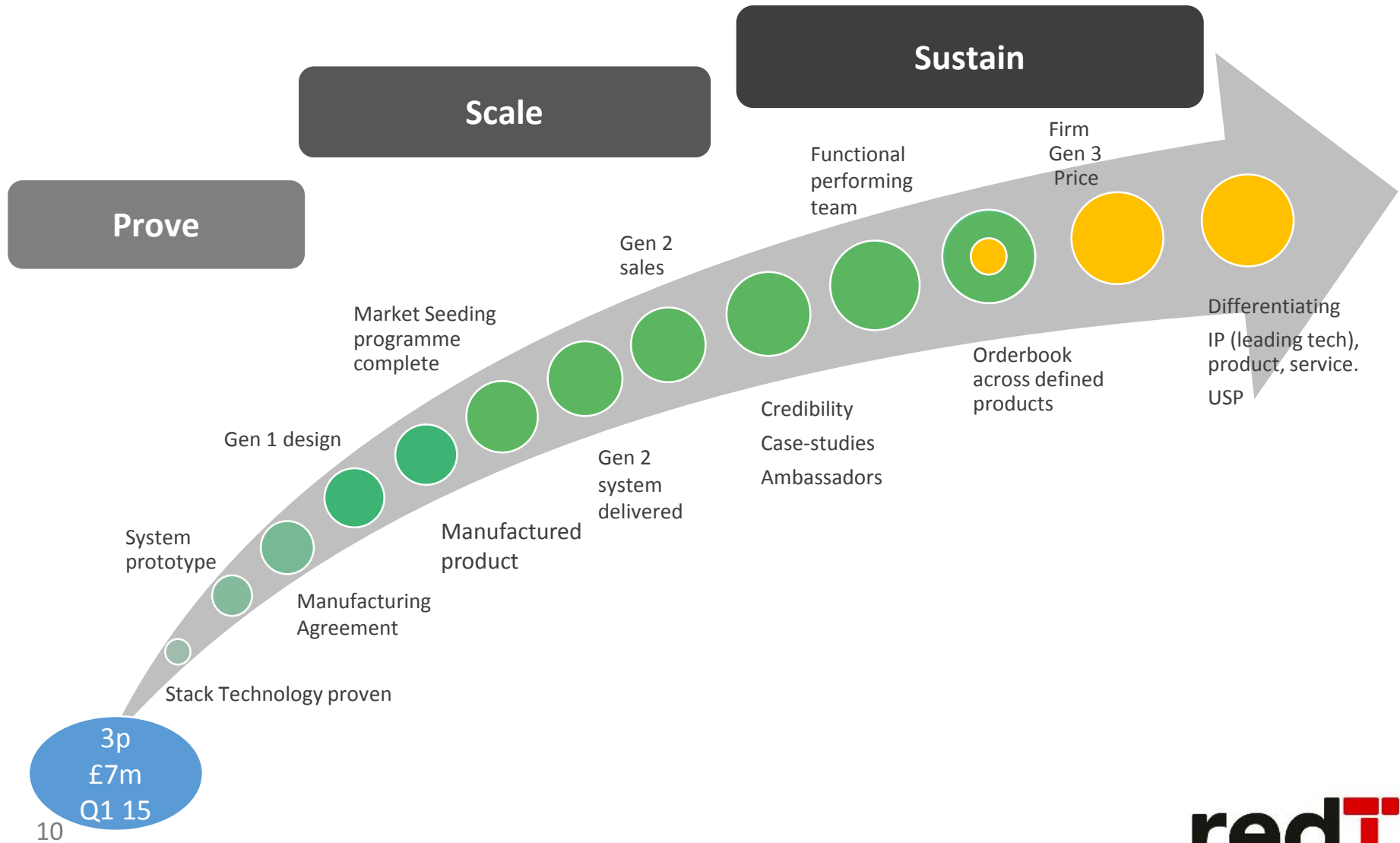
\$32-50bn
(US Market only)



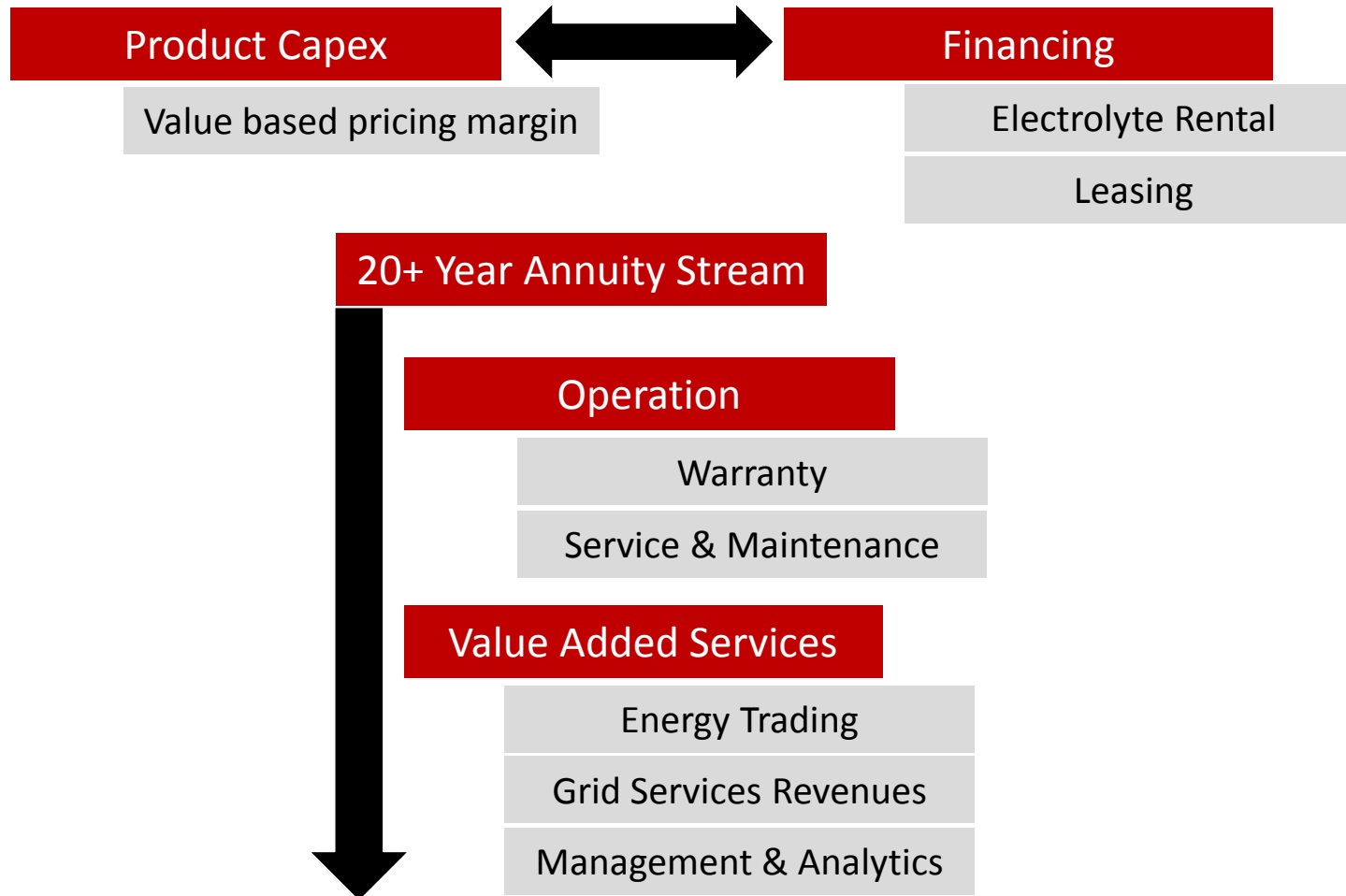
Large Scale Grid Projects – Trading and Grid balancing

For long duration grid services at national / regional level (>3hours) as base case, then can perform all grid services at no incremental cost, including energy trading. Policy to price services (not subsidies). Works now in Germany & USA, UK viable in near-term

Sustainable Equity Value



redT Revenue Business Model



Recent Achievements

- **14 Unit Order from Botswana based customer**
- **1st Vanadium-Lithium Hybrid 1MWh System sold into Australian Market**
- **Expansion into new markets through strategic distribution partners 12 Units and 300 unit pipeline – engaging competitor's pipelines**
- **Multiple unit orders within the UK and EU**
- **Team Expansion +97% y-o-y inc. Senior Hires from key competitors**
- **Diversified manufacturing – small and large volume production**
- **Launched Centrica – Cornwall 1MWh flagship project**

Commercial Update

	September 2017	April 2017	% Change
Production & Deployment	16 Units	9 Units	+78%
Orders	16 Units (+ 12 Distributor Committed)	5 Units	+220% (+ 12 units committed)
Final Stage Customer Selection for 2018 delivery	~€16.5m (205 Units)	~€6.5m (101 Units)	+154%
Active Customer Pipeline	~€323m	~€246m	+32%

The Olde House – 1MWh Project

Case Study: The Olde House, Cornwall

1822% Increase in Utilisation of On-Site Generation

34% Reduction in Total Imported Electricity

10% Internal Rate of Return (IRR) (Unlevered)

Site Details



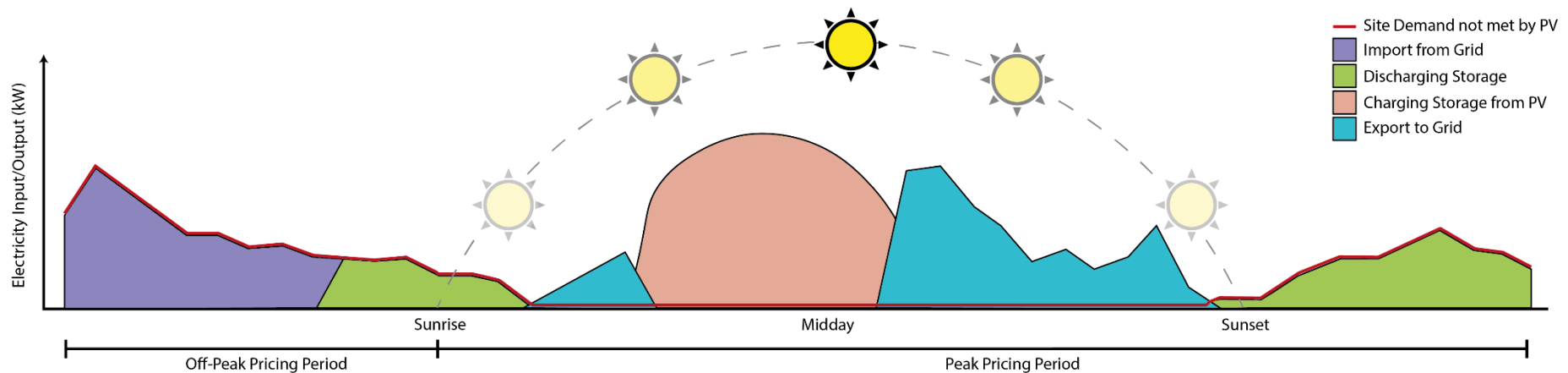
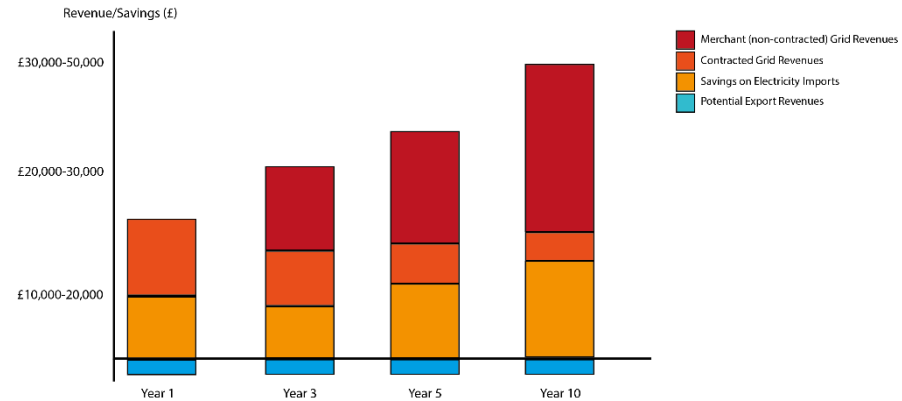
600 Acre Farm & Holiday Retreat, Cornwall, UK
Peak Demand: 130kW, Average Demand: 30kW



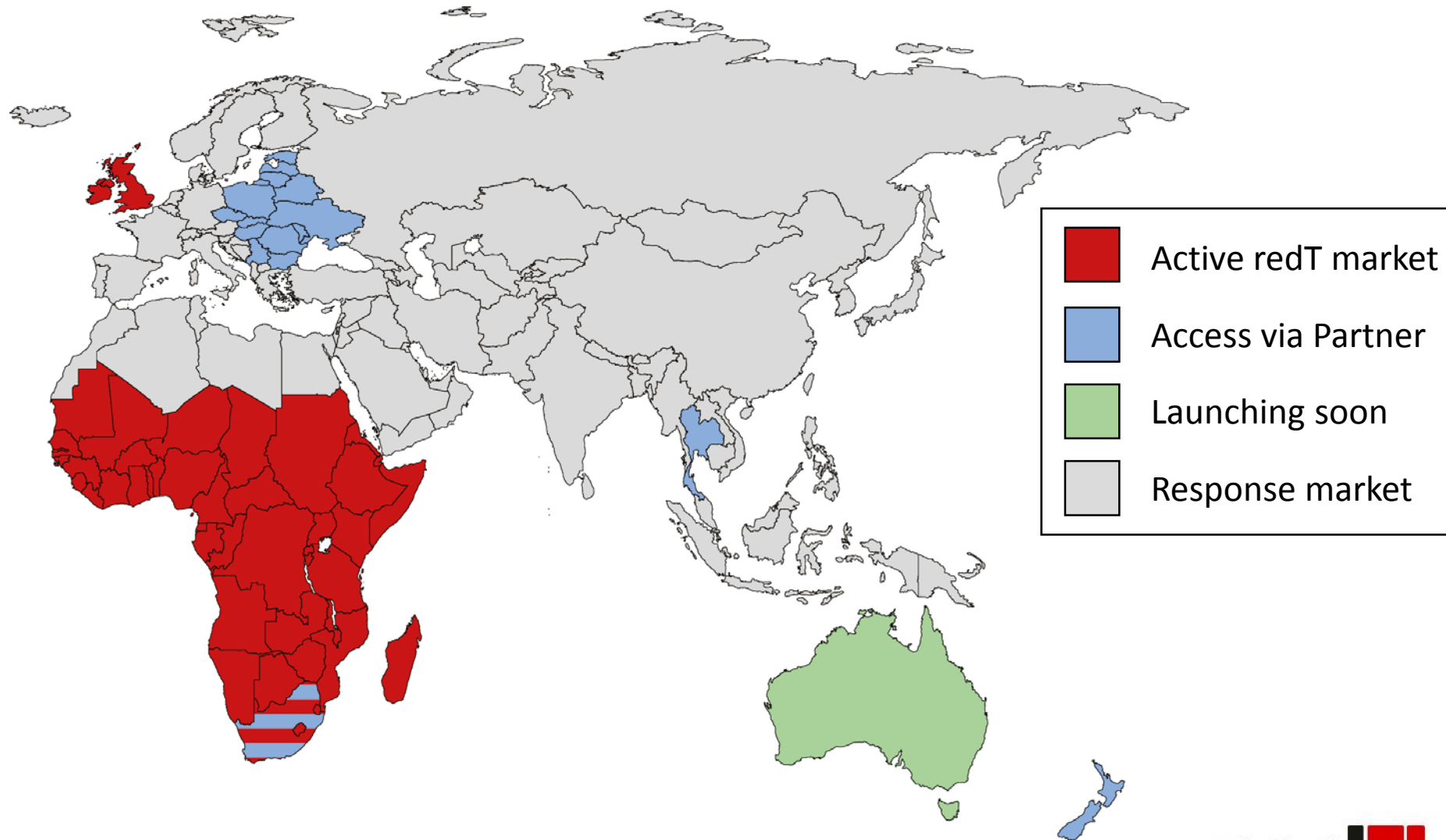
350kWp Solar Panels (Grid-Connected)



90kW, 1,080kWh redT energy storage system



Expansion into New Markets



redT – Business Outlook

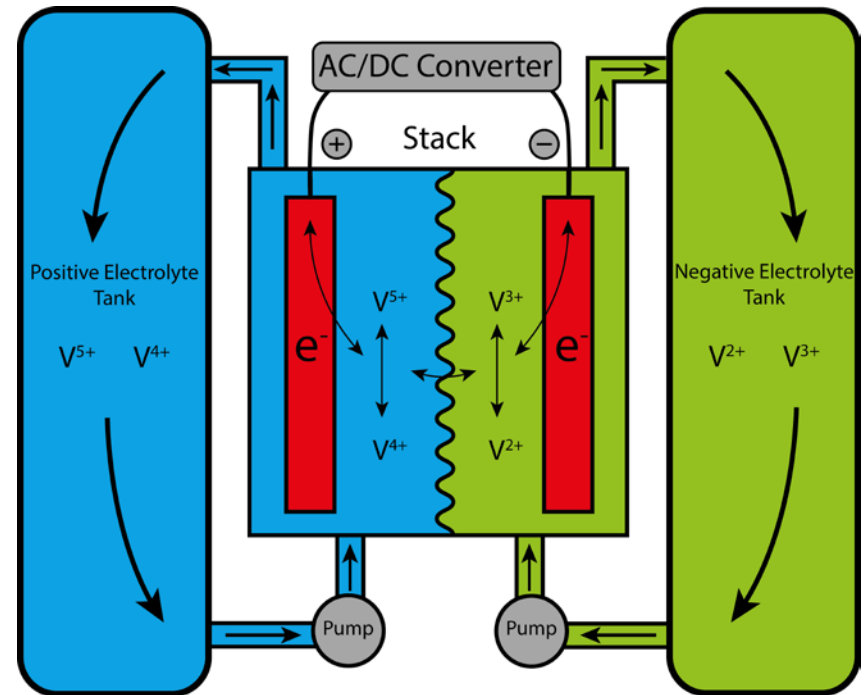
- Focussed on **implementation and deployment** of key customer sites (Olde House, RNLI etc.)
- Final stage of **redT team build-out**
- Key segments & **product differentiation**
- **Building orderbook** for 2018
- **Gen 3 development**, cost and specifications

Appendix

Liquid Energy Storage

- Conventional batteries have fixed power and energy locked together in the cell – redT energy storage machines are modular and decouple power from energy – sized to your exact needs
- Our energy storage machines use liquid electrolyte contained in tanks outside the stack and pumped through it – like a car engine and fuel tank – albeit, with fuel that does not degrade or run out.
- Long duration storage, with 100% depth of discharge functionality that doesn't deteriorate over time

[VIDEO: How redT's Technology Works](#)



Flow vs Conventional

redT Energy Storage Machine

Industrial-Scale, Medium & Long Duration Stationary Energy Storage Applications

Up to 25 year life – Low Levelised Cost of Storage (LCOS)

100% Depth of Discharge without Degradation

Safe – No Risk of Thermal Runaway

Charge is retained indefinitely with negligible self-discharge over time

Electrolyte is 100% reusable and can be reused over and over again

Power and Energy requirements can be sized independently for best fit

Optimal Performance with daily usage, coupled with renewables

Conventional Batteries (e.g. Lithium, Saltwater, Lead)

Short Duration, Residential & Small Scale Applications

Deteriorates with every cycle, need to replace after $\approx 5,000$ cycles @ 50% discharge

Discharge beyond 30-50% causes damage, requiring systems to be oversized

Risk of Thermal runaway, requiring safety systems to be installed

Fully Charged systems will self-discharge over time

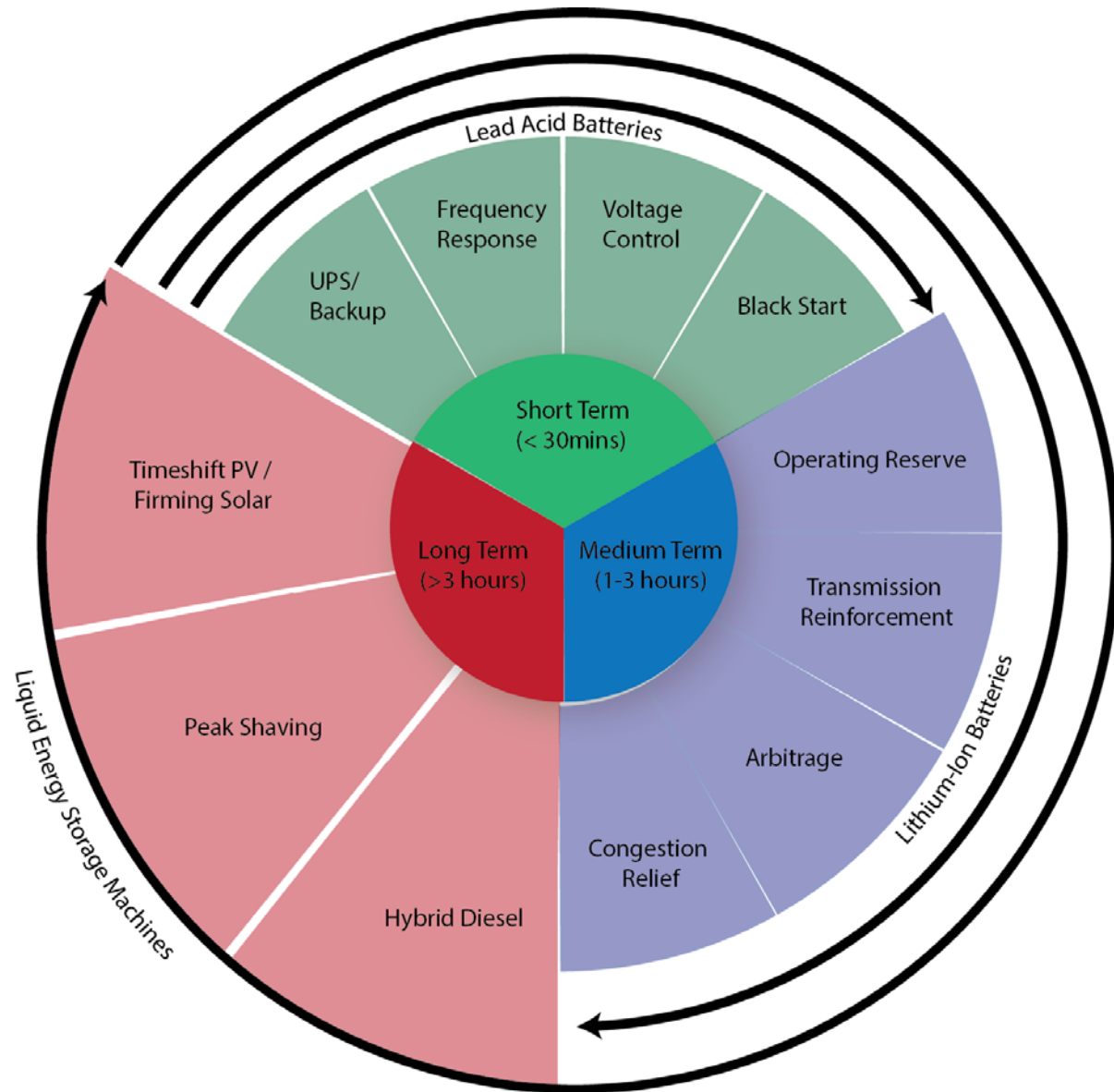
Lithium-Ion systems are not widely recycled & must be disposed of safely

Power and Energy Components cannot be separated

Most effective for occasional use and back-up functions

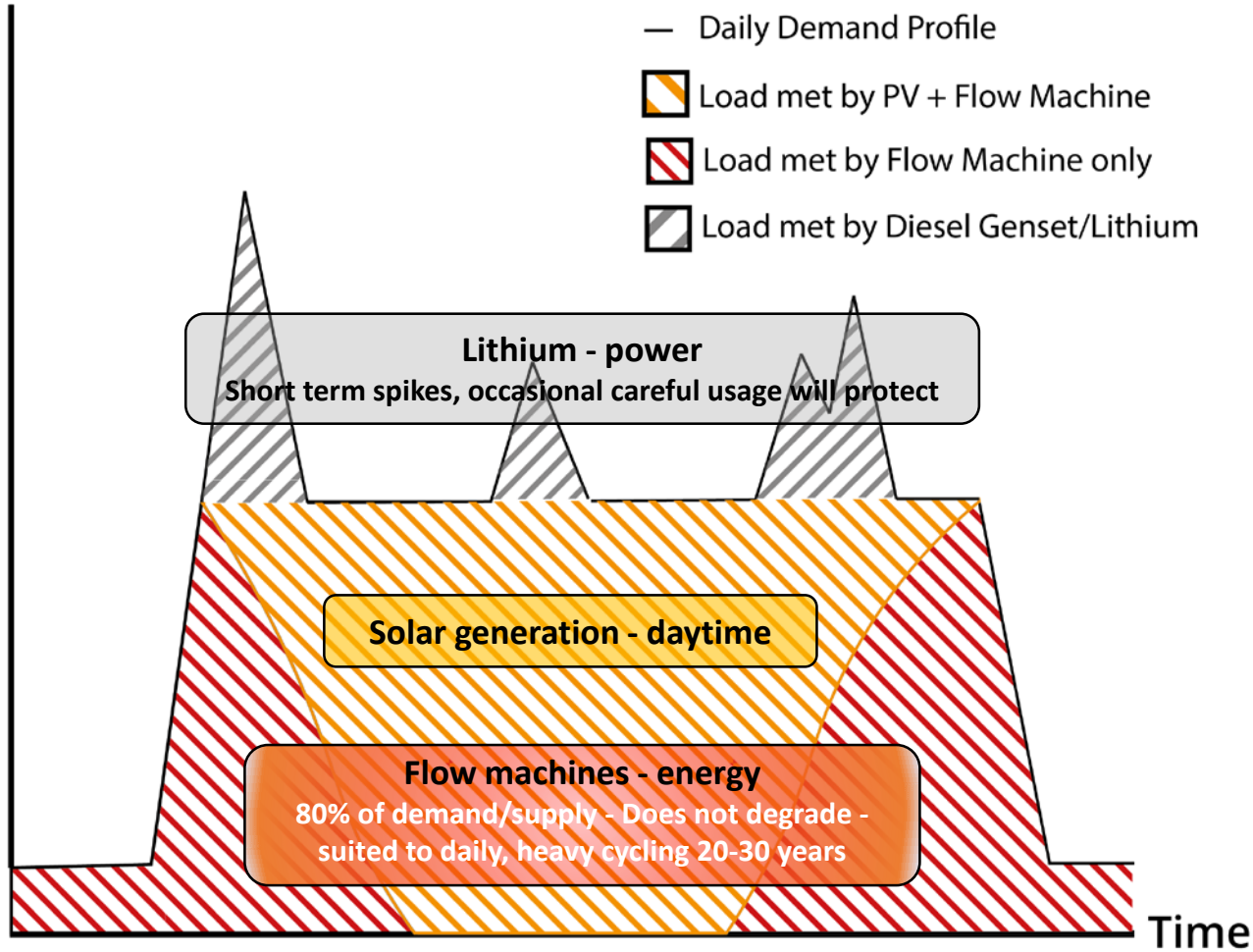
High System Utilisation

- Different technologies are better suited for providing certain services
- **Lead Acid** – Short term
- **Lithium ion** – Short/Medium term
- **Flow Machine** – Long Term + Additional Short and medium term services



Hybrid Energy Storage

Demand



H1 2017 Financial Highlights

Financial results for the group in **H1 2017** were in line with overall management expectations

- **€13.2m** in available cash (FY 2016: €2.8m)
 - Loans and borrowings **€Nil** (FY 2016: €Nil)
 - Revenue for the period **€4.5m** (H1 2016: €4.5m) (incorporating Camco activity)
 - EBITDA loss for the period **€3.2m** (H1 2016: loss €2.2m)
-
- **redT business** – reflective of the strategic investment and continued growth of the business
 - **Camco business** – comprising the legacy business operations of Africa, US and Carbon – continues producing positive contributions to the Group



redT 15-240 units being tested at PNDC facility, Scotland



redT 5-40 units at customer project in Johannesburg, South Africa



redT 15-75 Machine being prepared for shipping to
Johannesburg, South Africa



Internal view of redT 15-75 machine performing a
charge/discharge cycle



redT 15-75 on site in South Africa



Siting and commissioning of redT machine



redT's 1MWh site at The Olde House