

Half Year Results to September 2016

29 November 2016



Highlights

Strategy

- Near term focus to monetise V-Charge and KERS

V-Charge

- Significant licence opportunity with strong OEM / Tier 1 interest

KERS

- On track to secure initial licence in off-highway market

Financial

- Continuing reduction in cash burn



Flybrid Kinetic Energy Recovery Systems

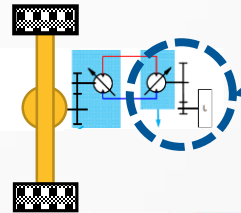
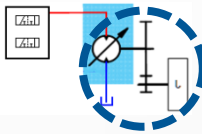


H-ERS Product (Hydraulically connected)

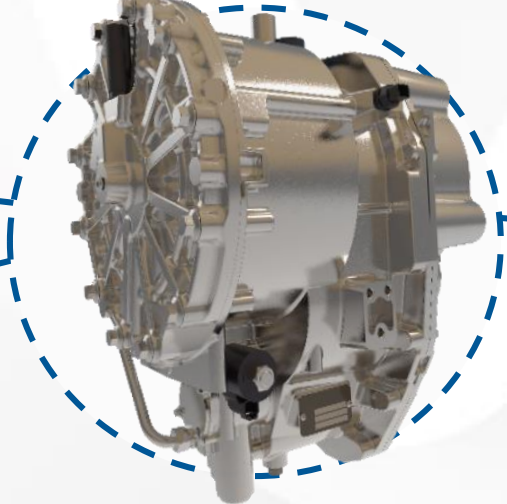
Production Design Complete



Excavators



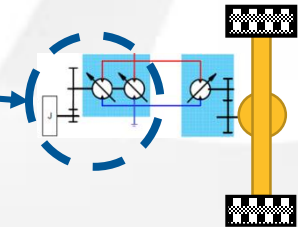
Wheeled Loader & LHD



Modular system across multiple machine types



Reach Stacker



Heavy Forklift

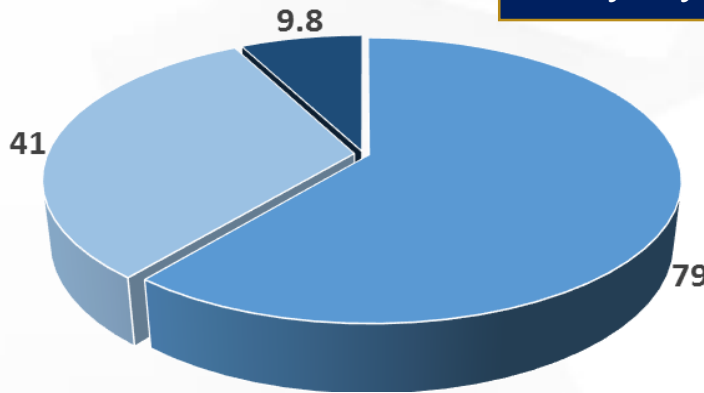


H-ERS Market Potential ~90,000 units pa

2015 Market Volumes 000s

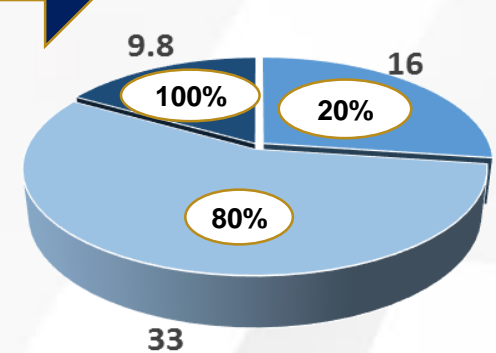
Duty Cycle/Application

x% Addressable share

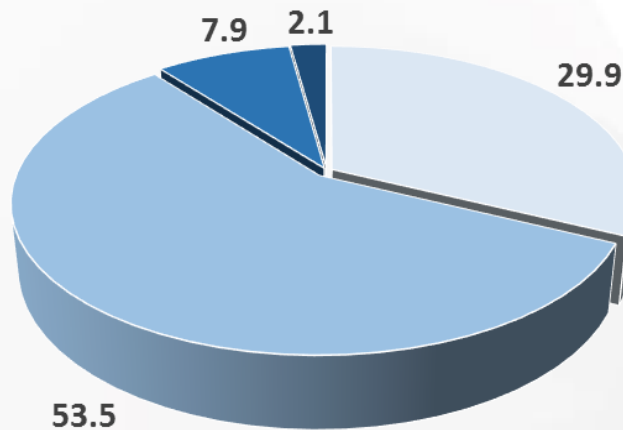


Global Excavator Market

- 20-30T
- 30-45T
- 45T+

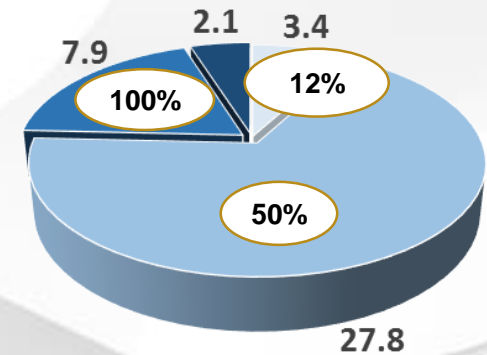


Addressable Excavator Market



Global Wheeled Loader Market

- 75 - 130 kW
- 130 - 225 kW
- 225 - 560 kW
- >560kW



Addressable Wheeled Loader Market



Flywheel Assembly Manufacturing

- In-house flywheel assembly
- Low cost forged flywheels successfully completed full life durability testing
- Working with supply chain to validate further cost down opportunities (e.g. cheaper materials and lower cost processes)
- Underpins value of KERS licences, offers OEMs de-risked technology and volume-capable source of low cost solution with rapid paybacks
- Adds significant business unit profit stream in addition to licensing revenues





Off-Highway Progress

- **ETI (Energies Technologies Institute) funded Project:**
 - Off and on highway truck demonstrator
 - High power KERS, integrated into machine drivetrain
 - Started H1 2016
- **APC (Advanced Propulsion Centre) funded Project:**
 - Caterpillar selected Torotrak ERS technology as best in class
 - Expected to start December 2016
- **H-ERS Commercialisation**
 - H-ERS – trials H2 2017, launch H2 2018
 - H-ERS – working to secure Tier 1 distribution
 - First licence – target in FY16



V-Charge Variable Supercharging



V-Charge Value Proposition

OEMs

- **On-cost € / % FE is lower** than competing technologies
- **Supports rightsizing** via alternative combustion cycles like Miller
- **Reduces transient NO_x** in diesel engine applications which can help to maintain Diesel engine market share (major CO2 benefit)
- **Supports downsizing**, enabling a smaller engine to remain efficient in real-world driving

Tier 1s

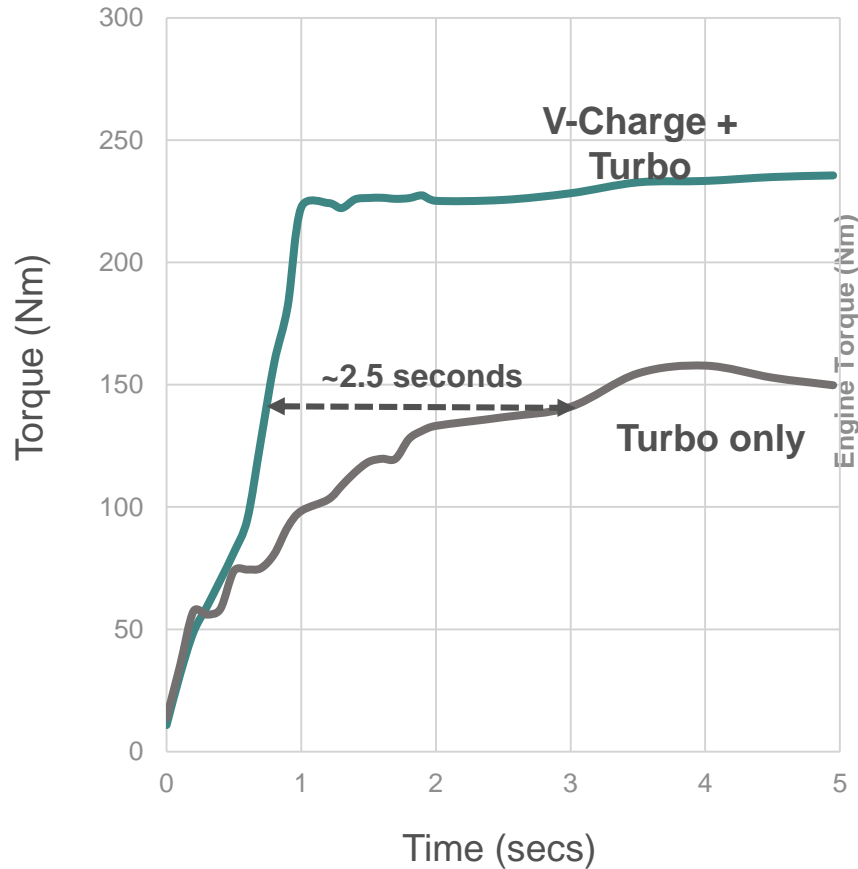
- **Large market** (~45m engines pa addressable market in 2025)
- **Unique market position** with a highly differentiated product
- **High margin potential** due to unique technology, low cost / %FE and strong IP position
- **Proven technology**, close to market launch in 2020/21

V-Charge is a compelling investment opportunity

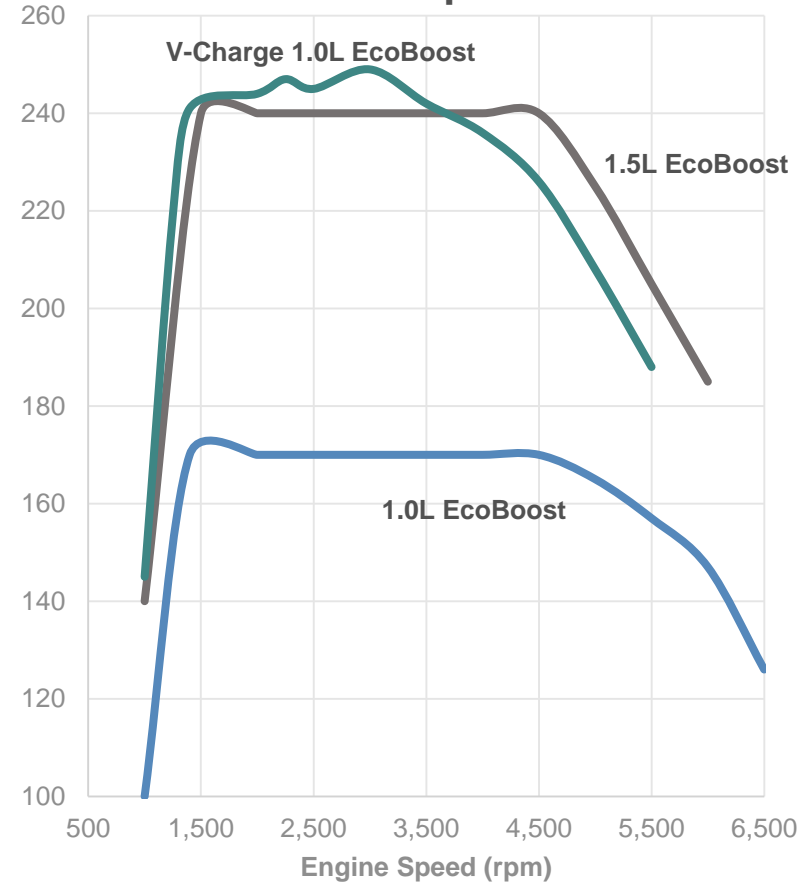


V-Charge Proven Performance Advantage

Transient Response – no turbo-lag



40% Greater Torque



V-Charge delivers more torque and power without increasing emissions or compromising driveability



OEM & Tier 1 Feedback from Test Drives

"V-Charge behaves very well ... Torque increase at low speed is impressive!"

"It feels like a diesel at the low end and a gasoline at the high end"

"We will not switch to a 48V architecture unless it offers the best cost vs, benefit ratio for FE improvement ... a system like V-Charge is very interesting to us"

12 OEM & 6 Tier 1 test drives completed to date

"V-Charge car drives as expected from looking at the torque curves. Great job!"

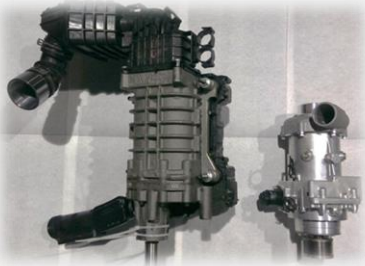
"The tip-in response is significantly better than the Ricardo Hyboost demonstrator"

"Of course, everyone is working on Miller now"

"Wow! Impressive response"



V-Charge vs Principal Competitors

Mechanical		Electrical	
V-Charge addresses failings of traditional mechanical superchargers		V-Charge more capable than eBoosters	
Size and weight	5.9kg vs ~10kg 	Permanent Power vs Transient only	eBooster unusable after 0.5 to 2 minutes because battery system cannot maintain power
Noise	97% quieter	Hence allows downsizing	V-Charge allows ~40% torque increase. Not practical with eBoost
No clutch	Better FE and/or transient response speed. Lower cost	More Powerful	Up to 17 kW Peak Power Vs 2.4kW in 12V or 6.2kW in 48V passenger cars

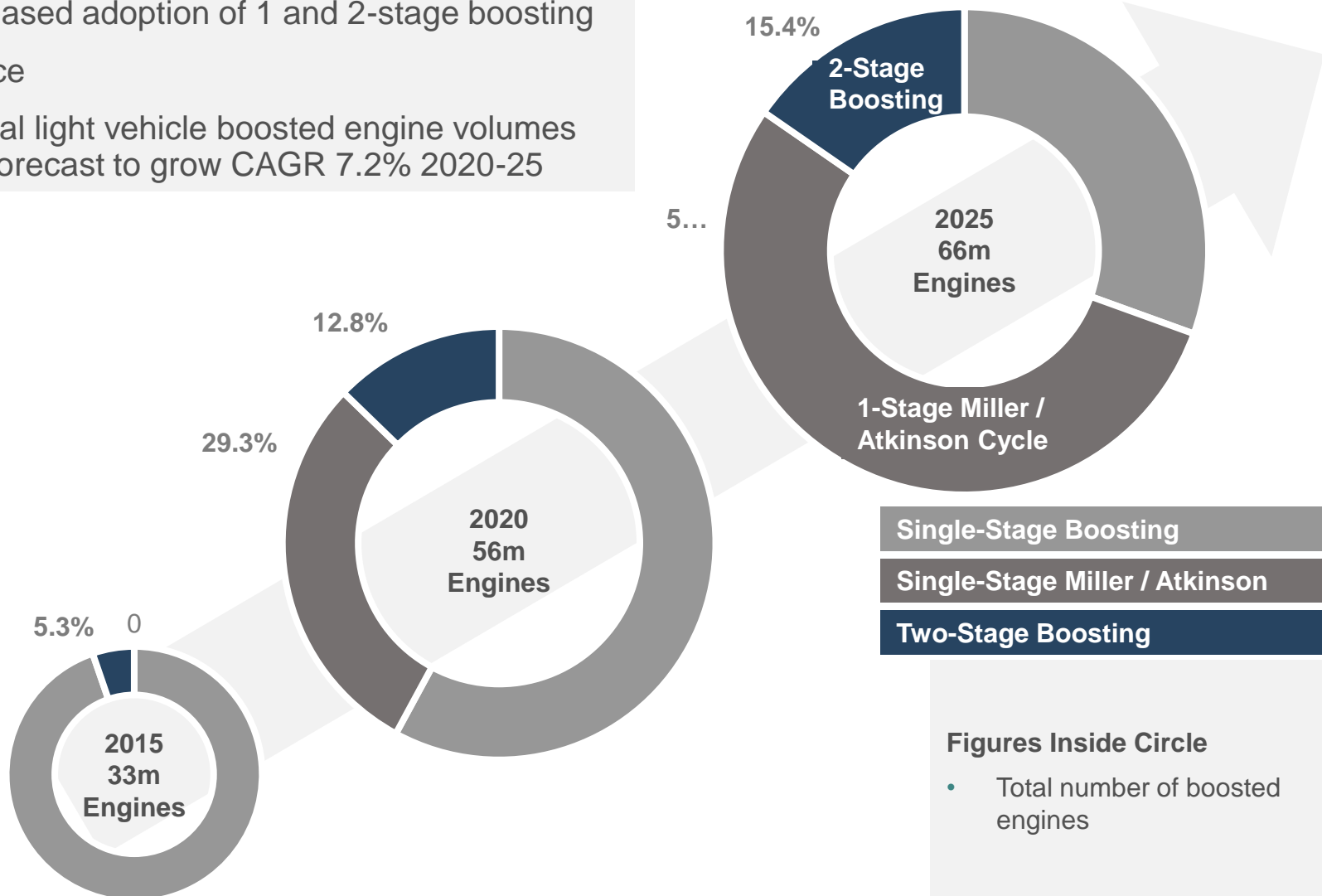


Boosting Market is growing rapidly

OEMs require more from engines - requires increased adoption of 1 and 2-stage boosting

Hence

Global light vehicle boosted engine volumes are forecast to grow CAGR 7.2% 2020-25



- Single-Stage Boosting
- Single-Stage Miller / Atkinson
- Two-Stage Boosting

Figures Inside Circle

- Total number of boosted engines

Source: Management estimates



V-Charge High Value Licence Opportunity

V-Charge Product

- Proven technology
- More power & torque
- Emissions improved, especially diesel
- Lowest cost / %FE

Significant Licence Value

- High growth market opportunity (~45m boosted engines by 2025)
- Strong competitive advantage -> high market share
- High level of OEM interest
- High growth, high margin product

Process underway to secure V-Charge licensing

Financial and Conclusions

Financial Results

£m	H1 2016/17	H1 2015/16
Revenue	0.9	1.2
Gross margin	0.4	0.6
Cash operating costs (net of grants)	(3.1)	(3.5)
Adjusted operating loss	(3.3)	(3.3)
Loss after tax	(3.5)	(9.4)
Equity free cash outflow¹	(3.4)	(4.6)
Closing cash - (gross of £1.8m 5 year loan)	7.9	14.4

- Lower H1 revenue reflects focus on licensing related business development
 - Targeting increased revenues in H2
- Cash operating costs down by £0.4m (11%)
- Adjusted operating loss – lower revenue offset by lower operating costs
- 26% improvement in equity free cash outflow, driven by cash OpEx reductions
- Closing cash in line with expectations; targeting significantly lower H2 cash burn

¹ Net decrease in cash and cash equivalents excluding proceeds from share issue & repayment of borrowings

Summary – significant progress

Significant progress achieved

- V-Charge performance on-engine exceeded OEM/Tier targets
- Successful demonstration of V-Charge Ford Focus, generating strong commercial interest
- Secured APC-funded KERS programme with Caterpillar
- Reducing cash burn

Key focus for next 6 months - licensing

- Complete successful demonstration of Ford S-MAX
- Secure global licence(s) for V-Charge in passenger cars
- Secure first licence for KERS in off-highway
- Develop commercial interest in ERS to support launch from 2018
- Commence production of low cost flywheels supporting ERS validation

Thank you

