GREENBOX MOBILE ENERGY

ELECTRICAL STORAGE SOLUTION

OPTIMIZER, ENABLER, INTEGRATOR
STORAGE CREATES OPPORTUNITIES

Power storage creates multiple **opportunities** for more efficient power production, better grid management, and increased stability and availability. Our scalable, all-in-one **EACCUs** are a perfect fit for the changing energy environment, enabling existing power systems to adapt to current trends, and creating a host of possibilities when combined with **renewable energy sources.**

A VARIETY OF
APPLICATIONS

MULTIPLE APPLICATIONS I

Grid &
Utility Service Providers

Our products can take care of frequency regulation, manage grid congestion and allow the avoidance of significant investment in grid infrastructure, for example, to enable a scale-up of **electric vehicle charging**. It will also make solar and wind power more reliable.

Community

We increase the self-sufficiency of urban areas with local power generation and provide reliable backup power in the event of grid failure. In areas **unconnected** to the public grid, adding our EACCUs to a local **microgrid** ensures high-quality power supplies.

Commercial

Facilities with onsite generation such as solar arrays or combined heat and power (CHP) plants can increase their own-use consumption by adding Greenbox EACCUs to take advantage of time-of-day electricity tariffs by shifting their power draws.

MULTIPLE APPLICATIONS II

Public Sector

Where a grid connection is not reliable, the EACCUs increase **security** and **quality** of supply for public facilities. The stability of existing power plants can be improved by spinning reserves from the **Greenbox EACCUs**, and solar arrays can be built in to reduce fuel consumption.

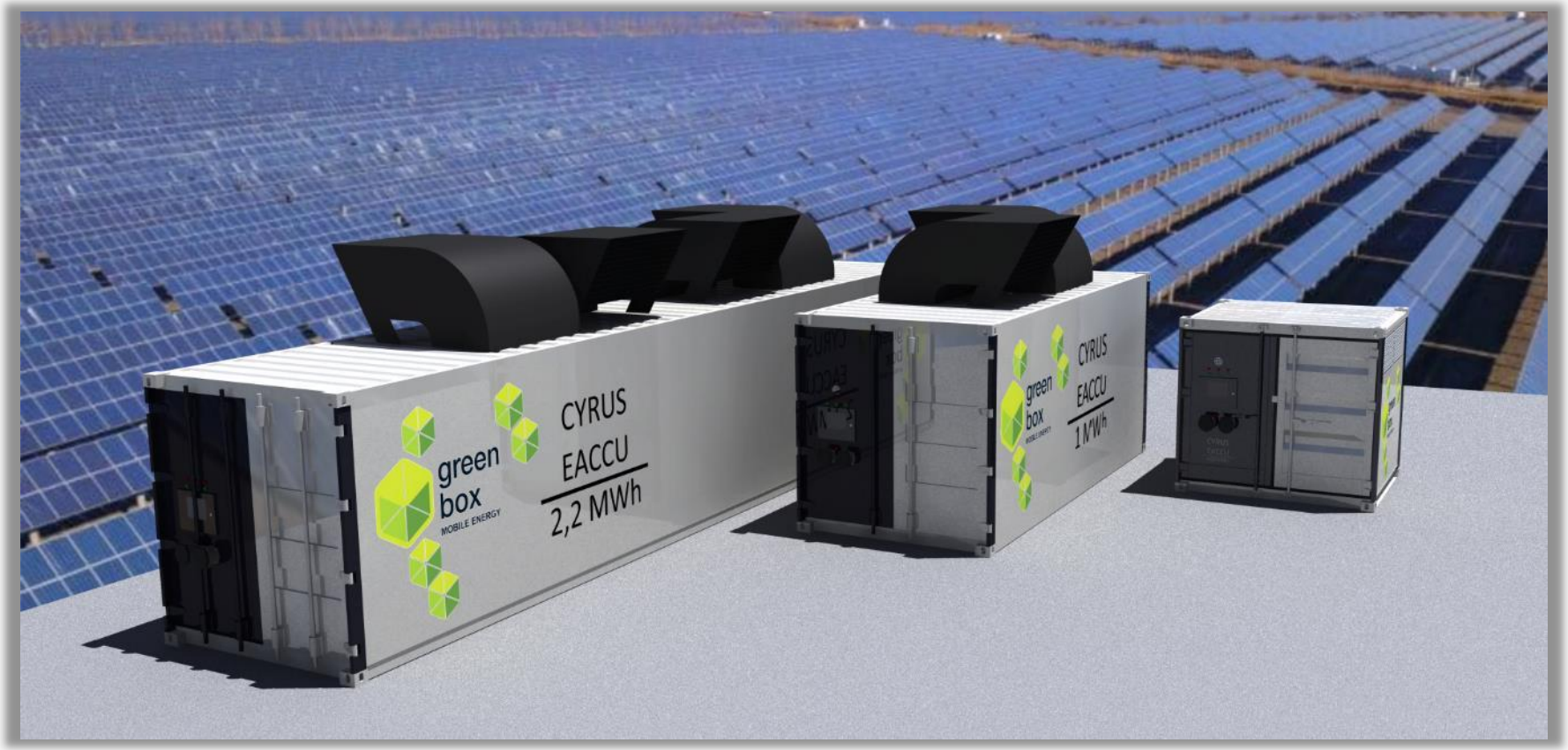
Industry

Remote industrial operations currently running on diesel power with no grid connections can reduce their fuel consumption and meet legal or company **environmental standards** more easily by integrating renewable sources with EACCUs.

ZERO EMISSION

STORAGE SOLUTIONS FOR
MICROGRIDS & ENERGY SYSTEM

The **EACCUs** are a key component for improving the reliability and profitability of microgrids and energy systems. It stores electricity from any distributed power source – such as gensets, wind turbines, or solar panels – and delivers it when needed.



ALL THE BENEFITS

AND MORE…

MULTIPLE BENEFITS

Grid Stabilization
The **Greenbox EACCUs** are able to provide grid support services and can form an **autonomous grid**, enabling customers to operate independently during grid outages.

Highest Power Density
Thanks to the extremely compact battery system design and the small footprint of the housings, the **Greenbox EACCUs** are the ideal solution for projects with logistical restrictions and limited space.

Digitally Connected
The **Greenbox EACCUs** are equipped with a data logger providing access to our digital solutions, including remote monitoring, fast and reliable service support, and – coming soon – further features such as predictive failure prevention and operational optimization.

Multilevel Safety Features
A multilevel **safety concept monitors** and ensures the safe operation of batteries, inverters, and HVAC systems. The outstanding fire and explosion protection system detects smoke and explosive gases. The **safety design** also includes a specially designed aeration mode and an optional built-in Novec fire extinguishing system as well as optional pipework connections for flooding with water in case of fire.

Black Start Capability
The battery energy storage system (BESS) can be used as a **black start unit** due to its grid capability. The BESS can perform black starts without auxiliary voltage and can form an autonomous grid.

MULTIPLE BENEFITS

Scalable In Size
Storage capacity and type of battery rating can easily be adapted, whatever your **individual power** and **capacity** requirements.

Ultra-Fast Response
By bringing power on-stream **immediately**, the **Greenbox EACCUs** provide essential fast response capability for power quality, black starts, frequency response, and backup applications.

Seamless Integration With Existing Power Plants
The system can be **built into existing** conventional and renewable power plants, making it easy to optimize operations and prepare them for the future.

Factory Tested Plug-And-Play Design
The **Greenboxx EACCUs** come factory-tested onsite. The highly mobile, fully integrated plug-and-play design ensures **fast**, **easy installation**, reducing setup time and costs. Power is available more quickly, and at lower cost.

Flexible Use
The **Greenbox EACCUs** can accept customer setpoints or be upgraded with the **Greenbox** microgrid controller to **support various applications**: storage of wind and solar power in microgrids, shaving peak loads to reduce demand charges, support for electric vehicle charging, flexibilization of generation assets, frequency, and voltage regulation services, and much more.

THE SYSTEM

IN DETAIL

COMPACT, FLEXIBLE, AUTONOMOUS
INSTANT POWER WHEREVER YOU NEED IT

HOUSING
- available in different sizes and housings
- our containers are custom-designed for harsh environments and challenging logistics
- superb protection from dust, insects, humidity, and heat – inside and out
- separated areas inside–to keep electric systems and batteries protected

BATTERIES AND BATTERY MANAGEMENT SYSTEM
- 0,5C/1C/2C rated high-quality cells
- battery system consists of vertical racks
- each rack contains several battery modules and one battery management system (BMS)
- the BMS units connect the racks to a DC power switch – each rack can be disconnected from the inverter
- all rack BMS are connected to our control cabinet via a master BMS

INVERTER
- operates bidirectionally
- converting AC from the grid into DC for charging the batteries (and vice versa)
- supports both grid-supporting and grid-forming modes

COMPACT, FLEXIBLE, AUTONOMOUS
INSTANT POWER WHEREVER YOU NEED IT

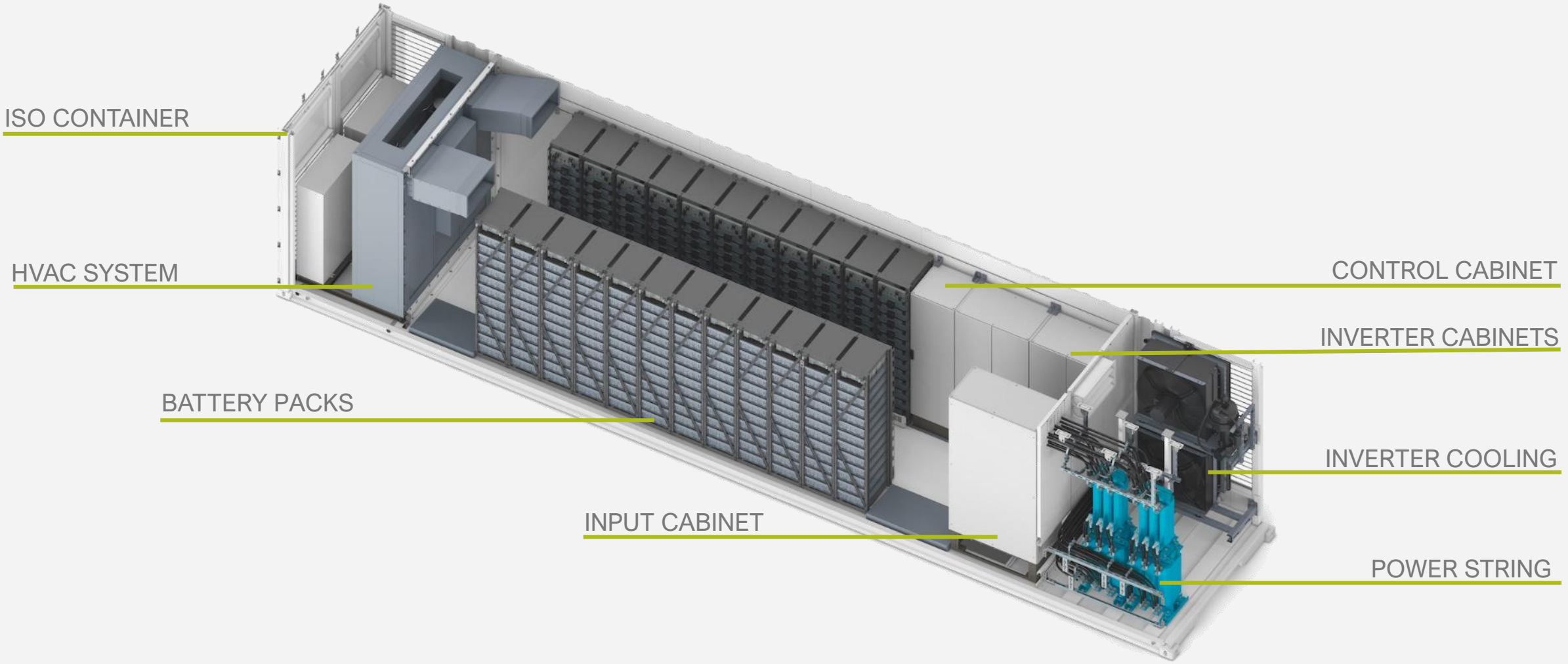
TRANSFORMER
- transforms the voltage to the level required by the inverter or grid
- is either installed inside or delivered as separate equipment for outdoor installation

HEATING, VENTILATION, AND AIR-CONDITIONING SYSTEM
- is located inside the housing and feeds temperature and humidity-controlled air to the cleanroom, protecting the sensitive electrical equipment and batteries from contact with ambient exterior conditions
- regulates temperature and humidity to the required levels

CONTROL SYSTEM
- top-level battery storage controller (BESC), specially designed for this application
- controls all aspects of the BESS
- located inside the control cabinet
- built-in touchscreen and simple remote access via Modbus-IP enable full control

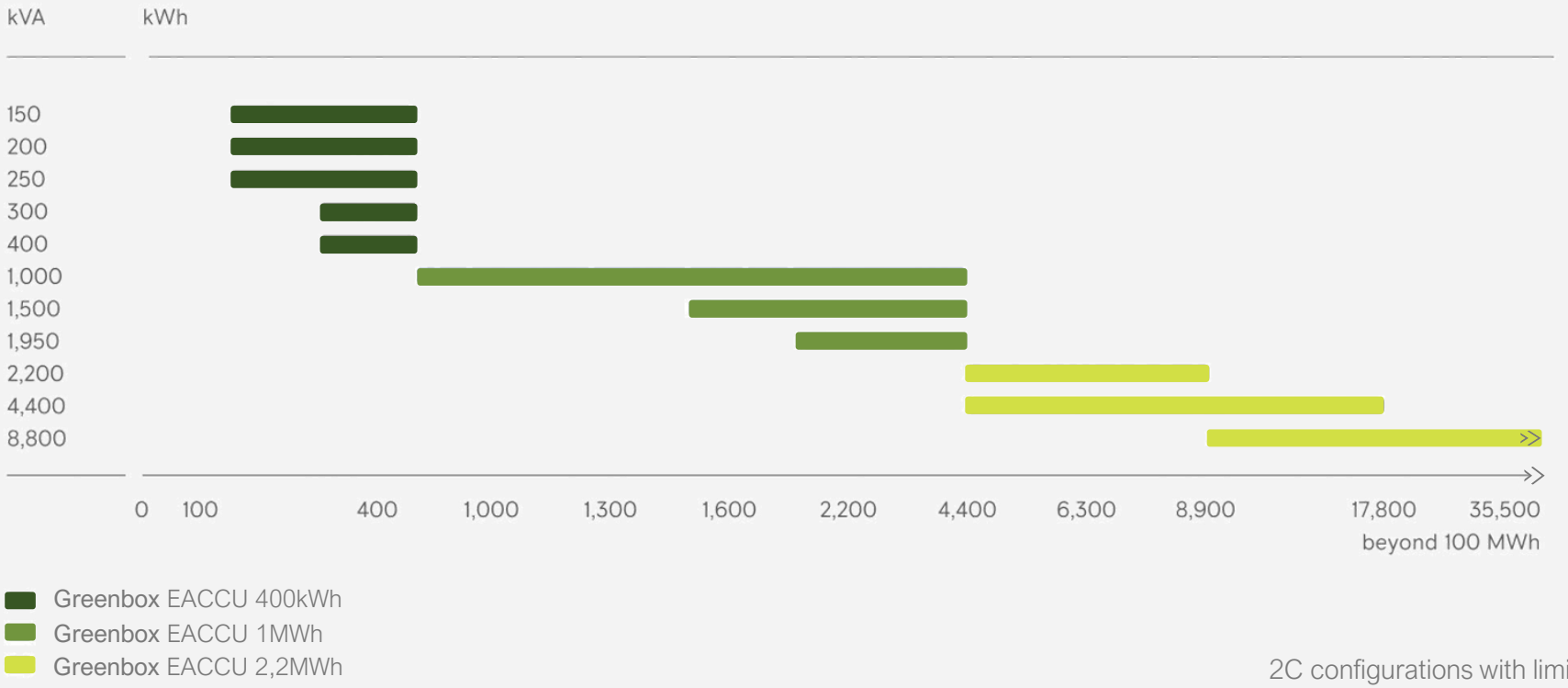
SAFETY FEATURES
- features a comprehensive safety concept
- comprising a multilevel safety architecture, fire & gas detection, fire extinguishing options, etc.

A CLOSER LOOK
COMPACT, FLEXIBLE, AUTONOMOUS



THE FULL POWER RANGE

The EACCUs portfolio covers a broad power range, enabling us to offer exactly the right size of battery storage solution for your power requirements. The **EACCU** comes in three versions: 400kWh, 1MWh, and 2,2MWh.



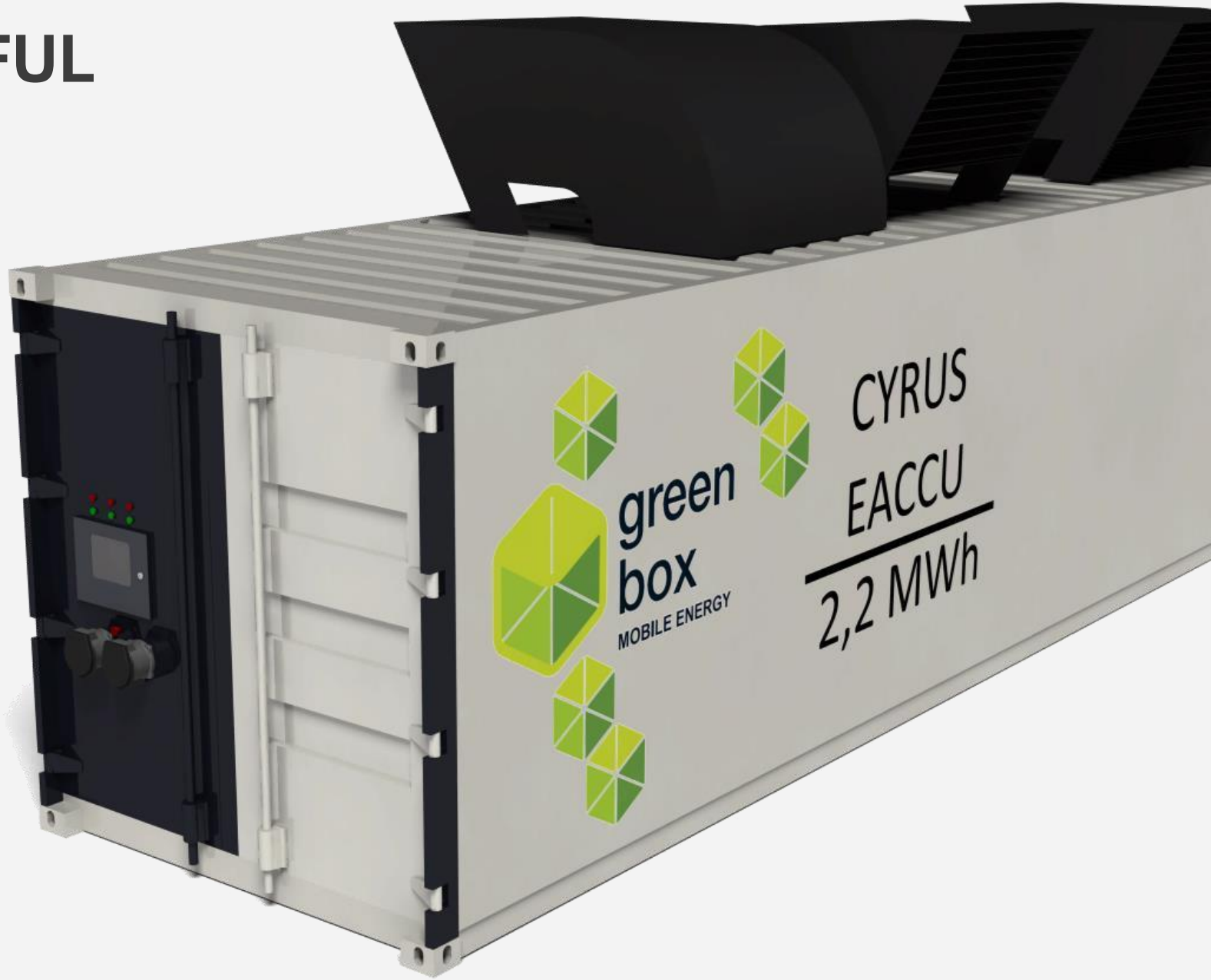
2C configurations with limited availability

PRODUCT OVERVIEW

EACCUs

LARGE AND POWERFUL
EACCU 2,2 MWh

The **EACCU 2,2MWh** is designed for customer applications with power and capacity requirements up to 2,000 kVA and 2,200 kWh and above. It is suitable for integrating solar assets and wind parks, and for providing frequency regulation and other ancillary services in the utility sector.



LARGE AND POWERFUL
EACCU 2,2 MWh

KEY TECHNICAL DATA GREENBOX EACCU 2,2MWh		
Cell Chemistry		NCM
Nominal Capacity	kWh	up to 2,200
Nominal Apparent Power	kVA	up to 2,000
Maximum Apparent Power (1min)	%	up to 150%
Transformer		optional
Nominal Voltage	V	515 V (400 V with internal transformer)
Enclosure		40ft ISO HC container
Black Start Capability		yes

MEDIUM AND VERSATILE
EACCU 1MWh

The **EACCU 1MWh** is designed for customer applications with power and capacity requirements of up to 800 kVA and 1,000 kWh. It is suitable for **off-grid solutions**, for reducing fuel dependence in remote communities, or for reducing demand charges in the industrial sector.

LARGE AND POWERFUL
EACCU 1MWh

KEY TECHNICAL DATA GREENBOX EACCU 1MWh		
Cell Chemistry		NCM
Nominal Capacity	kWh	up to 1,000
Nominal Apparent Power	kVA	up to 800
Maximum Apparent Power (1min)	%	up to 150%
Transformer		optional
Nominal Voltage	V	515 V (400 V with internal transformer)
Enclosure		20ft ISO HC container
Black Start Capability		yes

SMALL AND STURDY
EACCU 400 kWh

The **EACCU 400 kWh** is designed for customer applications with power and capacity requirements of up to 400 kVA and 550 kWh. It is suitable for off-grid solutions, for reducing fuel dependence in **small remote communities**, and for enabling the own-use consumption of solar power in the commercial and public sectors.

LARGE AND POWERFUL
EACCU 400 kWh

KEY TECHNICAL DATA GREENBOX EACCU 400kWh		
Cell Chemistry		NCM
Nominal Capacity	kWh	up to 550
Nominal Apparent Power	kVA	up to 400
Maximum Apparent Power (1min)	%	up to 150%
Transformer		internal
Nominal Voltage	V	400 V
Enclosure		compact housing
Black Start Capability		yes

SERVICE OPTIONS

ANYTIME YOU NEED IT

SERVICE SOLUTIONS
ENSURING LONG, RELIABLE SERVICE LIVES

The **EACCUs** are built to deliver the highest performance with low life-cycle costs. Our maintenance services keep them performing that way with a full portfolio of service solutions. Remote operation control and diagnostics, digital connectivity solutions, and new maintenance schedules keep the life-cycle costs of the **Greenbox EACCUs** to a minimum.

REPORTING & OPTIMIZATION
add transparency to system performance and allow constant improvement of system parameters based on operational experience

PREVENTIVE & CORRECTIVE MAINTENANCE
performed by trained technicians to ensure a high-quality of work

ACTIVE MONITORING
by trained personnel to identify failures in time and initiate required actions to reduce downtime

SERVICE SOLUTIONS
ENSURING LONG, RELIABLE SERVICE LIVES

REMOTE DIAGNOSTICS
by experts to identify root causes of malfunctions (3rd level support) and perform low-level configuration changes and bug-fixes

REPAIR GUIDANCE
for local personnel from experts via phone, video conference or email/mail to minimize downtime and costs

VALUECARE AGREEMENTS
make it easy to optimize lifecycle costs, maximize uptime, and devote more time and resources to your core business, with tailored solutions to move your business forward

EXTENDED WARRANTY COVER
for Greenbox products, protecting against unexpected costs with a scope tailored to customer needs

Ing. Andreas Schenner

Greenbox Mobile Energy GmbH
Mariendorfer Damm 1
12099 Berlin, GERMANY
Phone: +43 664 4147259
E-Mail: a.schenner@greenbox.global

Subsidiary: Cyrus Industries GmbH
Biedermayrstraße 15
4421 Aschach an der Steyr | AT
Phone: +43 664 4147259
E-Mail: a.schenner@cyrus-industries.com