

Company Overview

ENEROX - Building Energy Storage Infrastructure

cellcube



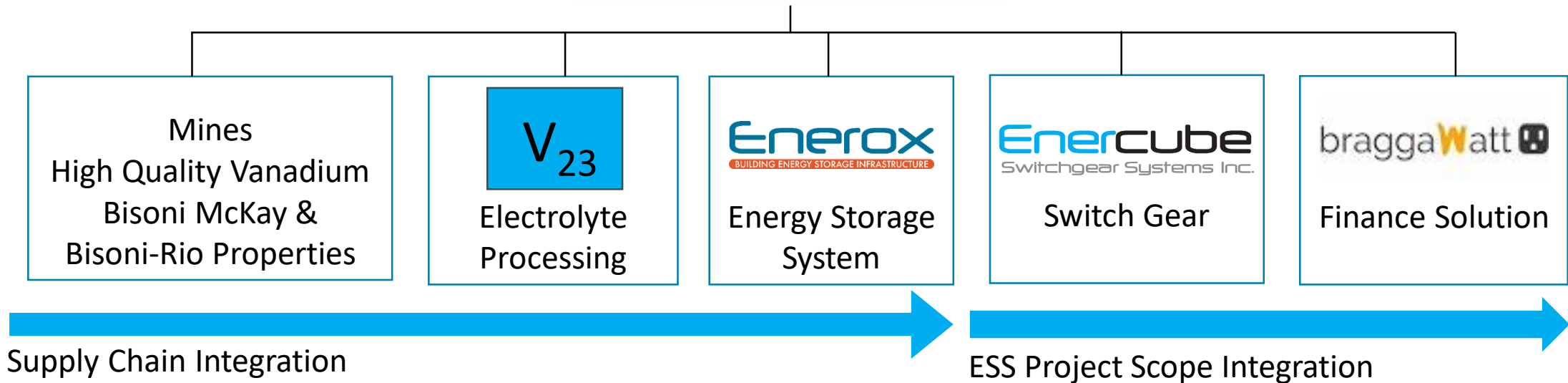
Status: Q3 2018

Information subject to change without notice.

Enerox
BUILDING ENERGY STORAGE INFRASTRUCTURE

Enerox is part of the CellCube Energy Storage Systems Inc. Family

Integrating best in class technology into an end-to-end energy storage infrastructure portfolio



Enerox GmbH, Austria

EnerCube Switchgear Systems Inc., Canada

Vanadium 23 Corp., Canada

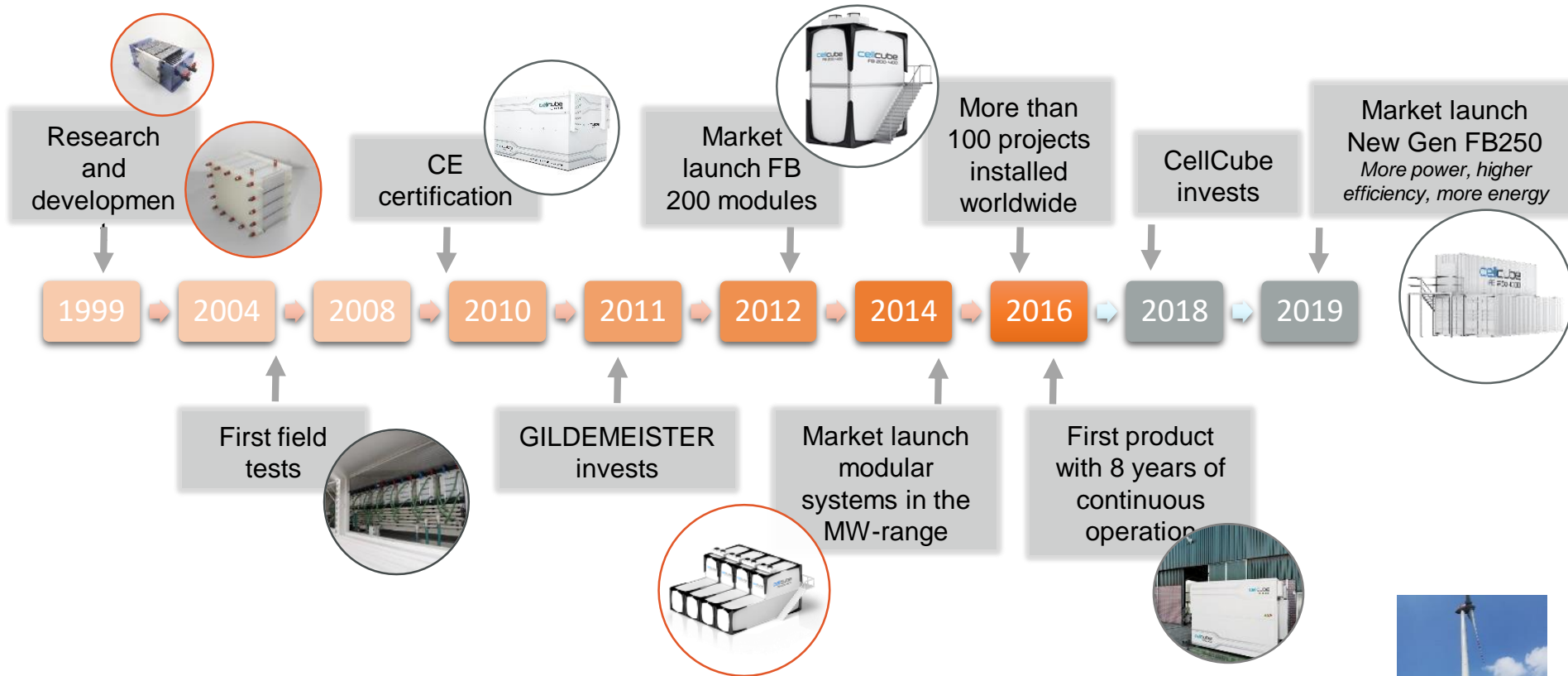
Research, Design, Manufacturing, Distribution of the integrated CellCube ESS

Design, Manufacturing, Distribution of Switchgear and Drive Equipment

Mining and highest grade of Production for Vanadium and Vanadium Electrolyte

CellCube is setting the highest standard in Vanadium Flow Batteries

The ENEROX experience sets market leading standards - joining the CellCube Family in 2018



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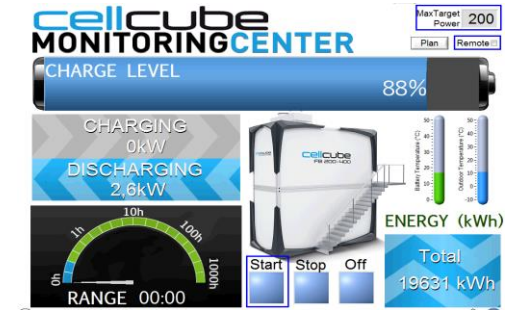
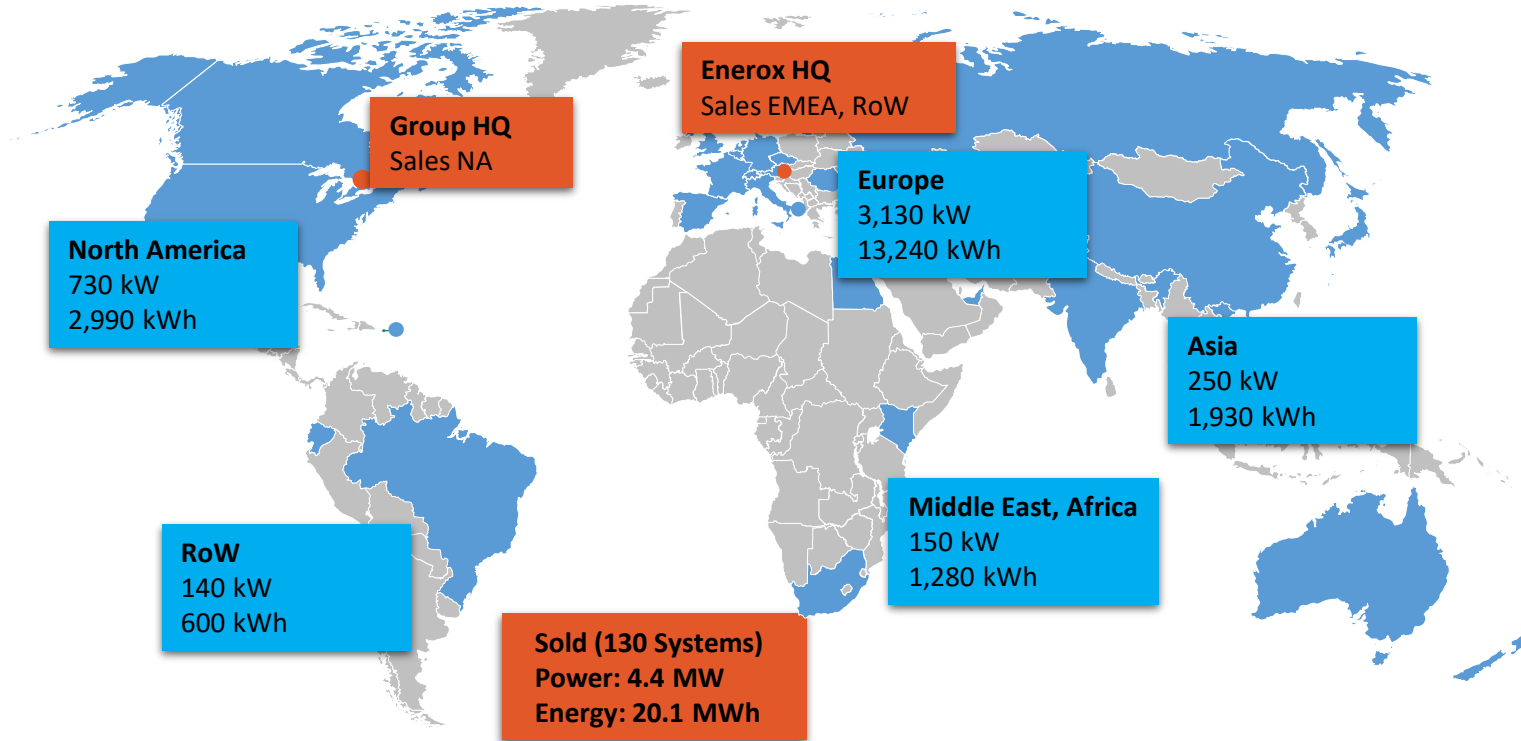


Deployed in regions from
-40° to +50° Celsius



CellCube business is entering now commercial large scale business

International business track record of Enerox (incl. Gildemeister)



- ✓ Daily Monitored
- ✓ Over 130 systems installed
- ✓ Products running since 2008
- ✓ 30 employees (Enerox) / 85 (Group)
- ✓ More than 2 Million Operational Hours
- ✓ 16 Storage Applications realized (Grid to Off-grid)
- ✓ >10,000 cycles achieved in single field deployment
- ✓ engineered with combined >100 years development expertise

Certified by:



market & customer requirements move clearly into energy centric

Results from Market Research in 2018

The next generation energy storage (after the Lithium bubble) needs to offer

- ✓ More flexibility for conventional and renewable power generation
- ✓ To get Transmission and Distribution Grids future proof at lower TCO
- ✓ Reducing Levelized Cost of Electricity (LCo-E) by decreasing LCo-Storage

Renewable Integration

More PV & Wind are getting deployed

Global renewable electricity generation is projected to grow by almost 45%, or 2,245 TWh to over 7,310 TWh in 2020

Power & Grid Flexibility

Capacity Markets

More Peaking & Reserve Capacity is required

Increasing RE integration challenges conventional peaking reserve. Renewable Baseload can provide Must-Run-Rate

New Electrification

De-Carbonization

Less & replacement of Diesel / Gas off-grid

Energy Demand in remote areas grows significantly.

Demand for conventional gensets drops at same time to be replaced by PV & Wind plus storage

Smart Cities & Communities

More micro-grids and smart infrastructure needed

Increase of distributed generation and e-mobility drives demand for local flexibility.

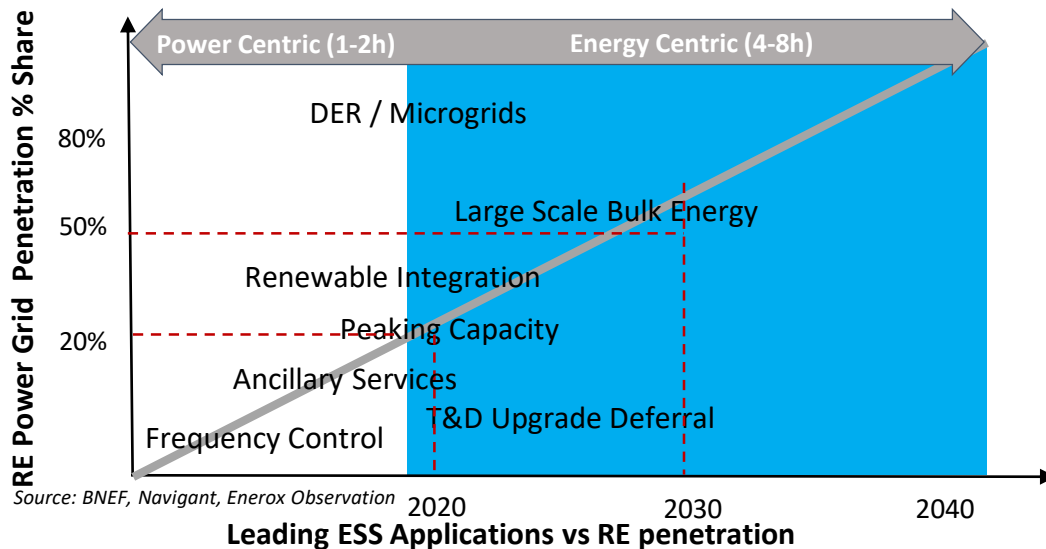
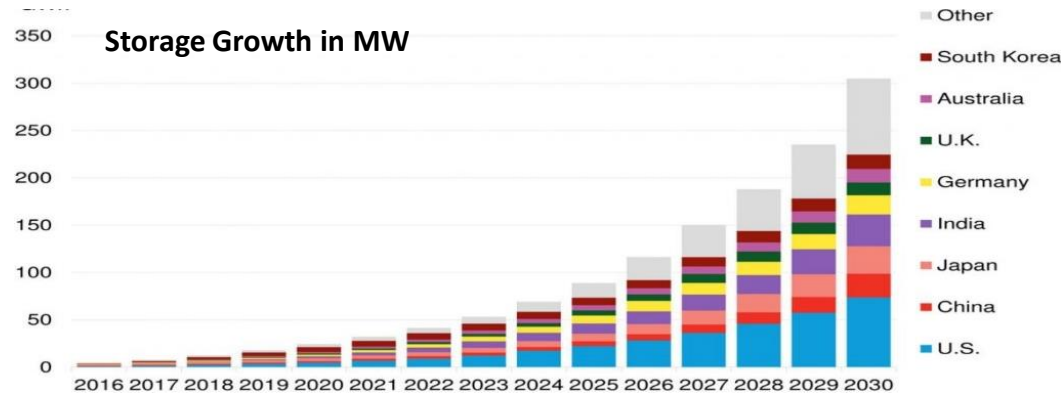
Annual distribution revenue expected to reach nearly US \$20 billion by 2023



Source: Navigant Research, Bloomberg Energy, CellCube

Based on market demand we offer competitive energy centric solutions

CellCube's portfolio covers capacity and microgrid markets



Utility / Grid-Scale

Microgrids / DER



Island / Off-grid



CellCube's solutions focus on reduction of LCOE and TCO

CellCube solution overview for selected market segments



Utility Scale Solutions

- Peaker Plant Solutions
- Reserve Capacity
- Renewable Baseload
- Curtailment avoidance
- T&D investment deferral
- Ancillary Services



Microgrid Solutions

- Optimized Energy Supply
- C&I Solutions
- Grid Stability Services
- Energy Backup Services
- EV charging infrastructure



Offgrid Solutions

- Fuel Cost Reduction
- Peaking Capacity
- Green Energy Supply

Power and Storage Capacity – flexible, scalable, available and cheap

CellCube Product Families

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FB 250-1000

Flow Battery

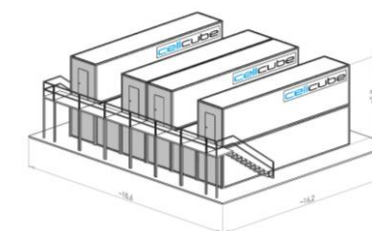
Rated Power in kW

Usable Energy
Capacity in kWh

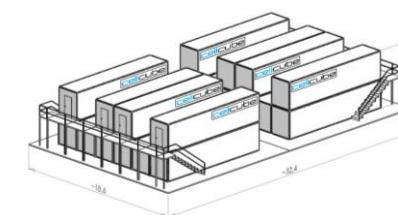


Product	Power Output	Usabel Energy Capacity (kWh)
FB 250	250 kW	1000 (4 hours)
		1500 (6 hours)
		2000 (8 hours)
FB 500	500 kW	2000 (4 hours)

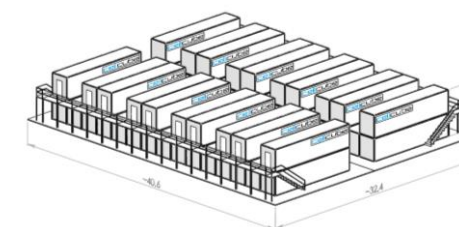
Scalability
(examples)



1MW – 4 MWh



2MW – 8 MWh



10MW – 40 MWh

US: IEEE 1547, UL 1741 | UL 1973, UL 508, UL 9450, NFPA 70, CA Rule 21 (pending) CA: CAN/CSA-C22.2 AU: AS 4777
DE: BDEW, VDE-ARN-4105 IT: CEI 0-16 & 0-21 GB: G59, G83 BE: C10/C11 RU: GOST EU: CE | Other codes and standards pending

CellCube is a provider and partner for an end-to-end service

Overview of Service Options



SOLUTION DESIGN

- Fit for Purpose Analysis
- Modelling & System Simulation
- Integrating Renewables & Power Systems
- Research & Development / Customized Solutions



TURNKEY SOLUTION

- Containerized DC/AC Storage System – PCS selection optional
- Integrated Battery Management System (BMS) – EMS optional
- Standardized communication interfaces
- Installation, Integration and commissioning services
- Balance of Plant (optional)



OPERATION & MAINTENANCE SERVICES

- Basic System Maintenance
- Extended system warranty
- Monitoring & System Optimization Services
- Performance Guarantees

Our Customer and Partner base

Utilities/DSO/TSO



C&I/Integrator/Solar



University/Institute



More customers in industrial and commercial space

Our value proposition puts our clients into a leading market position

CellCube Product & Solution Highlights



- ✓ Commercially viable solutions for long duration storage systems for 3 -10 or more hours of energy storage
- ✓ Scalable into the multi hundred MW range
- ✓ Global Monitoring 24/7 available
- ✓ No capacity degradation and unlimited cycling
- ✓ 100% usable depth of discharge
- ✓ Finance Solution with bankable assets and rental option
- ✓ Service life of up to 30 years
- ✓ Safe, non-flammable, non-explosive, environmentally friendly
- ✓ Products in the field running over 10 years
- ✓ CellCube tested with more than 10,000 uninterrupted cycles
- ✓ Commercial Model available for temporary deployment

The background image shows a modern, multi-story building with a glass facade. In front of the building is a carport with two cars parked. To the right of the carport is a large solar panel array mounted on a grassy field. The sky is overcast.

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Thank you very much for your attention!

ENEROX GmbH

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