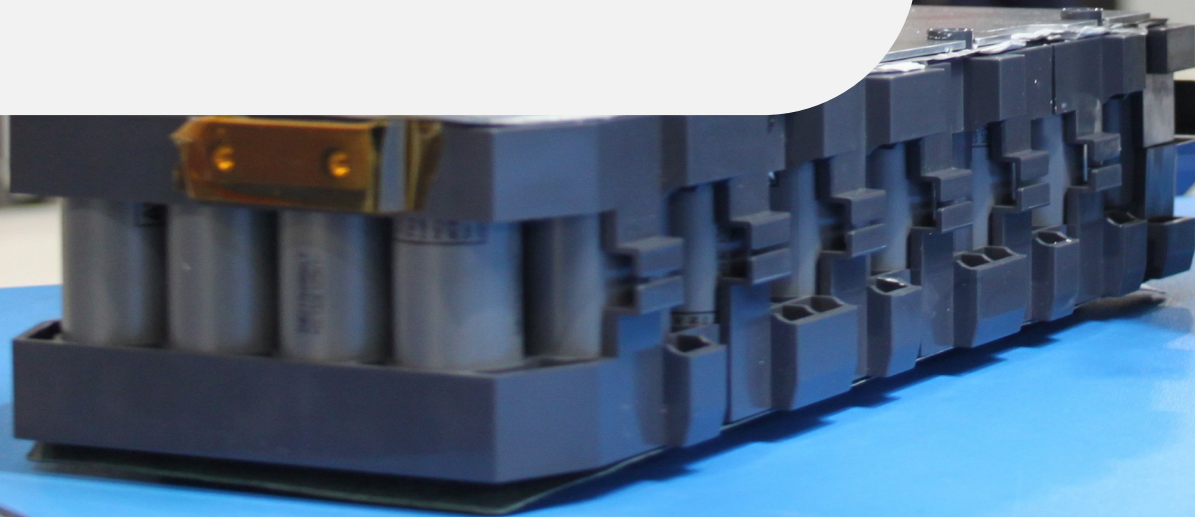


The Smarter Battery

Integrated IOT Platforms For Drivetrain Applications

ALEXANDER
BATTERY TECHNOLOGIES



Key Facts

- Founded** 1984
- Location** UK North-East
- 120+** Employees Globally
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- 900sqm** Manufacturing Footprint

Growth Objectives



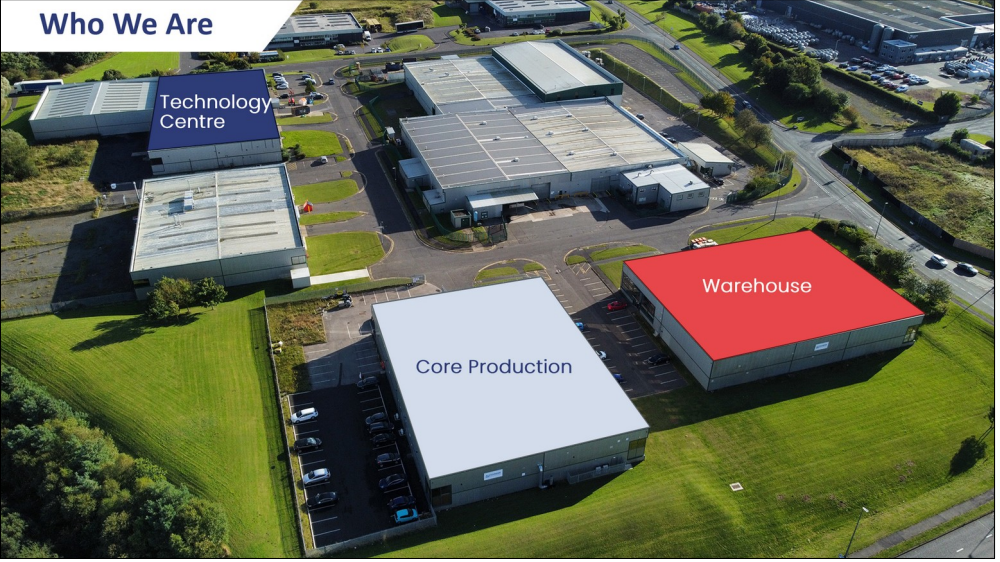
New Markets
EV Prototype & LEV mass production 2024
Robotics, Home & Garden, Medical



International Expansion
EU manufacturing footprint <5y
USA distribution <7y



Environmentally Sustainable
ISO14001 & recycle partner 2024



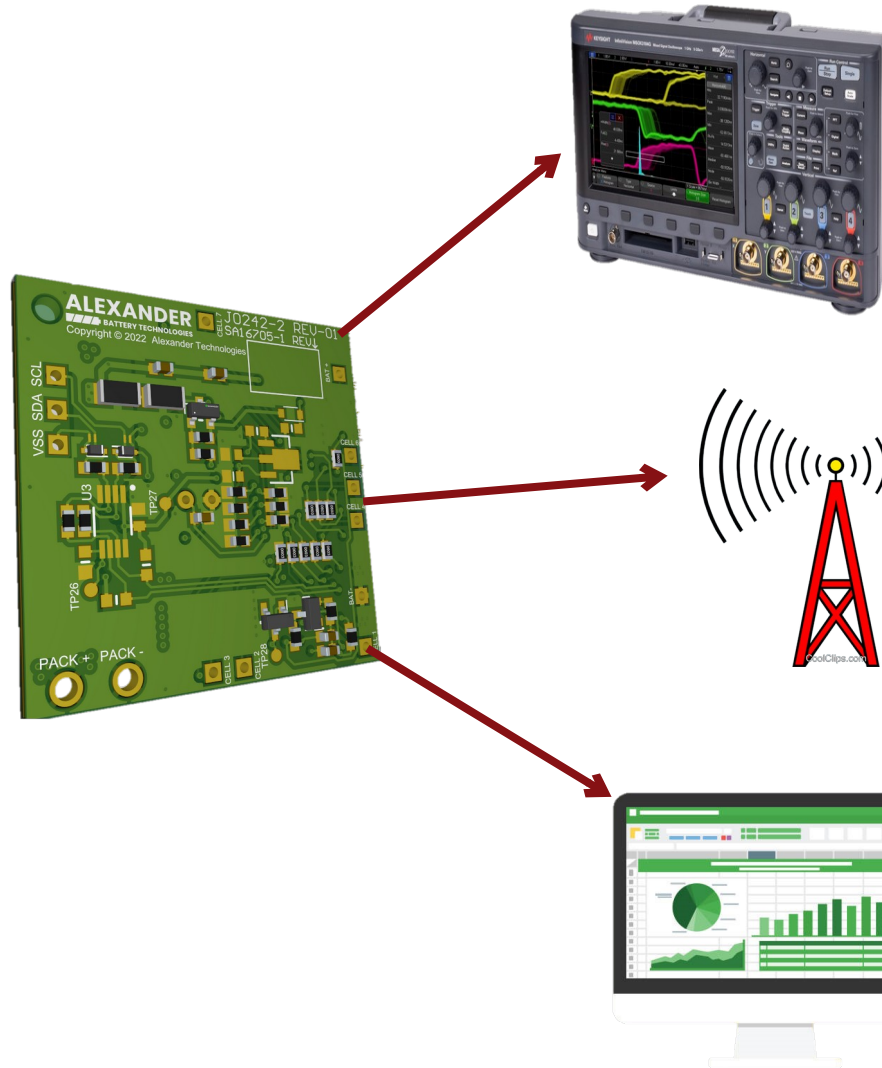
Manufacturing Capacity

- 13 Lines**
12 Labs
2h setup & ramp-up
- 9 Months**
Concept to mass production
- 100k**
Units produced per week

Portable Packs



Key Features



Monitoring & Safety

- Monitors parameters of cells (OV,UV,OC,SC)
- Periodically checks cell voltages
- Constantly monitors pack output

Communications

- Means communicating with host device/outside world
- Several protocols: SMBus, I2C, CAN

Logging

- Logging events such as UV, OC, OV
- For troubleshooting and monitoring

Special Features

Regenerative Charging

Bluetooth & Wireless Connectivity

Data & Environmental Logging

Sensor: Moisture, Impact, Temp

App & IOT connectivity

4 Stages of Safety

1

BMS OC/OV reading
Cut off FET

2

MCU
Switch to safe state

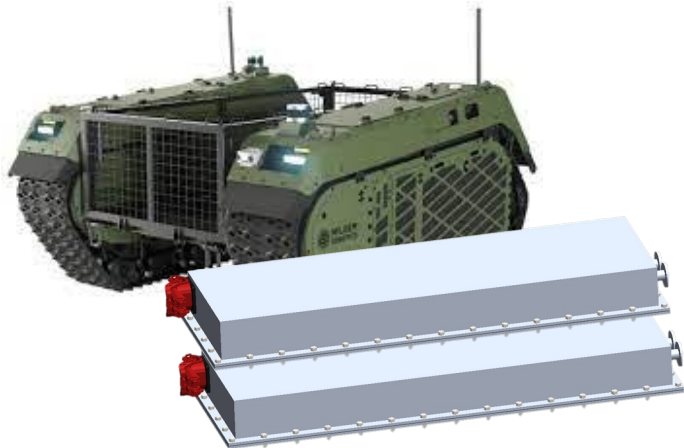
3

Fuse OC protection
Trigger by OC or MCU

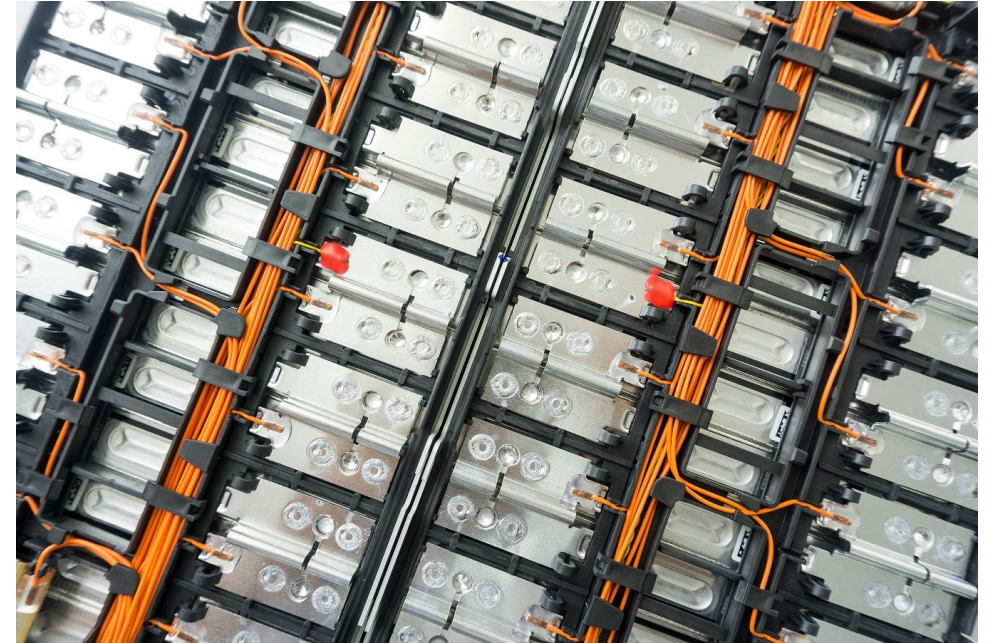
4

Kill Switch
Blows Fuse

Drivetrain Applications



- **Wide install base**
- **Critical safety application**
- **Growing legislation to manage**
- **Battery 'value' has never been higher**



- **Design for usability**
- **Design for manufacturing**
- **Design for assembly**
- **Design for sustainability**
- **Design for logistics**
- **Design for recycling**



- **Safety**
- **Quality**
- **Maintenance**
- **Digital Products**
- **Commercial**
- **Environmental**



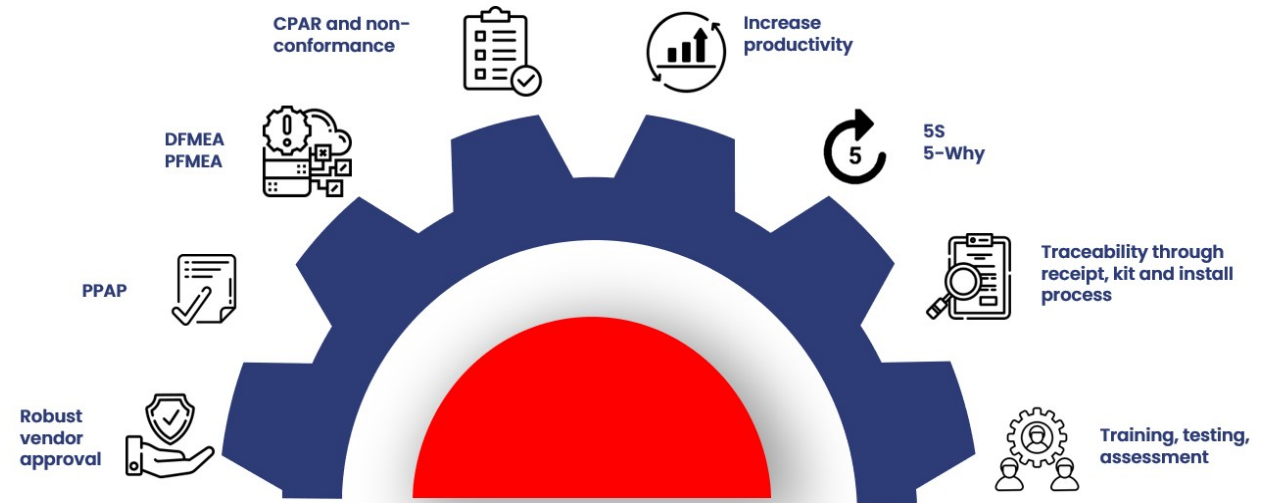
- **Over the air monitoring**
- **Over the air updates**
- **Two-way alerts**
- **Remote or automatic decommissioning**



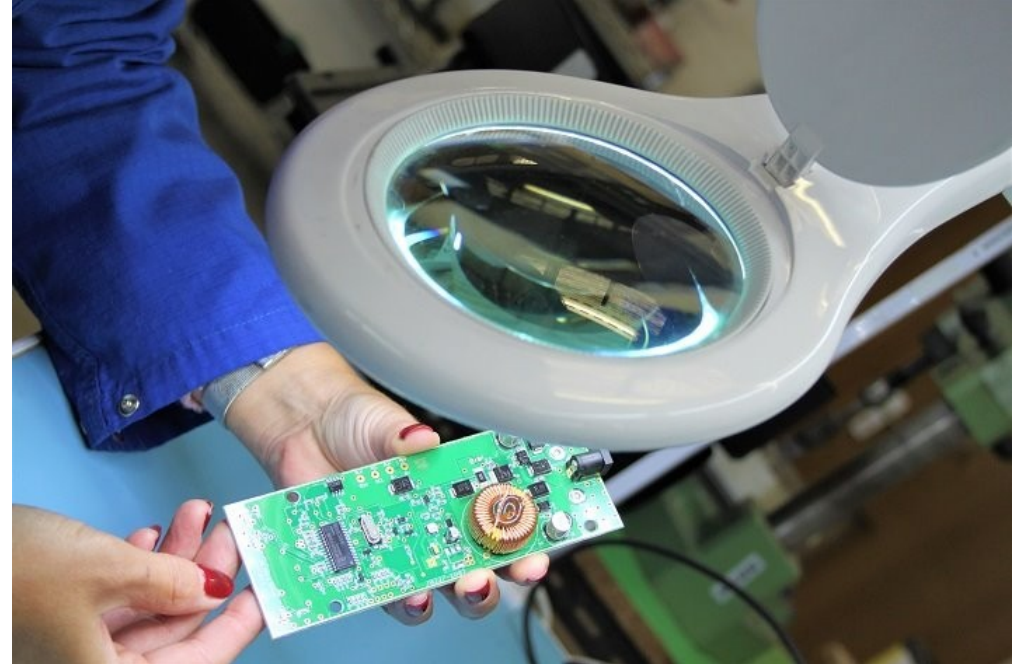
- **Condition based maintenance**
- **Proactive customer support**
- **Issue tracking**



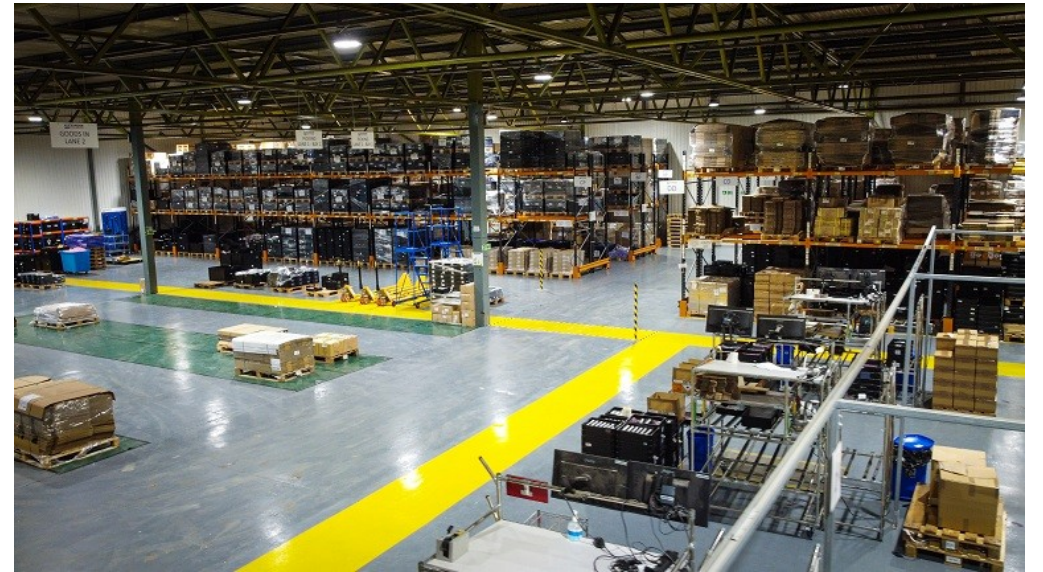
- Production monitoring through a proprietary industrialisation tool
- Centralised SW version control
- 100% traceability throughout lifecycle
- Easy replication of production



- **Upgrades**
- **Try & buy**
- **Subscriptions**
- **P2P and community opportunities**



- Rental setups
- Stock levels & shelf-life handling
- Service and support



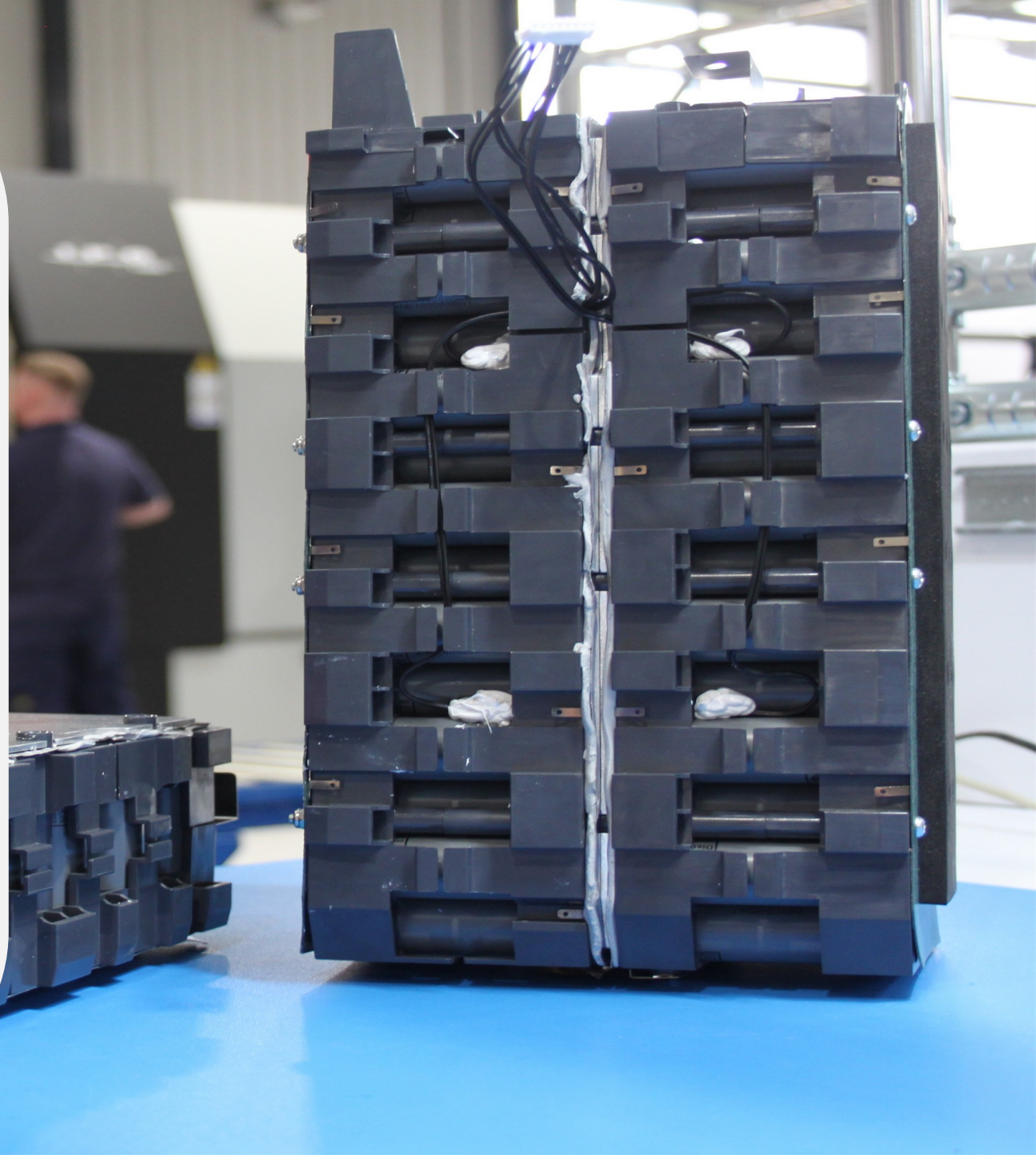
- **Legislation**
- **Recycling & reclamation**
- **Returns processing & paybacks**



The Smarter Battery:

- True innovation provided by the proprietary BMS and IoT Platform component.
- Impact resistance, heat management, ingress protection, fire shielding etc.
- Balancing & multi-level safety protections.
- 24/7 cloud connected monitoring and data analysis.
- Remote diagnostics and condition-based maintenance.
- Over-The-Air updates and upgrades.
- Remote decommissioning and alerts (to user and support hub).
- Bulk shelf-life monitoring and maintenance for resellers, rentals, distributors, warehouses, etc.
- Continuous quality, factory performance and continuous improvement management.

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Contact:

Alex Stapleton

Chief Commercial Officer

+44 7376 143 022

astapleton@alexenergy.co.uk