

Leclanché

Energy Storage Solutions



July 2021

Corporate Presentation

- 01 **Executive Summary**
- 02 **eTransport Solutions**
- 03 **Stationary Storage Solutions**
- 04 **On a Clear Path To Deliver Profitable Growth**
- 05 **Leclanché Technologies and Financial Information
under NDA only**

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 an as needed basis.

Leclanche At-a-Glance

An undeniable market opportunity...

Global shift to vehicle electrification and renewable energy

2030

~115 GWh ⁽¹⁾
Medium and Heavy Transport

~150 GWh
Stationary Storage

~1.25 TWh ⁽²⁾
Automotive

... enabling electrification ...

Locomotives



Maritime



Buses



Commercial Trucks



80% CAGR from 2019 to 2022 ⁽²⁾

Stationary Energy Storage Systems



...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

US\$500 million+ in contracted revenue⁽¹⁾

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

Actionable expansion with major European auto OEM

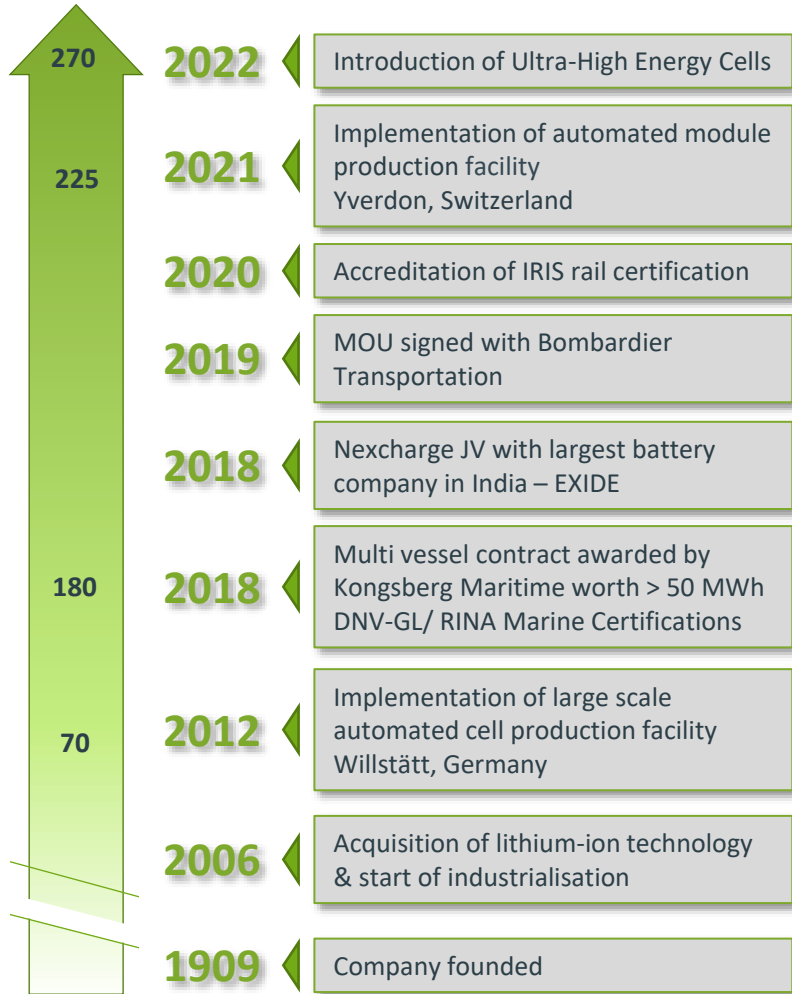
Proven complementary to hydrogen fuel cell applications

¹ Contracted Revenue = Backlog and framework supply agreements including general T&C / MOU / Long Term Supply Agreement. ² Scheduled to complete framework agreement in H2 2021.

² Based on IDTechEX Research Dec. 2020 (COVID Adjusted) ² LUX report (2019)

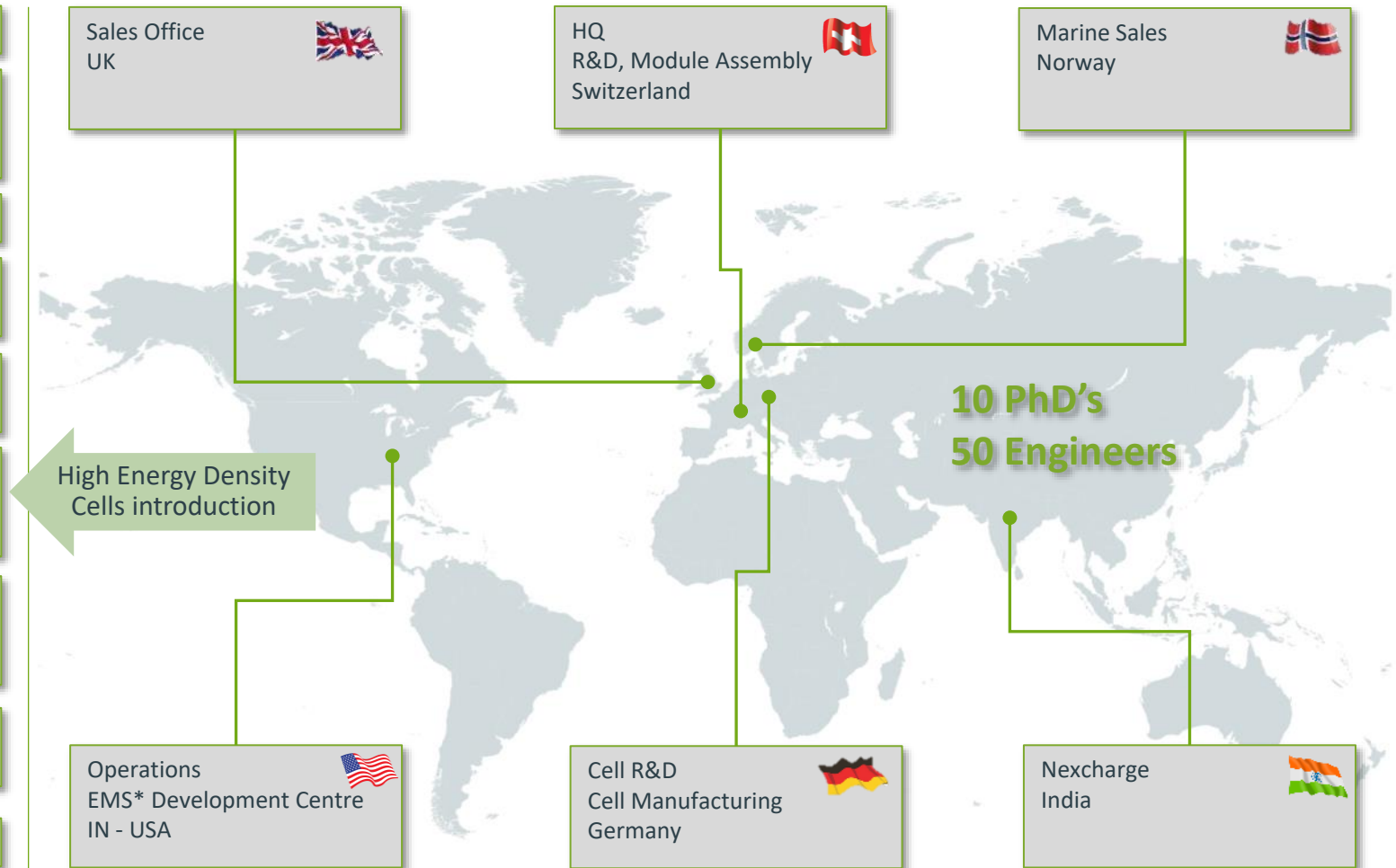
Proven Technologies, Industrial Maturity

Rich heritage and global reach



Cell Energy Density (Wh/kg)

>US\$250 million investment in R & D, Engineering, and industrialization since 2007



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

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**



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

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

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Strategic Customers and USD 500 million Contracted Revenue Underpin Growth

Existing & Long-term Strategic Partnerships with Leading OEM Customers

Marine Customers



Hybrid Hydrogen Fuel Cell Projects

Marine: Hyseas III, Scotland

- World's 1st hydrogen hybrid marine vessel.

Rail: Canadian Pacific Railways, Canada

- Locomotive retrofit.

Truck: Toyota, USA

- Fleet electrification pilot project.

Ground Transport Customers



- Contracts signed for supply of Leclanché MRS marine battery systems for 13 large vessels and semi-submersible drilling rigs.
- Total energy capacity to be supplied of 57 MWh with either 55 Ah or 60 Ah cells.
- Delivery/ commissioned 9 complete systems, and vessels.
- 6.7 MWh system supplied to 3,200 ton Yara Birkeland, the world's 1st autonomous container vessel.



- MOU signed with Bombardier Transportation (now part of Alstom) as preferred supplier of Lithium-ion battery systems with potential revenue of EUR 100 M over 5 years.
- Supply of 53 kWh INT-53 Energy battery packs for train traction applications.
- New Leclanché Functionally Safe BMS developed to meet stringent rail certifications.
- Battery packs to be fitted with new generation Leclanché M3 Module produced on new automated production line in Switzerland.





[Click to see Leclanché eMarine movie](#)



[Click to see Leclanché railway movie](#)

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

Proven, Proprietary & Vertically Integrated Battery Systems

Our technology is differentiated down to the cell level

Water-based Process for Battery cell Production

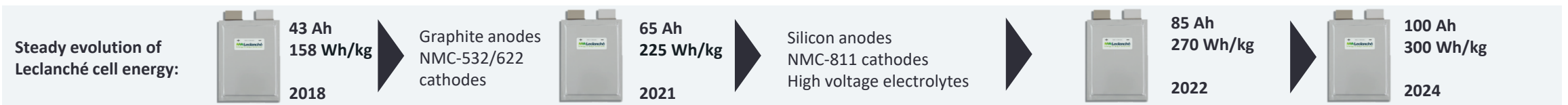
Energy savings compared to traditional solvent based

- ▶ Lower electrode drying temperature (50-60°C lower)
- ▶ No solvent recovery system (lower Capex and Opex)
- ▶ Reduction in humidity control space (70-80% reduction)
- ▶ Cell cost reduction of up to 10% compared to solvent based ⁽¹⁾

EU future sustainability requirements

Prepared for a circular and climate neutral economy

- ▶ Responsible sourcing of materials
- ▶ Minimum content of recycled materials
- ▶ Carbon footprint
- ▶ Performance and durability and labelling
- ▶ Collection and recycling



Leclanché cells will keep increasing cell energy while maintaining an extraordinary cycle life








Less cobalt in the cathode materials and high-energy materials will further reduce the costs per kWh









Materials with lower carbon footprint and energy-saving processing steps will make the batteries more sustainable

Proven, Proprietary & Vertically Integrated Battery Systems

Leclanché Battery Technology – Main Attributes

| | | | | |
|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
|  Energy Density (Wh/kg) |  Charging Time |  Cycle Life |  Safety |  Total Cost of Ownership |
|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|

| | 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 |

Proven, Proprietary & Vertically Integrated Battery Systems

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 1st 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.

Proven, Proprietary & Vertically Integrated Battery Systems

Winning in the marketplace

Leclanché Battery Pack Comparison to Key Competitors

Our advantaged technology

| | Marine | | Commercial Vehicle | |
|---------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| | Leclanché MRS9 | Competitor A | Leclanché INTEG-39 Energy HV | Competitor B |
| Design |  |  |  |  |
| Energy Energy Density | 155 kWh 114 Wh/kg | 124 kWh 76 Wh/kg | 39.4 kWh 106 Wh/kg | 25 kWh 103 Wh/kg |
| Cycle life (100% DoD*) | 4,500 | 4,000 | 4,500 | 1,600 |
| Dimensions (HxWxD) | 2440 x 1236 x 440 mm | 2241 x 865 x 738 mm | 409 x 612 x 1266 mm | 150 x 700x x 1700 mm |
| Weight | 1,356 kg | 1,628 kg | 372 kg | 238 kg |

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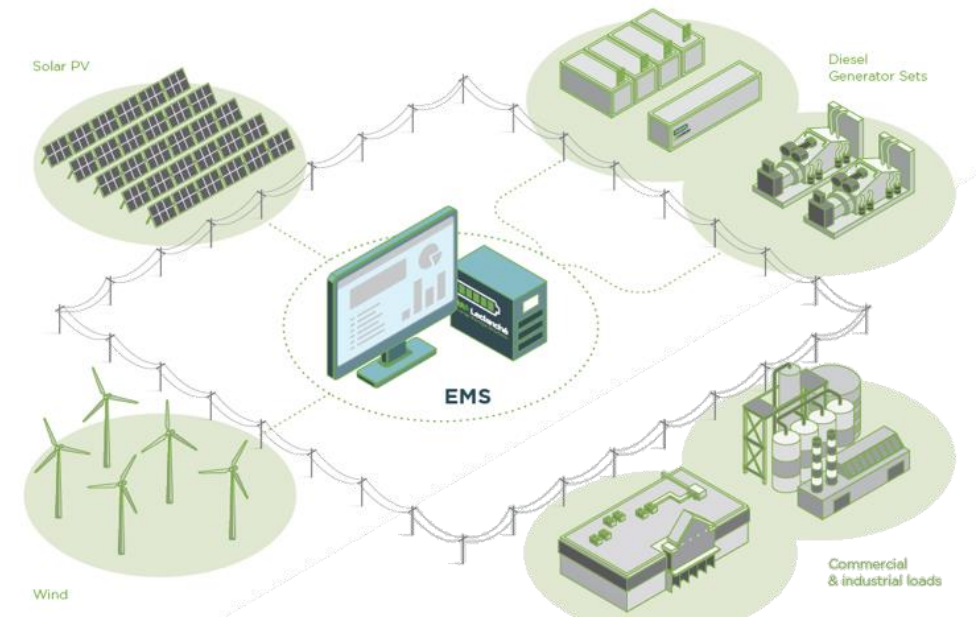
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Leclanché Stationary Storage Solutions Credentials

- 150 MWh installed, targeting 1GWh by 2025
- ESaaS implementation expertise & experience
- EMS-enabled revenue stacking and extended battery life management
- Multi-platform design, integration, end-to-end solution with LeBlock™ modular system
- Positioned in high-growth markets such as fleet management, fast-charging, load displacement and off-grid expertise



Integrated Technology Partners



Leclanché Stationary Storage Solutions

MARKET

- Target Energy storage market: \$30+ billion market by 2023
- Addressing “segments” requiring sophisticated Energy Management Software (EMS):
 1. Fast EV Charging: **\$12b, growing to 30bn by 2030.**
 2. Micro-grid: **\$8b, growing to \$39b by 2030.**
 3. Solar + Storage: **\$5b growing to 8b by 2030.**
- Focus on Fast EV Charging solutions in OECD markets
- Focus on off-grid in Caribbean and Latin America.

AGILE

PRODUCT

- Industry leading EMS Platform
- New innovative, modular, pre-configured building block concept – **LeBlock™** (pat.pend)
- Plug ‘n play for fast installation
- Efficient / easy handling and logistics to site.



RELIABLE

COMPETITION

- 150 MWh installed with the goal of **1 GWh by 2025**
- Competitive overall price driven by in-house EMS and systems knowhow
- First ever BOO platform with EMS to offer ESaaS.



EXPERT

Trusted by Customers Worldwide

Renewable Integration and Grid Ancillary Services



76 GWh

Of cumulative
renewable energy
throughput
(Dec 2020)

Fast EV Charging Infrastructure

Port

Automotive

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



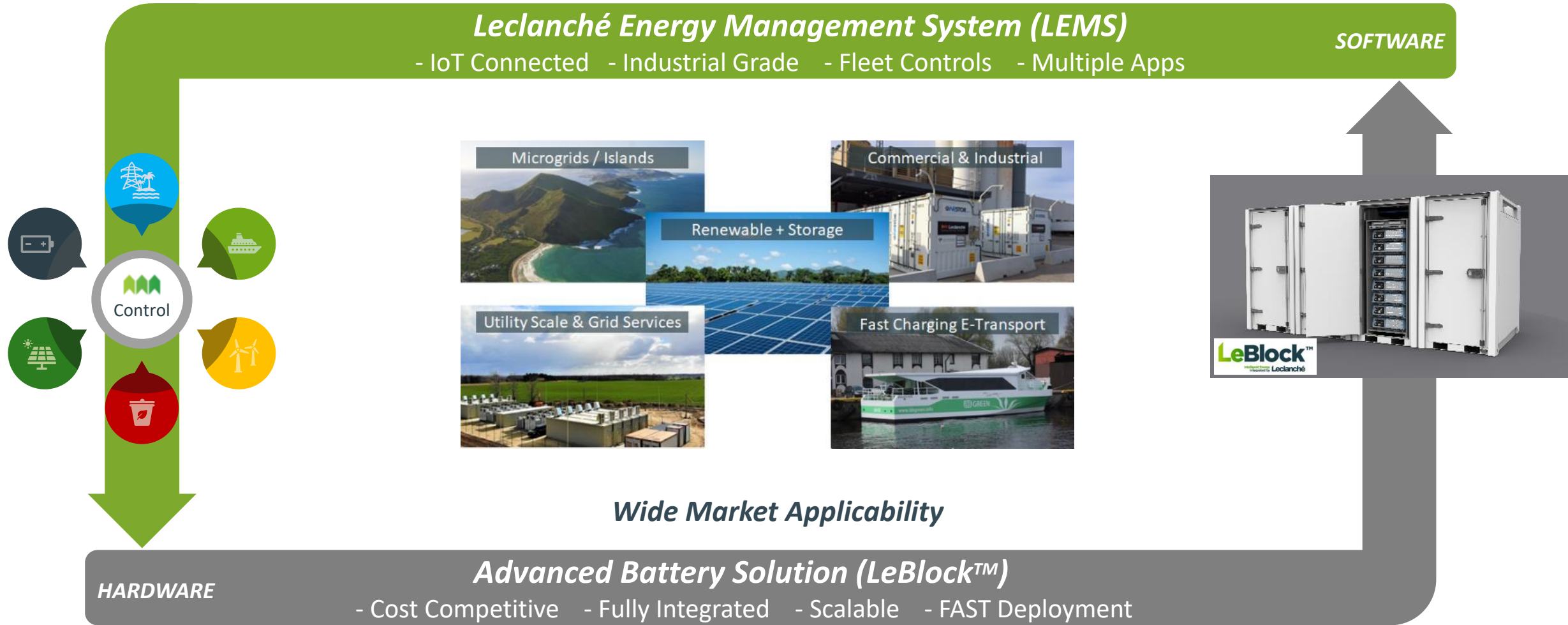
Amherst Island, ON, Canada

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

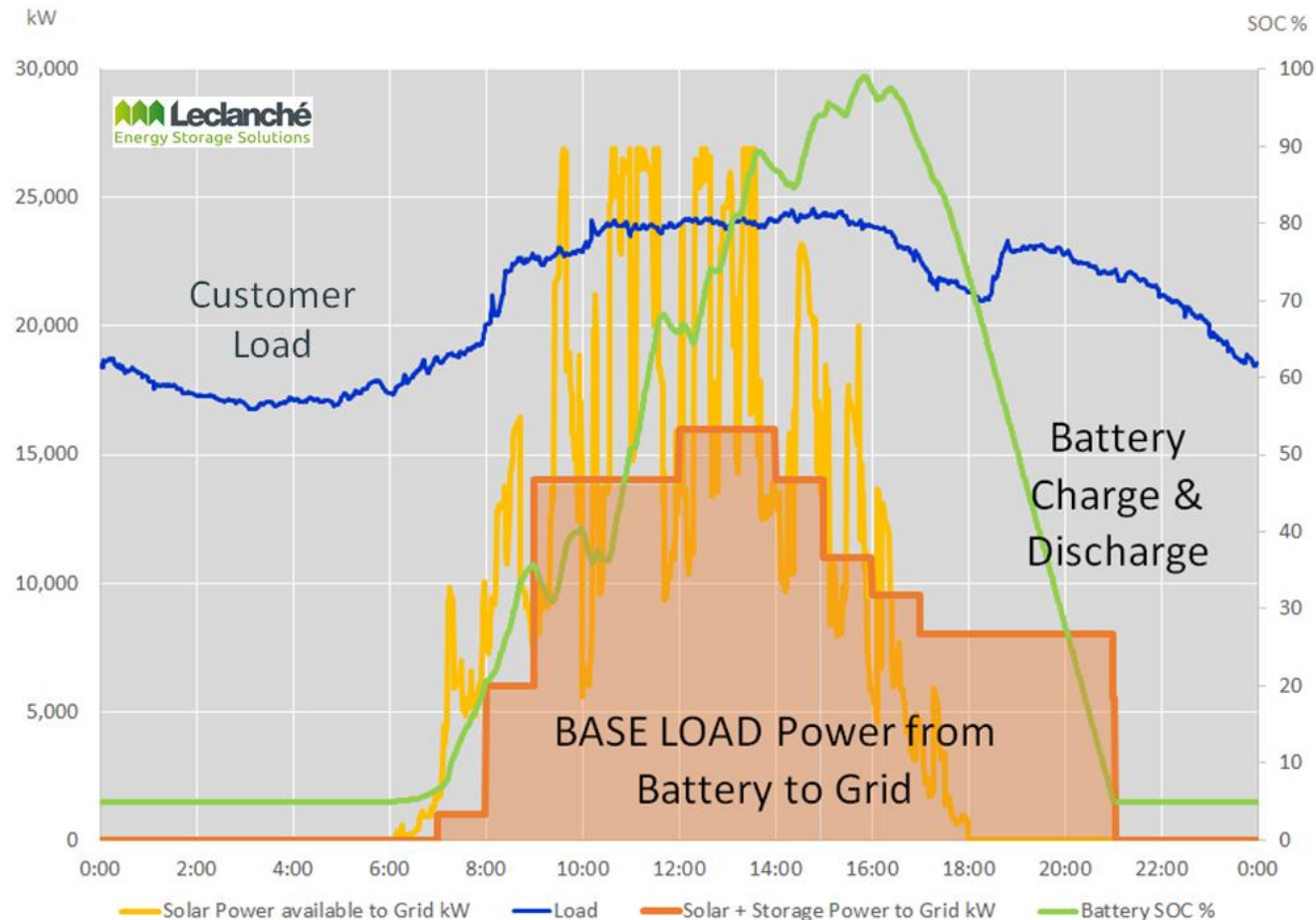
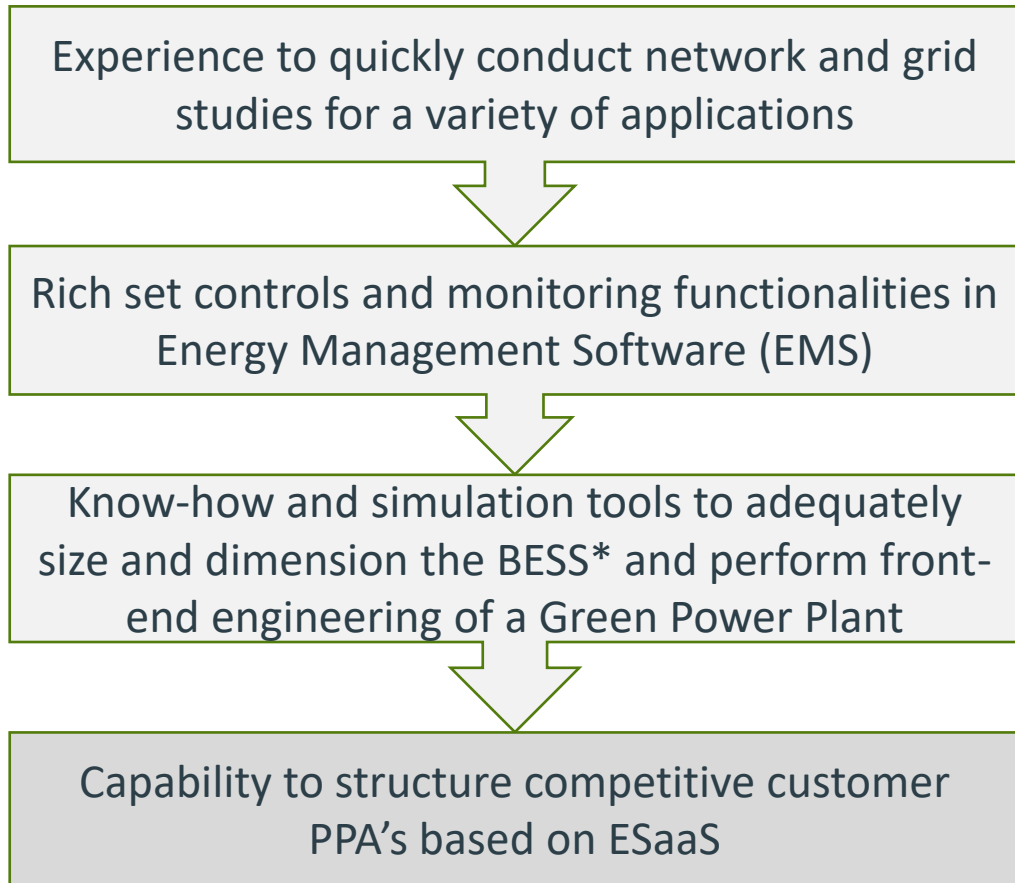


Proven, Proprietary & Vertically Integrated Battery Systems

Leading stationary storage products & software

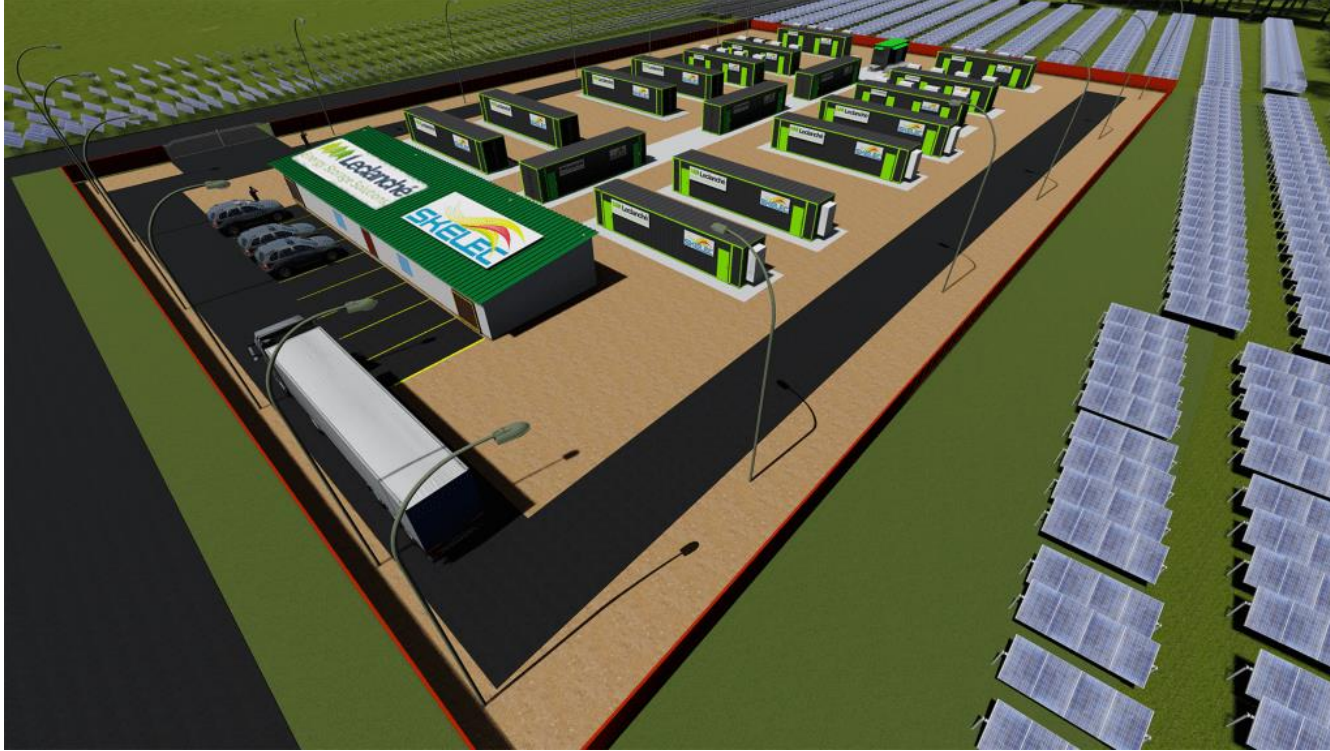


Building Caribbean's largest Green Power Plant: Solar+Storage Microgrid project in St. Kitts



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

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



- Solar PV 30 MW peak / 45 MWh
- 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



Typical Site Layout



- ▶ 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

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Solid base to deliver sustainable profitability

... more than US\$ 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 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 Buça
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



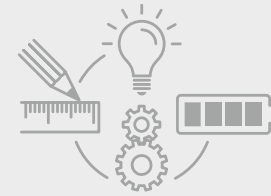
Thank You
Leclanché is on a clear path to deliver profitable growth.



**STATIONARY
SOLUTIONS**



**e-TRANSPORT
SOLUTIONS**



**SPECIALTY BATTERY
SYSTEMS**

Leclanché
Energy Storage Solutions

info@leclanche.com
www.leclanche.com



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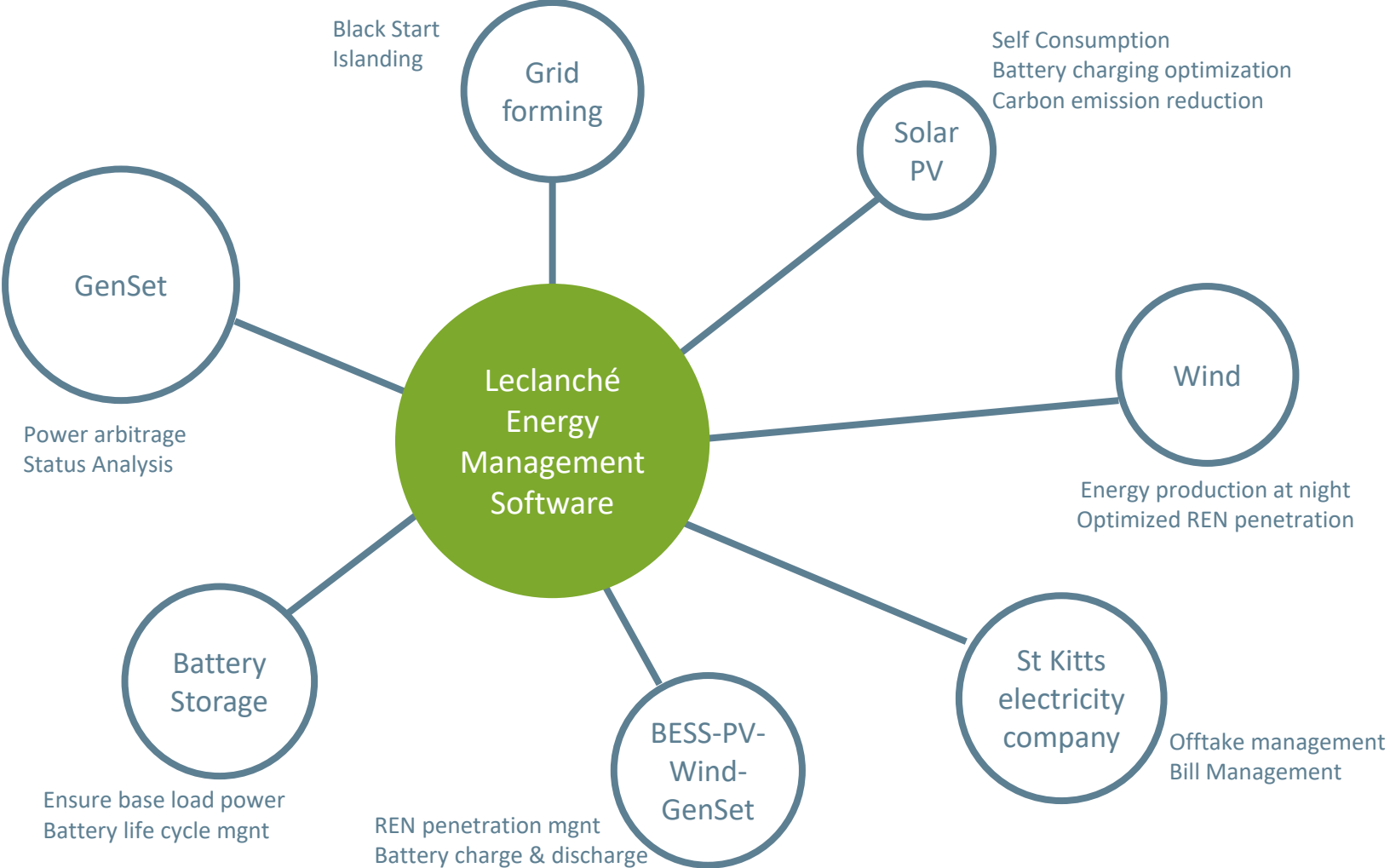
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Enhancing renewable energy penetration in microgrids



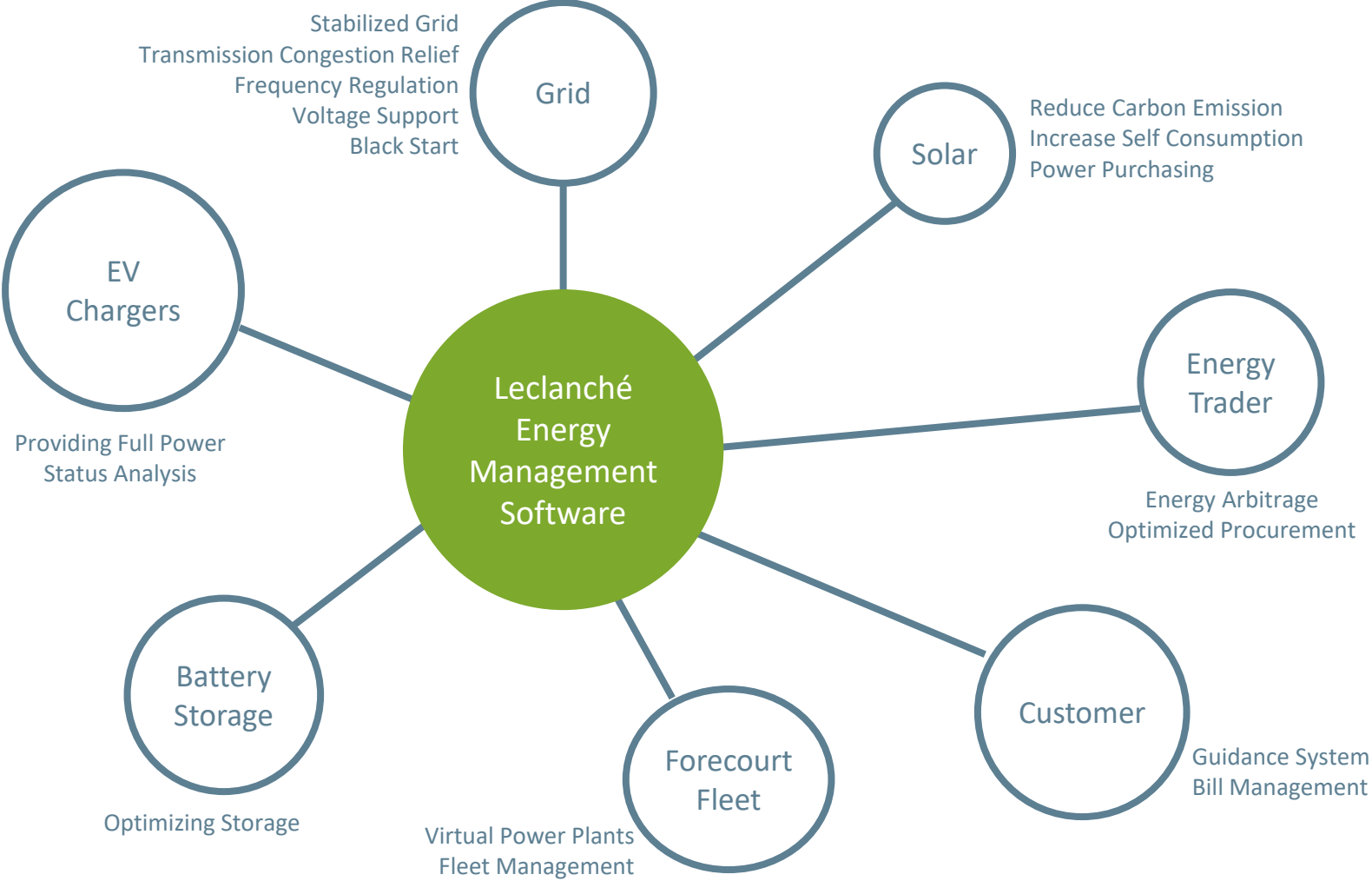
Smart Energy Management
 guaranties base load
 dispatchable power from
 battery to grid

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

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-Fourcorts

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