

Leclanché Energy Storage Solutions

Corporate Presentation

August 2021



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Executive Summary



Leclanché, the 111-year-old Startup, is at the heart of the Energy Transition

Energy transition to reduce the overall Greenhouse Gas Emissions is being driven primarily by the changes in the management of electricity networks and the electrification of transport systems.

Leclanché's strategy and business model is at the heart of the convergence of these drivers.

Electrification of transport systems

- We deliver integrated Battery Packs for Electric Vehicles of all sizes, with intelligent interface to the charging infrastructure.

Renewable energies integration

- We deliver Energy Storage Systems that reliably add intermittent solar and wind energies in the electricity network as dispatchable power on as needed basis.

Leclanché At-a-Glance

...Enabling electrification...

Trains/ Locomotives



Maritime



Buses



Commercial Trucks



**Stationary Energy
Storage Systems**



... an undeniable market opportunity...

**Global shift to vehicle
electrification and
renewable energy**

2030

~115 GWh ⁽¹⁾
Medium and
Heavy Transport

~150 GWh ⁽¹⁾
Stationary
Storage

~1.25 TWh ⁽¹⁾
Automotive

...captured by the best player in the space

**Fully integrated
battery system
producer
Cells • Packs •
Software**

**200+ Patents
9 years of
knowhow in large-
scale production**

**USD 500 million+
in contracted
revenue⁽²⁾**

**One-Million KM+
of run-time>>>>**

**Actionable
expansion with
major European
auto OEM**

**Proven
complementary to
hydrogen fuel cell
applications**

¹ Based on IDTechEX Research Dec. 2020 (COVID Adjusted) and LUX report. The Medium & Heavy transport sectors are expected to reach 115 GWh in 2030 @ a CAGR of 26% from 2020.

² Contracted Revenue = Backlog and framework supply agreements including general T&C / MOU / Long Term Supply Agreement

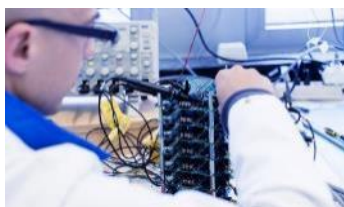
Vertical Integration Enables Greater Customization, Market penetration & Margin Advantage

Unique R&D and design capabilities across the complete battery system

Leclanché Vertical Integration Enables Control of the Full Process



In-House R&D, Manufacturing and Assembly Facilities



Research & Development
Germany, Switzerland & USA



Cell Production Line
Willstätt, Germany



Module Assembly Line
Yverdon, Switzerland



Key Benefits of Vertical Integration

Clear technology roadmap

Control of the full process

Solutions that exactly match customer specifications

Tighter cost control & higher margins

Trusted Customer Partnerships based on comprehensive offer

Broad-based strategic customers across the global battery value chain

Existing & Long-term Strategic Partnerships with Leading OEM Customers

Marine Customers



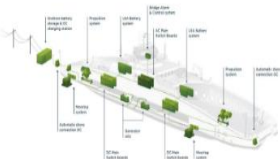
Ground Transport Customers



Stationary Storage Customers



Fast EV Charging Infrastructure



Port

Combined Onboard and Onshore Energy Storage solution for the first fully electric passenger/car ferry in North America



Amherst Island, ON, Canada

Automotive

Rapid and Ultra-rapid Charging for Electric Cars, LCVs, Bus and Trucks.



Automotive Markets Expansion

Passenger Cars

Ultra-high Energy Densities
300 Wh/kg



Superior Battery Cycle Life
Up to 1,000 cycles

Functionally Safe Battery Management System

Highest Level of Certifications, Safe & Reliable Performance

Corporate Certifications

- **ISO 9001:2015**
Quality management System
- **ISO 14001:2015**
Environmental management System
- **ISO 45001:2018**
Occupational health and safety management system



Industry Certifications

- **Marine type approvals**



- **Railways applications**



- **Road Transport**



ECE R100.02

eTransport Solutions Business Unit



Strategy is Working... Winning in the Marine Marketplace

31 MWh delivered over 7 vessels and an additional 40 MWh planned for 12 vessels that are in the pipeline



e-Ferry, Denmark: Launch of the world's largest fully electric ferry, maiden voyage Aug 2019, equipped with 4.3 MWh Leclanché battery pack.



Damen, Canada/The Netherlands: 2 ferries with 1.9 and 4.6 MWh battery packs, delivery in 2020. Vessels under construction.



Grimaldi, China/Italy: 9 ferries each with 5.1 MWh battery packs, delivery from 2019 to 2022.



Hyseas III, Scotland: 0.7 MWh battery pack for world's first hydrogen hybrid marine vessel. Delivery in 2020.



Wasaline, Finland: Recent contract win to supply of 2.2 MWh battery packs. Project kick off 2020. Delivery May 2021.



Yara, Norway: "Yara Birkeland", the world's first electric, autonomous feeder vessel will reduce diesel truck haulage by 40k journeys per year. 6.7 MWh Leclanché battery packs. Delivery December 2019/January 2020.



Awilco, Singapore: Project 1 & 2- drilling platforms under construction, both with 1.9 MWh battery packs operating as spinning reserves (Acting as a generator set).



Siemens/Shiptec, Switzerland: MS Jungfrau & 3 other hybrid CGN vessels. Supply of battery packs of 169 kWh 599 kWh (x2) & 1.4 MWh.



[Click to see Leclanché eMarine movie](#)

Strategy is Working... Winning in the Ground Transport Marketplace

Reference projects with world leading OEMs



Train

Bombardier Transportation: Leclanché SA is selected as preferred global provider of Battery Systems, giving a potential business revenue of more than 100m € over the next 5 years.



Train

Alstom: Delivery of 840kWh battery systems for 11 BEMU trains in Germany from 2021 to 2023. Potential for 72 additional trains systems within Europe.



Bus

Skoda Electric: Specific Skoda battery packs supplied for use in electric buses. Discussion ongoing for further supply.



Bus

Ashok Leyland: Delivered battery packs for 40 electric buses. Potential volume > 50 MWh over the next 3 years.



Truck

PACCAR group/TMNA: Hybrid electric truck in USA: delivered prototype packs. Long term development program with hydrogen fuel cells and Leclanché LTO battery pack.



FCC

Delivery of INTEG-39 Energy packs for use in municipal vehicles such as refuse trucks and water tankers. 156 kWh of packs delivered & potential for further 312 kWh.



URO

Supply of INTEG-39 Energy packs for TT Uro truck project. Negotiations in place to supply 5.6MWh of packs.













[Click to see Leclanché railway movie](#)

**1/3 of the global railway network
is still powered by diesel**

Competitive cost-base driven by increasing energy density of cells

Leclanché Battery Technology – Main Attributes

 Energy Density (Wh/kg)	 Charging Time	 Cycle Life	 Safety	\$\$\$ Total Cost of Ownership
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	Typical Application	Energy Density	Cycle Life	Charging Time
High Power LTO Introduced 2012	  e-TRUCK e-EXCAVATOR	75 Wh/kg	20,000 (to 80% DoD)	10 mins
High Energy G/NMC Introduced 2020	  e-RAIL e-MARINE	225 Wh/kg	8,000 (to 80% DoD)	20 mins
Ultra High Energy G/NMC Planned for 2022	  e-BUS e-CAR	270 Wh/kg	2,000 (to 80% DoD)	20 mins

Competitive cost-base driven by next generation battery module design and production processes

Technology Leadership

Modules-crucial building block to design a wide range of solutions for electric vehicles

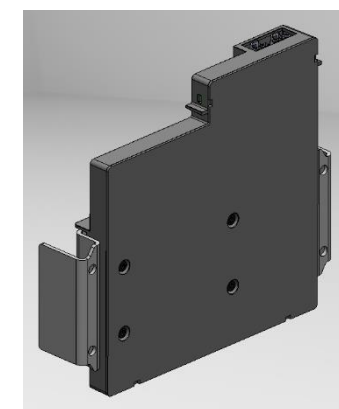
- ▶ **Production** - Designed for high volumes
- ▶ **Energy density (Wh/kg)** - 15 to 20% improvement
- ▶ **Configuration** - Up to 47 configurations possible
- ▶ **Size (volume)** - More compact with 7% volume gain
- ▶ **Construction** - Use of high precision laser assembly
- ▶ Designed in a simultaneous engineering process with Comau, part of the Stellantis Group.



FSS:
Functional Safe Slave



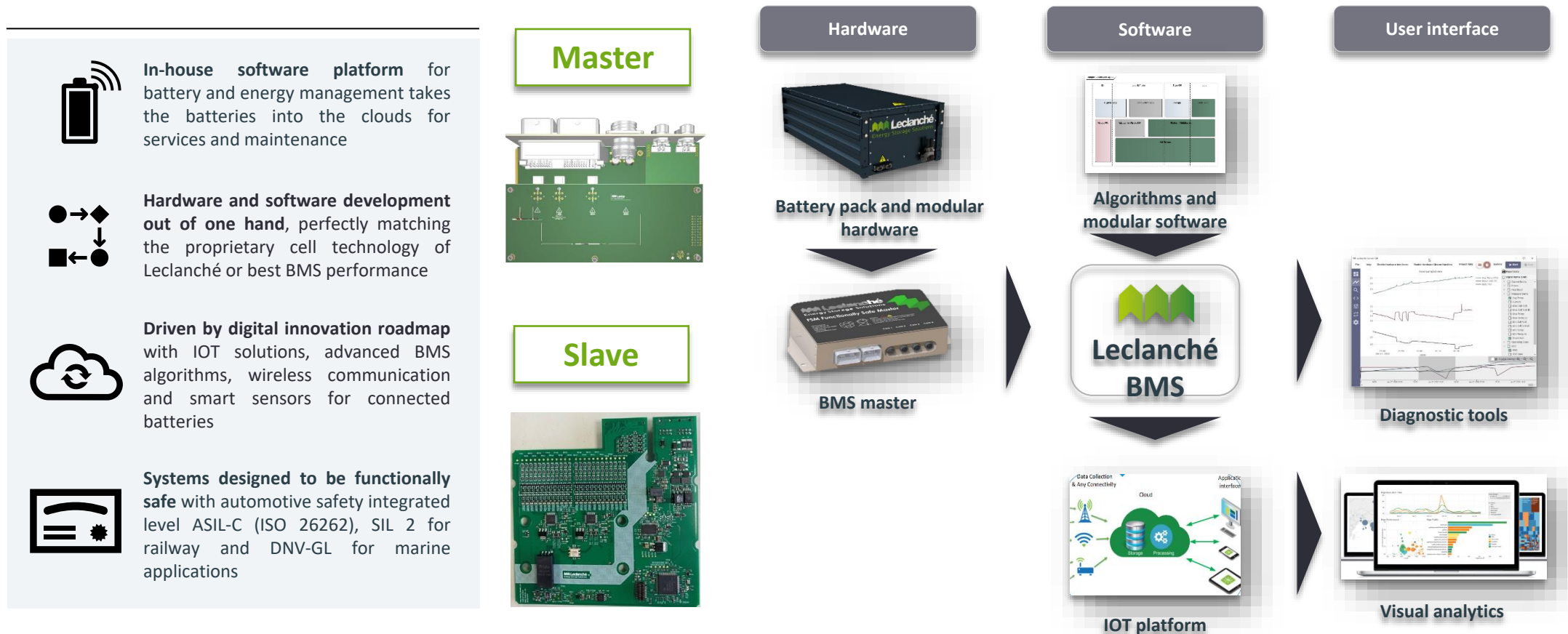
FSM:
Functional Safe Master



Competitive cost-base driven by industry leading battery management system

Technology Leadership

Leclanché battery management system (BMS) and internet of things (IOT) platform



Leadership In Electrification of Hard-To-Decarbonize Heavy Transport Sector

Hydrogen fuel cells are an ideal and complimentary technology with Leclanché battery systems

Leclanché is already actively working on multiple hybrid fuel cell projects

Marine



Hyseas III, Scotland

- 0.7 MWh pack for world's first hydrogen hybrid marine vessel.
- Delivery of Marine Rack System battery packs 2020.

Rail



Canadian Pacific Railways, Canada

- Leclanché nominated to supply prototype 1.2 MWh battery system on hybrid fuel cell locomotive, with delivery in 2021.
- CPR has 1,100 locomotive fleet with > 50 % potentially to be converted.

Truck



PACCAR Group / Toyota, USA

- Hybrid electric truck :
Delivered prototype packs.
- Prototype development program with hydrogen fuel cells and Leclanché LTO battery pack.

Expansion into Passenger EVs, Reaching Competitive-Scale

Entry led by proven technology leadership

- ▶ Almost doubles future addressable market with massive potential.
- ▶ Adds substantial scale to procurement activities reducing overall product costs for our other eTransport verticals.
- ▶ Allows monetization of R&D expenses through licensing agreements OR contributing as equity in joint ventures with partners.
- ▶ Offering a fully integrated product encompassing “Powder-to-Pack” proprietary technologies: electrochemistry, cells, battery modules, battery management systems, and battery pack design.
- ▶ One of the largest pools of ~350 trained personnel in Europe with extensive experience in electrochemistry and mass production, and protected IP with more than 200 patents over 13 families.
- ▶ European based and well-established supply chain relationships.
- ▶ Time-to-market advantage based on proven manufacturing processes.

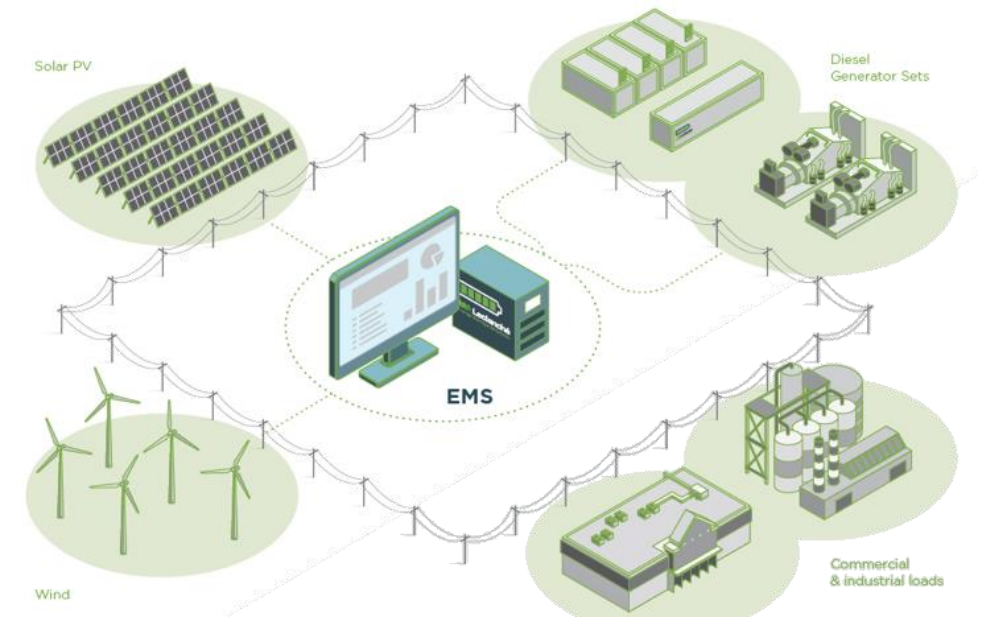


Energy Storage Systems Business Unit



Leclanché Stationary Storage Solutions Credentials

- 150 MWh installed, targeting 1GWh by 2025
- Battery-based Energy Storage System (BESS) based on multi-platform design and integration with LeBlock™ modular system
- EMS-enabled revenue stacking and extended battery life management
- Positioned in high-growth markets such as fleet management, fast-charging, load displacement and off-grid expertise

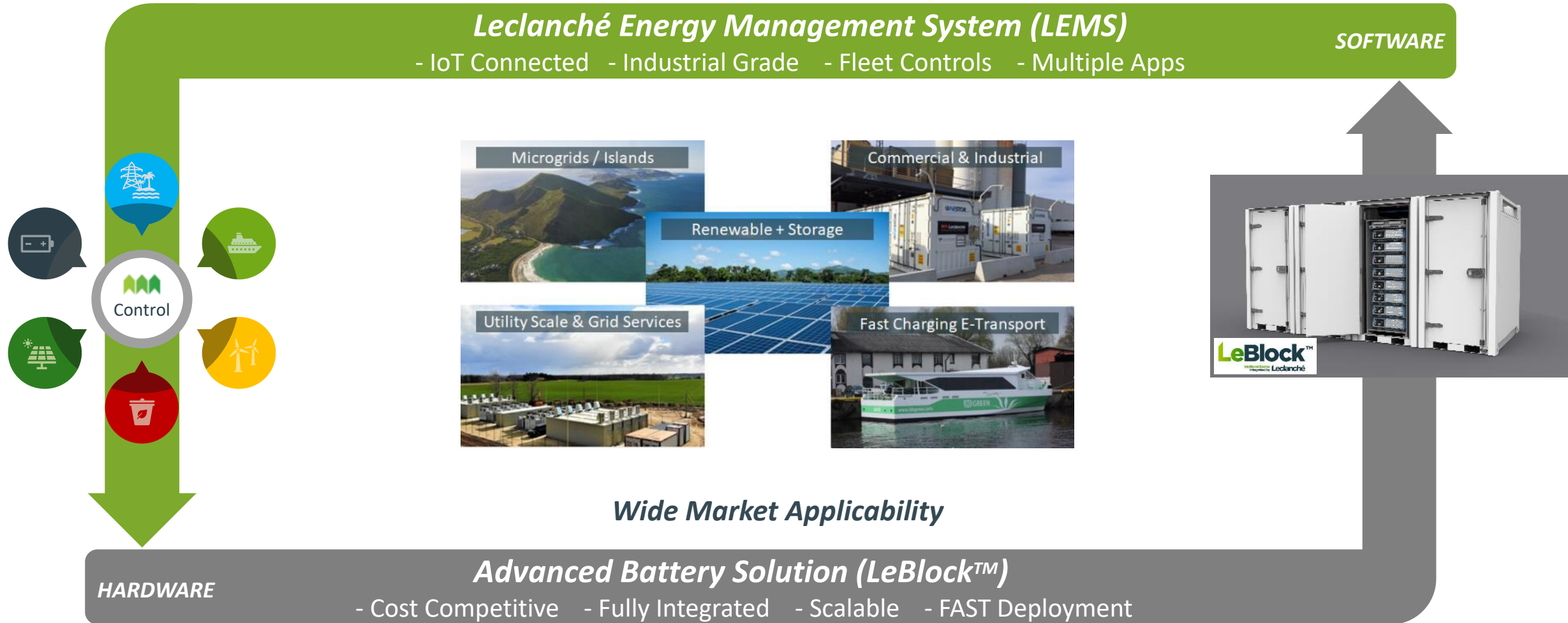


Integrated Technology Partners



Proven, Proprietary & Vertically Integrated Battery Systems

Leading stationary storage products & software

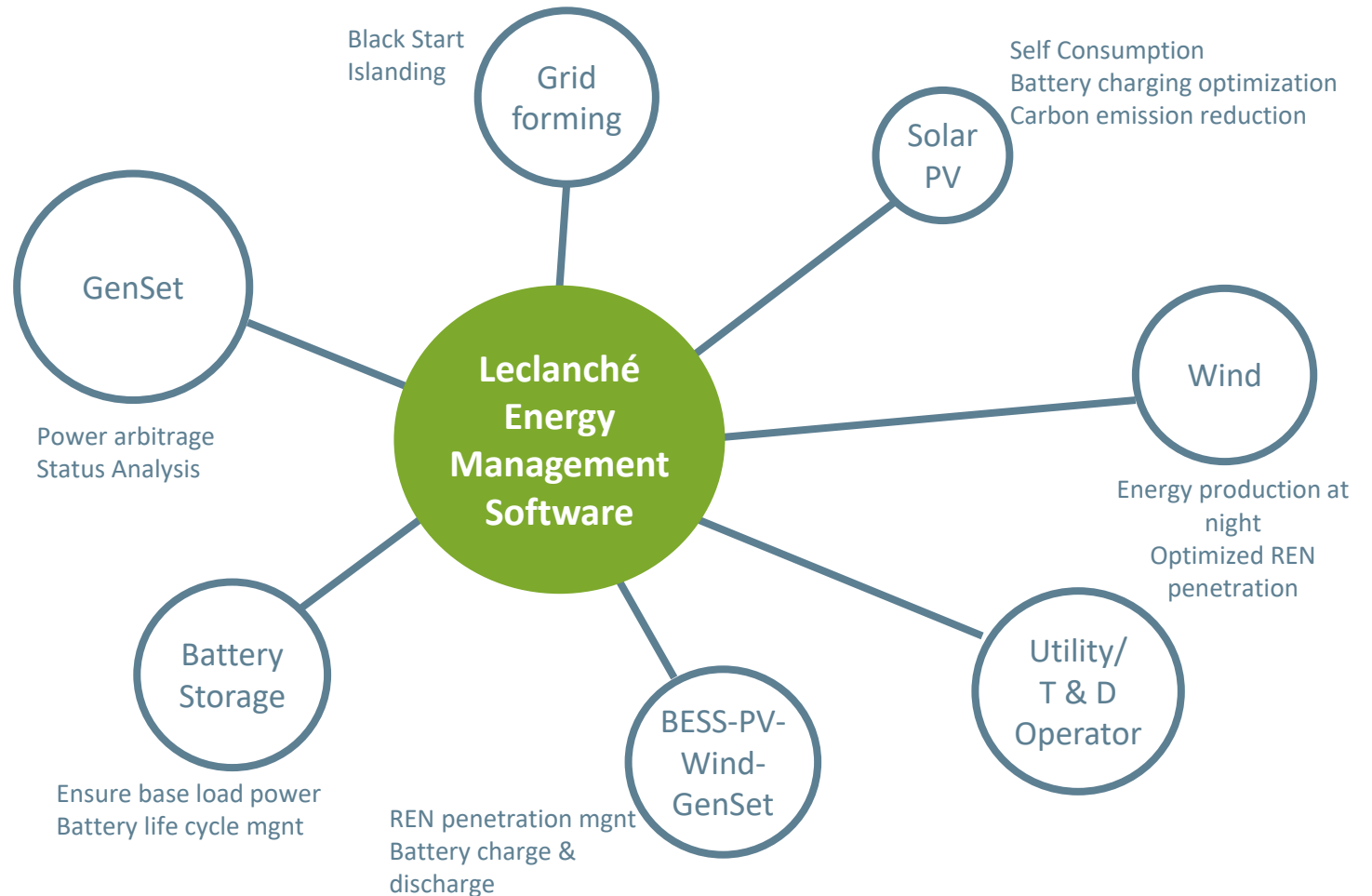


Smart Energy Management Software Architecture, the brain of the BESS

Leading stationary storage products & software

Energy Management System

- ▶ **Smart Energy Management drives the Energy Transmission**
- ▶ **Multi-applications-Revenue Stacking**
- ▶ **Smart Energy Management guaranties base load dispatchable power from battery to grid**
- ▶ **Maximize the REN penetration vs. GenSet use**
- ▶ **Energy Management for EV fast charge stations**



- ▶ **Modular and scalable concept**
- ▶ **Plug & Play: easy to interconnect**
- ▶ **Simplified logistic**
- ▶ **Fast installation on site**
- ▶ **Integrated Battery Auxiliaries**
- ▶ **Reduced Carbon Footprint**
- ▶ **Optimized LCOE**



Modular



**Simplified
logistic**



**Fast installation
on site**



**Easy
augmentation**



Lower TCO



**Minimal
environmental
footprint**

Different Blocks to Build LeBlock™



Battery Block

- 744 kWh up to 1C

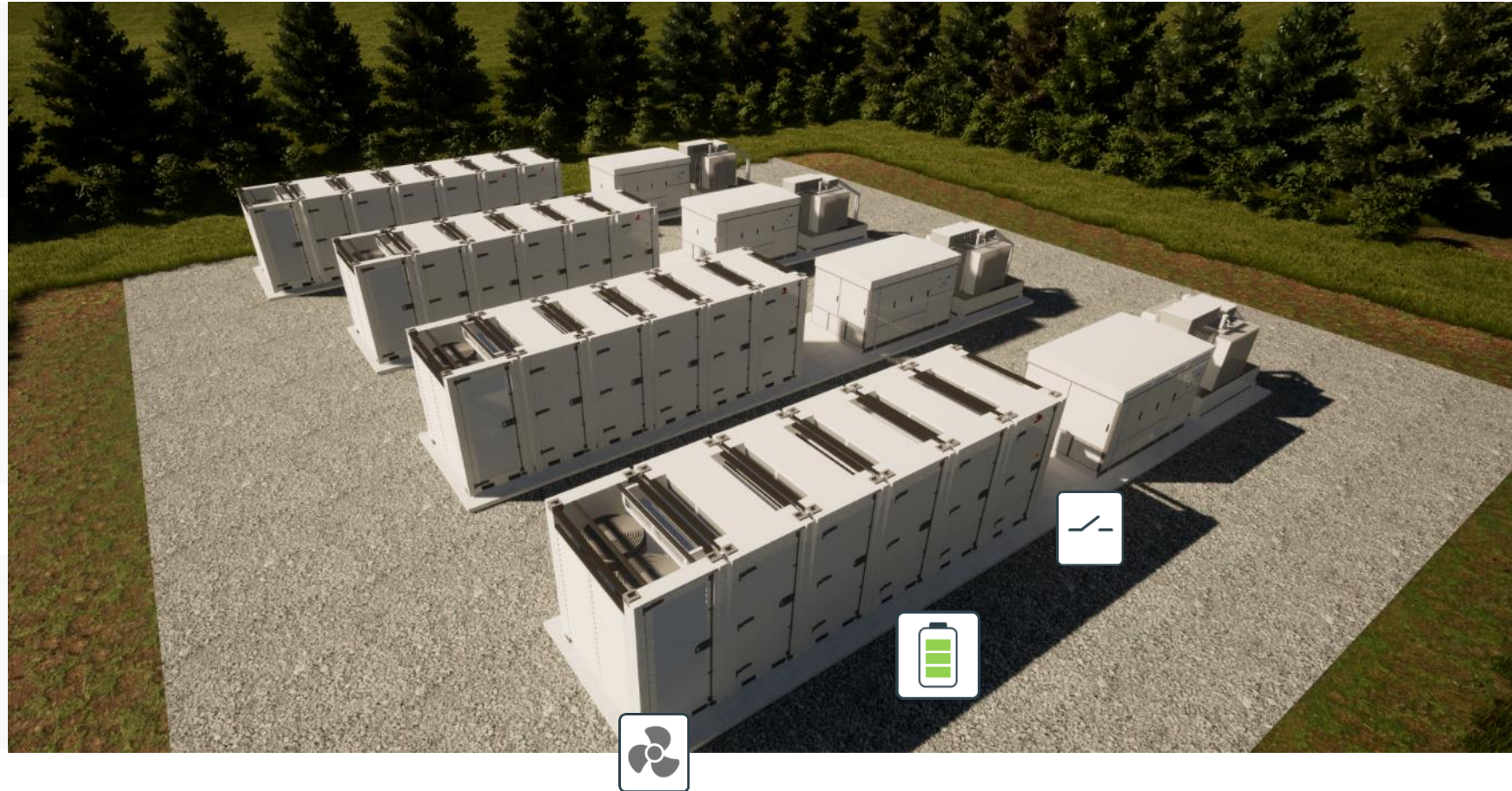


Thermo Block

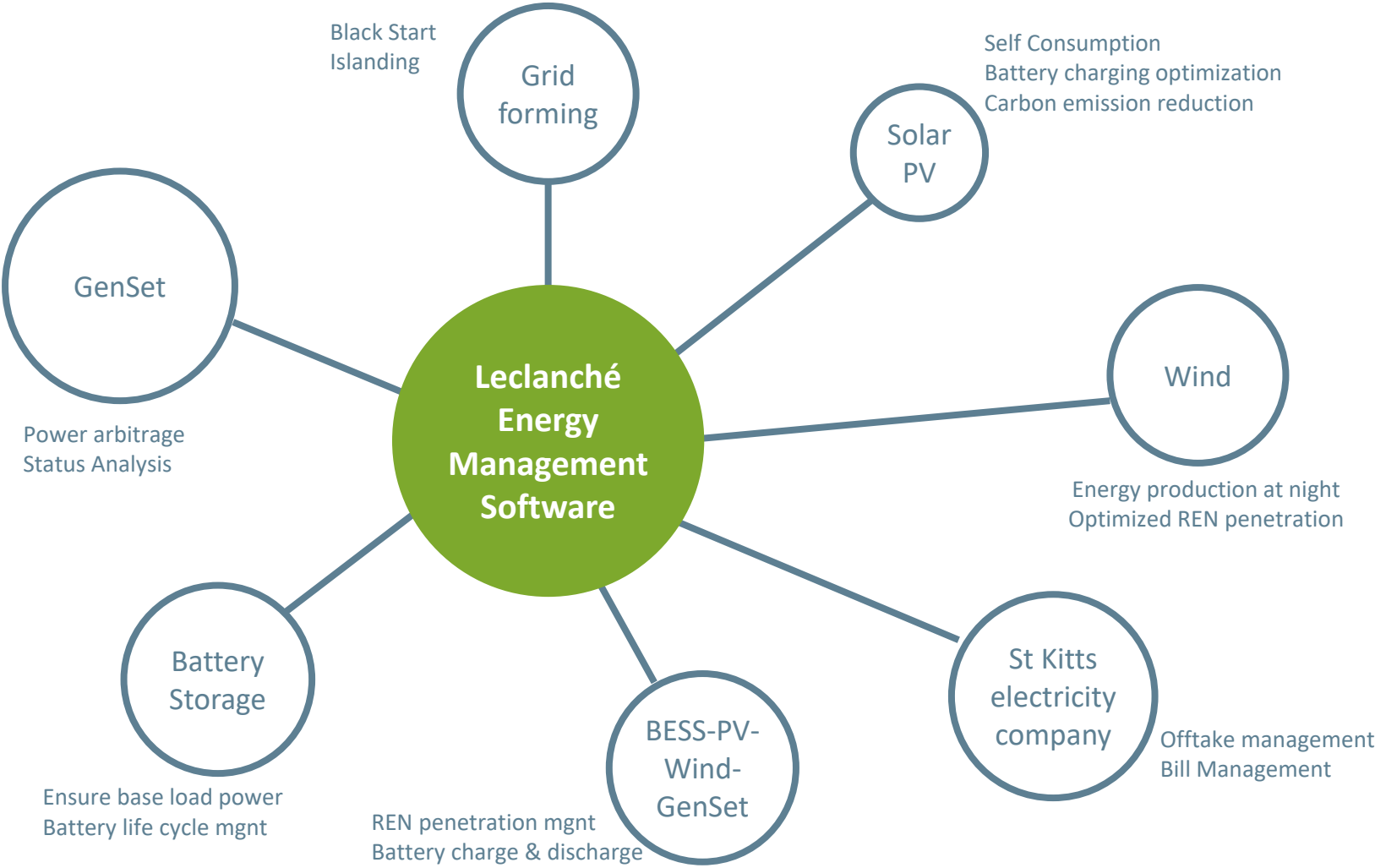


Combiner Block

- DC & AC protection
- Control / command



Enhancing renewable energy penetration in microgrids



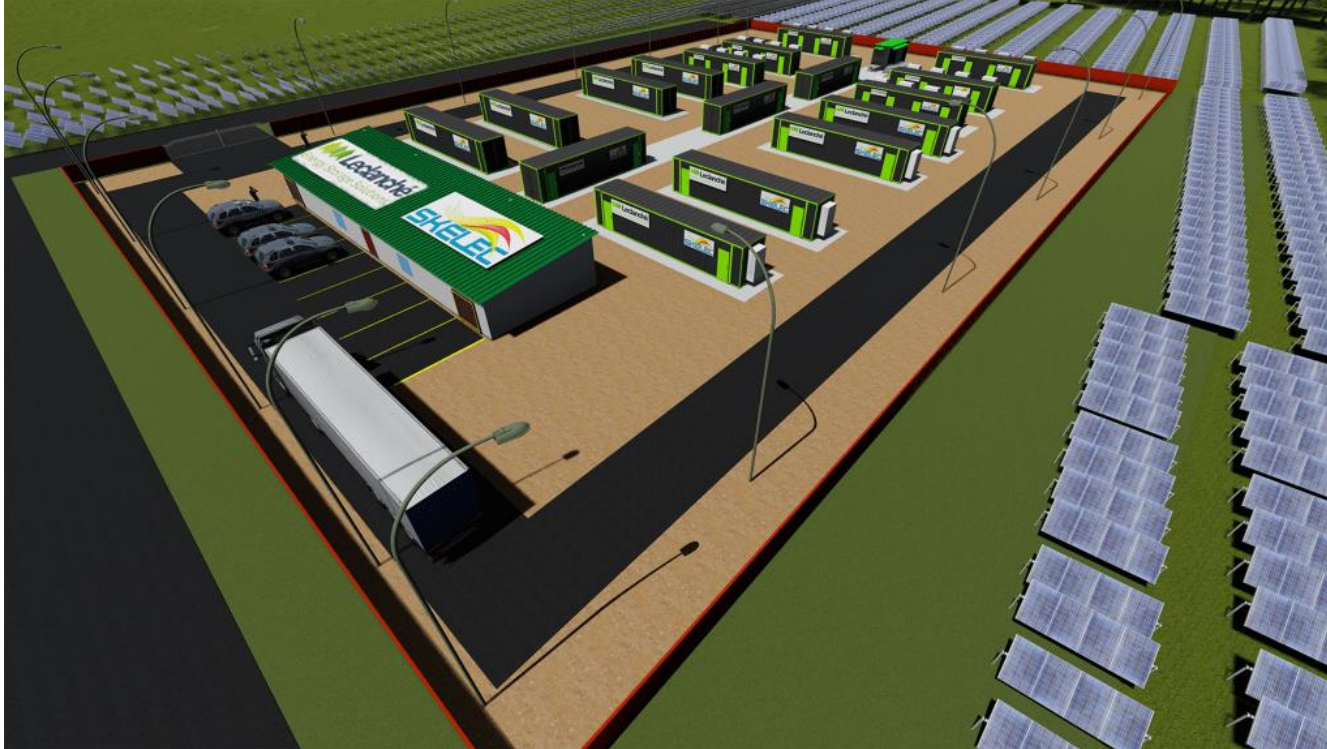
Smart Energy Management
guaranties **base load** dispatchable
power from battery to grid

AI-enabled algorithms **optimizing**
the green energy dispatch based
on Time-of-the Day demand
cycles to **maximize** Revenue

Maximize the REN **penetration** vs.
GenSet use

Multi-applications-**Revenue
Stacking**

St Kitts – the largest Solar + Storage project in the Caribbean



- Solar PV 30 MW peak / 45MWh
- 30% of the Island's baseload
- \$70 M capitalization / 20-year PPA



St Kitts prime minister Timothy Harris and Leclanché Bryan Urban at the groundbreaking December 15, 2020



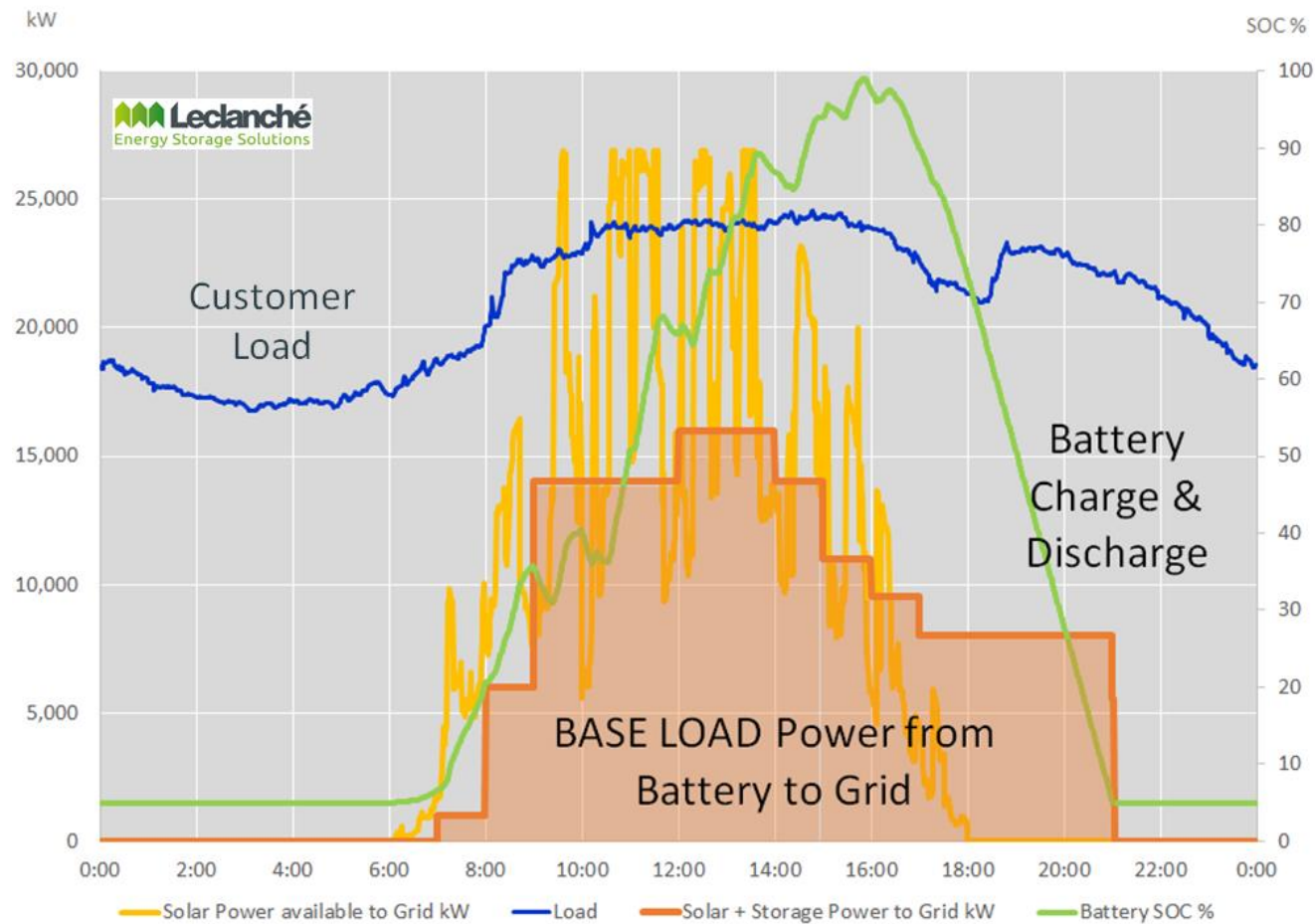
Building Caribbean's largest Green Power Plant: Solar+Storage Microgrid project in St. Kitts

Experience to quickly conduct network and grid studies for a variety of applications

Rich set controls and monitoring functionalities in Energy Management Software (EMS)

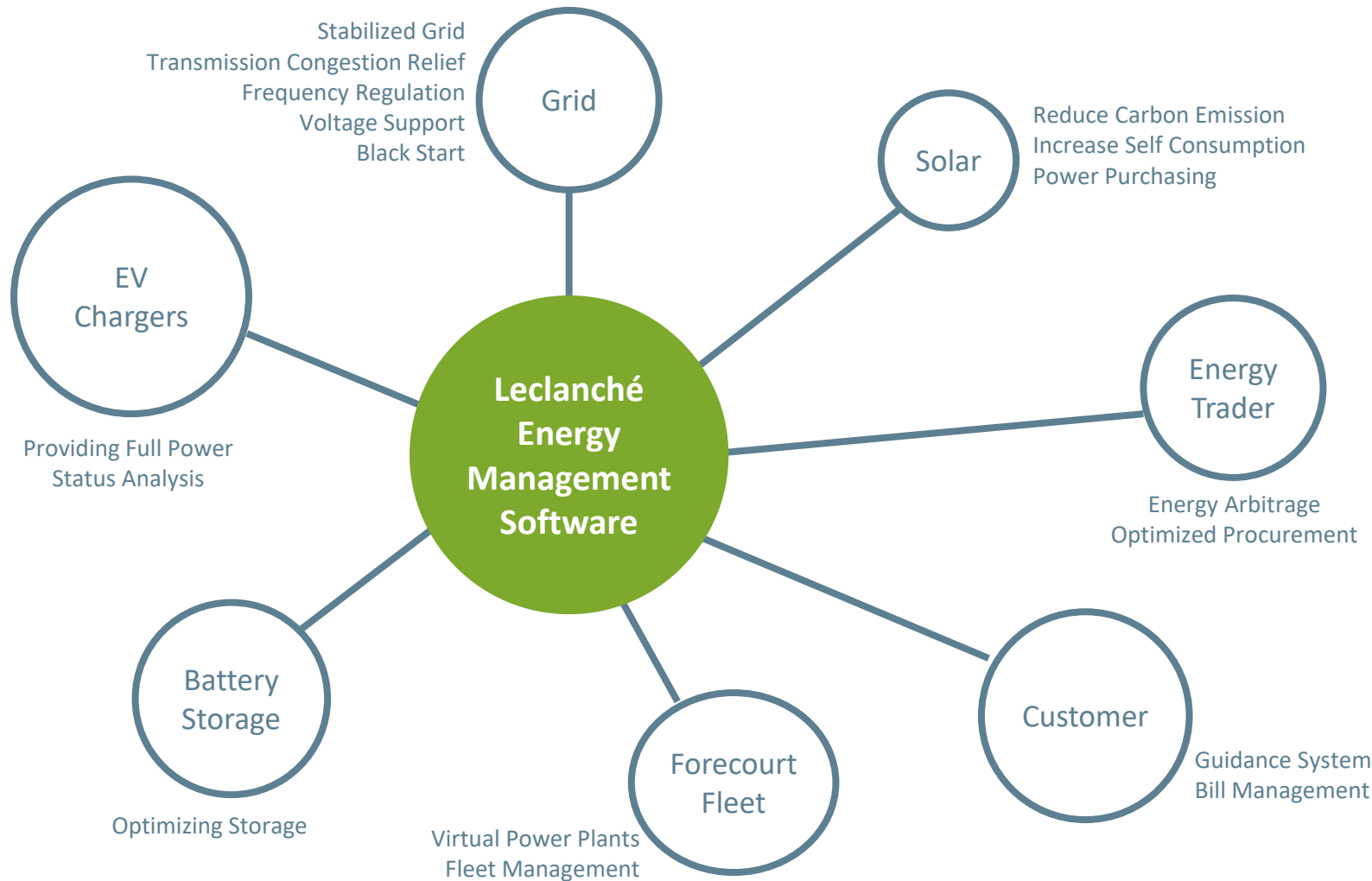
Know-how and simulation tools to adequately size and dimension the BESS* and perform front-end engineering of a Green Power Plant

Capability to structure competitive customer PPA's based on ESaaS



*BESS – Battery-based Energy Storage System; PPA – Power Purchase Agreement; ESaaS – Energy Storage-as-a-Service

Enabling High Power Fast EV Charging



Smart Energy Management drives the Energy Transmission

AI enabled algorithms **anticipating** demand cycles, energy production and procurement prices

Creating **VPPs** and Networks of e-Forecourts

With many networked charges the EMS becomes more intelligent, creating more revenue and customer **value**

Typical Fast-Charging site layout with LeBlock™



Solid-Base To Deliver Profitable Growth



Solid base to deliver sustainable profitability

... more than USD 250M investment to reach a critical-size for cost competitiveness

Technology Leadership:
simultaneous investment in
Product Portfolio Expansion and
Organizational Resources

- One of the highest breadths of inhouse technology ownership in the Industry: from Cells, Modules, Battery Packs & Racks to IoT-enabled Fleet EV Asset Optimization Software Platform
- Industry leading Energy Management Software suite for a range of applications in renewable energy integration, grid ancillary services▶ extending to in-vehicle energy management unit

Competitive Cost-base:
leap-frog competitor's cost-base
to secure good gross margins

- Lowest cost per kWh Cells for Fleet EV combining high Energy Density and long-life Cycles
- More than tripling the production capacity to gain efficiencies
- Monetizing and gaining procurement-scale through licensing inhouse technologies to the Automotive sector

World Class Team



World Class Executive Leadership Team



Anil SRIVASTAVA
CEO

Joined in 2014

- Fourteen years of senior executive experience, including board level engagements.
- Previously CEO of AREVA Renewables, EVP Alcatel-Lucent Global Accounts.
- MBA Wharton School of Business, USA



Hubert ANGLEYS
Chief Financial Officer

Joined in 2016

- Previously held senior roles such as CEO of Metalor Group, Financial Director at Alcoa & financial positions at Sicpa.
- Degree in Accounting, Business Administration and Law, France.



Phil BROAD
EVP – Customer Management

Joined in 2018

- 24 years in tier 1 Automotive & Commercial Vehicle industry
- Previous roles include Global Account Manager at Honeywell
- BEng (Hons) System Engineering, UK



Pierre BLANC
Chief Technology & Industrial Officer

Joined in 2000

- Previous roles at Leclanché: Head of R&D, Chemical Engineer working for client brands such as Varta and Panasonic.
- Member of management groups supporting Swiss and Germany national research programs.
- BA Mod. Chem Trinity College, Dublin

Management: Previous Experiences



World Class Senior Leadership Team



Thom Reddington
SVP Global Operations,
Stationary Storage

Joined 2016

- 38 years experience in the Automotive Market specializing in new product/project development and commercialization.
- Executive Management experience in 3 Lithium-Ion battery start-ups.



Sylvain CHONAVEL
VP Systems Engineering

Joined 2018

- Project Director – Frazer Nash
- Engineering Director – Whitfield Solar Ltd
- McGill University
- MBA Herriot Watt
- Ecole Nationale Supérieure des Mines



Gerardo GIMENO
VP e-Transport

Joined 2019

- Sales Mgr – Commercial & Off Highway Vehicles
- Managing Director – Moldes Epila SA Specialsi Machinery.
- MBA – ESIC Business & marketing School



Guillaume Clément
VP Global e-Marine

Joined 2021

- 15 years international experience in Energy Management (FR, AUS, CN, NO)
- Various company-wide positions from project to sales through manufacturing and services
- Engineer Supélec, France, MBA IAE Rennes, France

Management: Previous Experiences

STABILUS

SUNPOWER™



Schneider
Electric



World Class Senior Leadership Team



Dr Hilmi Buqa
VP – R&D Cells

Joined 2009

- Senior Scientist – High Power Lithium SA
- Postdoctoral Scientist – Paul Scherrer Institut
- 36 reviewed scientific papers
- 10 patents issued
- PhD Lithium-ion technology (1996)



Dr Olaf Luche
General Plant Manager
– Willstätt

Joined 2020

- 25 years in global industrial companies for tier 1 automotive e suppliers, in Germany, France and China.
- Plant Manager – Stabilus
- PhD Organic Chemistry – RWTH Aachen



Dr Petronela Gotcu
Manager – R&D Cells

Joined 2018

- 10 years of experience in battery research
- Author of more than twenty peer-review international publications, and reviewer
- PhD in Material science – Delft University



Guido Guidi
SVP Global Sales -
Stationary Storage

Joined 2018

- 10 years in tier-1 solar PV industry and energy efficiency market.
- Director Sales & Marketing at Helexia Development and Sr. Manager European Corporate Accounts at SunPower Corporation.
- MSEE, Italy and MBA, Switzerland

Management: Previous Experiences

STABILUS

SUNPOWER™



Schneider
Electric



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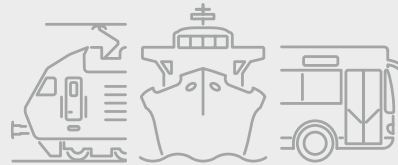
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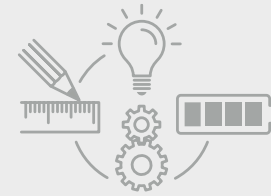
Thank You
Leclanché is on a clear path to deliver profitable growth.



**STATIONARY
SOLUTIONS**



**e-TRANSPORT
SOLUTIONS**



**SPECIALTY BATTERY
SYSTEMS**

Leclanché
Energy Storage Solutions

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