

this
Webinar is powered by
GoodWe

25 November 2024

2:00 pm – 3:00 pm | GMT, London

3:00 pm – 4:00 pm | CET, Berlin

6:00 pm – 7:00 pm | Dubai

pv magazine
webinars

Guide for Installers: Expanding into C&I with Flexible Storage Solutions



Tristan Rayner

Editor
pv magazine



Faisal Bouchotrouch

Product Manager C&I Europe
GoodWe



Michael Gutwein

Solution Manager for the DACH region
GoodWe




Niklas Knöppel

CEO
Solelgrossisten Sverige AB

Welcome!

Do you have any questions?  

Send them in via the Q&A tab.  We aim to answer as many as we can today!

You can also let us know of any tech problems there.

We are recording this webinar today. 

We'll let you know by email where to find it and the slide deck, so you can re-watch it at your convenience.  

Guide for Installers:
**Expanding into C&I with Flexible Storage
Solutions**

25th November, 2024



Contents

- 1 **GoodWE Presentation**
- 2 **C&I Current and Future Trends**
- 3 **C&I New Product Launches**
- 4 **GW C&I Solutions**
- 5 **Use Case: Frequency Market Participation,
by Niklas Knöppel**



GOODWE

GOODWE GLOBAL TEAM



5000+

Employees



1500+

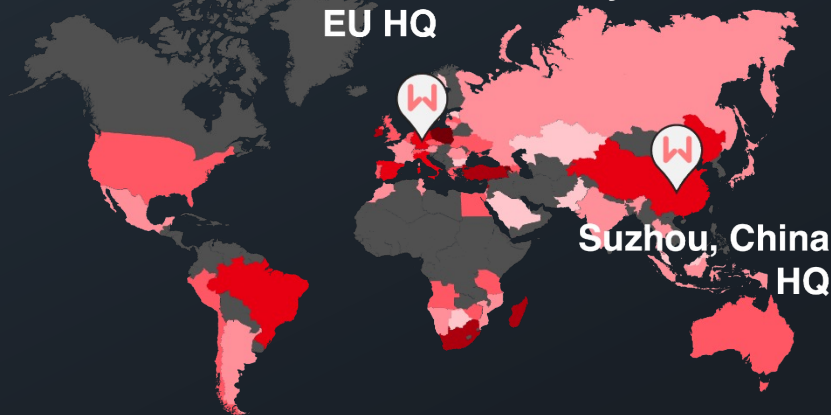
R&D Team



150+

International Staff

Munich, Germany
EU HQ



Suzhou, China
HQ



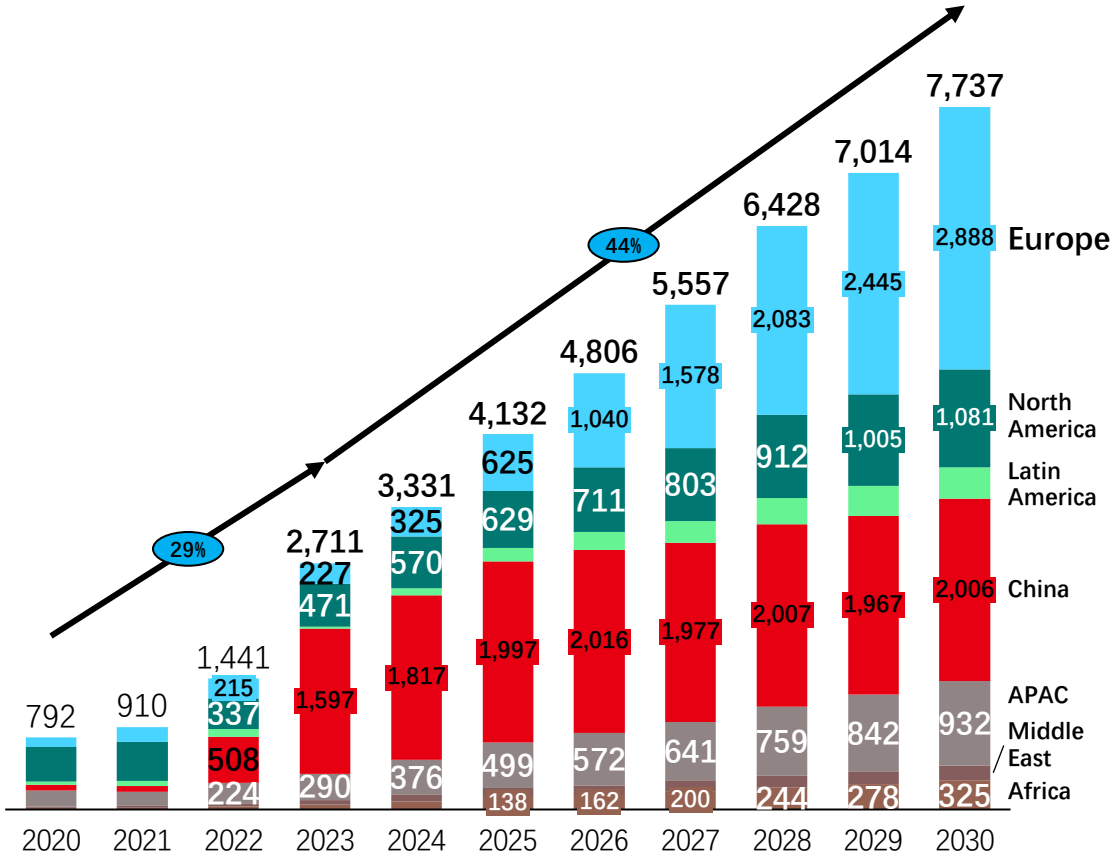
GOODWE

We Are GoodWe

Contents

- 1 GoodWE Presentation
- 2 **C&I current and future trends**
- 3 C&I new product launches
- 4 GW C&I solutions
- 5 Use Case: Frequency market participation, by Niklas Knöppel

Global C&I Storage Annual Additions (MW)



- Continuous Market C&I Growth
- 2023 – 2030: 44% CAGR
- **By 2030, Europe** will be the largest single market for C&I BESS globally.

Source: S&P Global, team analysis

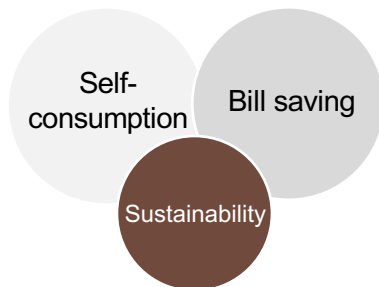
The current market is still niche, but as costs decline stronger business cases are emerging

Today

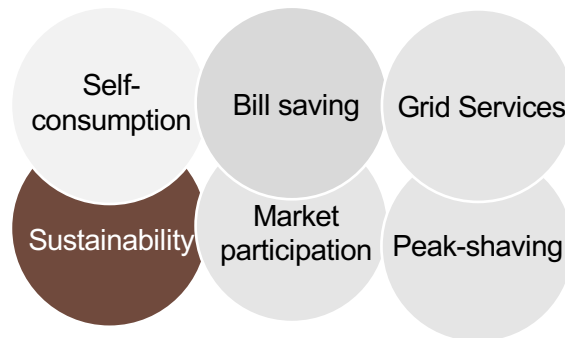
2025 and onwards

Reasons to add C&I storage

Niche applications, diverse customer landscape, case-by-case solutions



Stronger business case, clear end-use products and applications

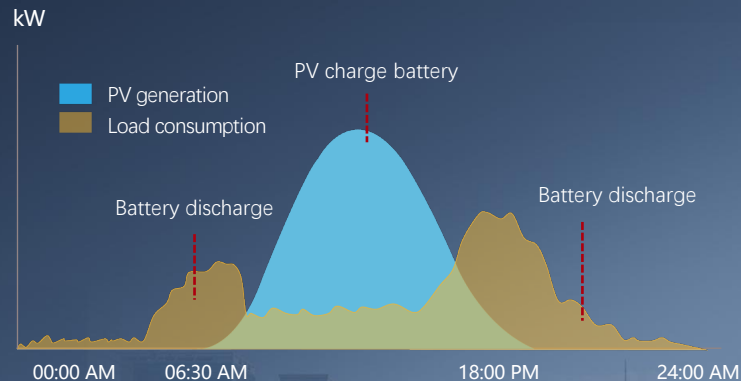
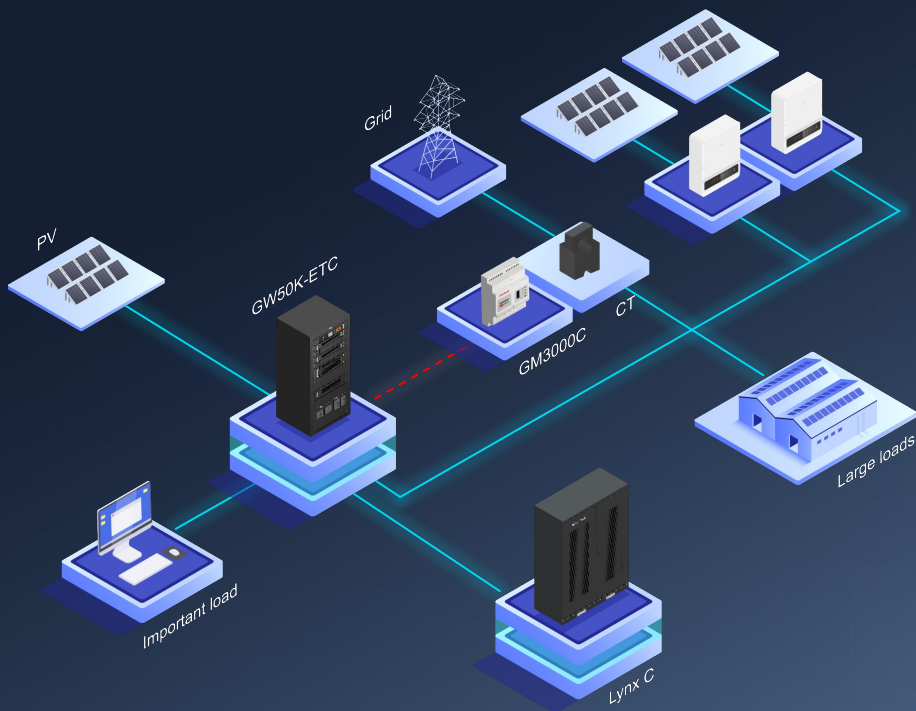


Market drivers

- ▲ Energy independence/backup, bill savings
- ▼ Highly fragmented market, lack of reusable experience
- ▼ High system cost
- ▼ Most EU countries forbid feed-back electricity – cannot process arbitrage

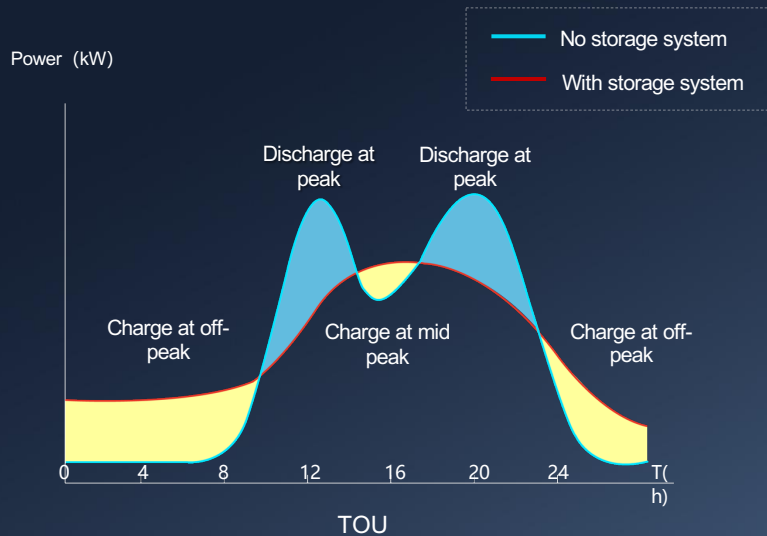
- ▲ More mature and diversified market participation mechanism, e.g. arbitrage, VPP
- ▲ Strong C&I PV outlook up to 2030
- ▲ Supportive policy and subsidies
- ▲ Easier and well-planned commercial structures along with dramatically cost cut-off

Self-use



In general mode, PV power will firstly support load operation and exceed power can be used to charge battery or sell to grid.

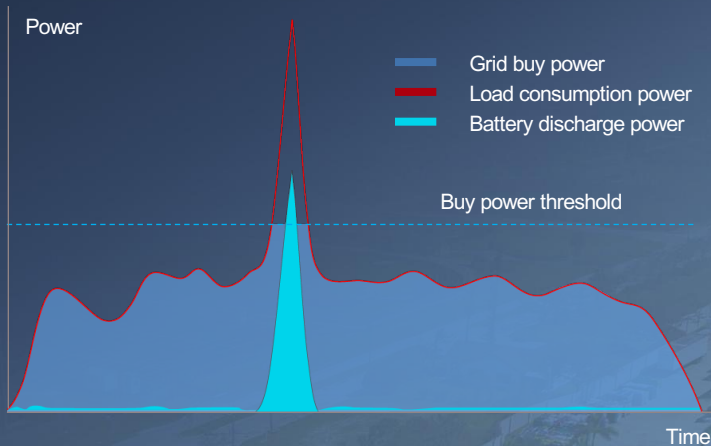
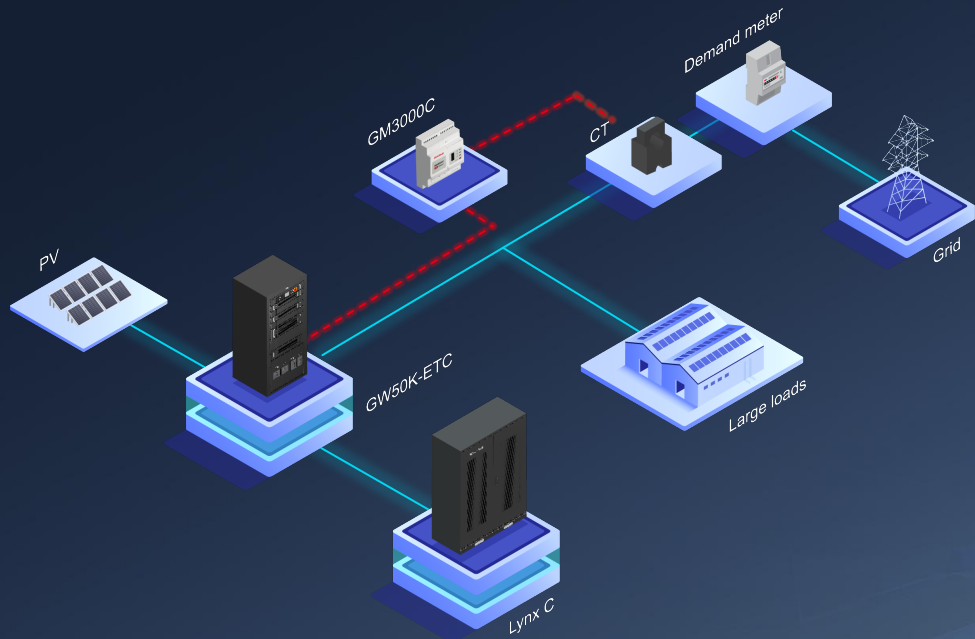
Time Of Use / Energy Arbitrage



AL-TOU		Existing	New	% Change
Demand (\$/kW/mo)	Summer Max	\$24.51	\$20.49	-16.4%
	Summer Peak	\$21.13	\$26.65	26.1%
	Winter Max	\$24.51	\$20.49	-16.4%
	Winter Peak	\$7.57	\$15.81	108.9%
Energy (\$/kwh)	Summer Peak	\$0.1276	\$0.1374	7.7%
	Summer Part Peak	\$0.1178	\$0.1152	-2.2%
	Summer Off Peak	\$0.0870	\$0.0915	5.2%
	Winter Peak	\$0.1157	\$0.1204	4.0%
	Winter Part Peak	\$0.1001	\$0.1073	7.2%
	Winter Off Peak	\$0.0787	\$0.0928	17.9%
Fixed	Basic Service Fee	\$116.44	\$139.73	20.0%

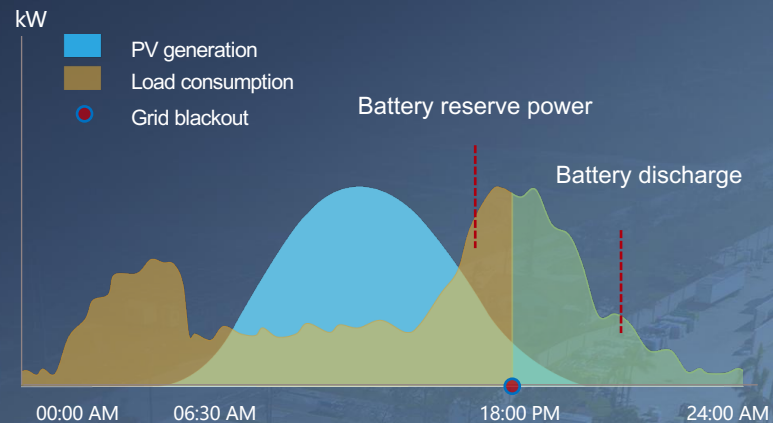
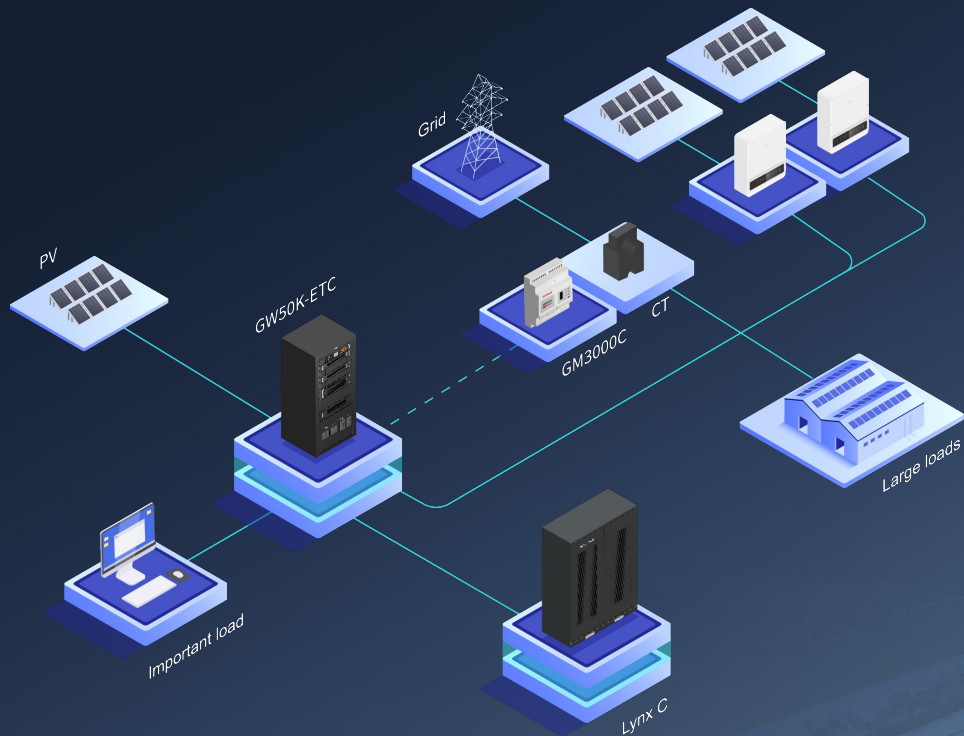
In economic mode, time periods can be set to charge battery charge at off peak and discharge battery at peak hours.

Peak-Shaving



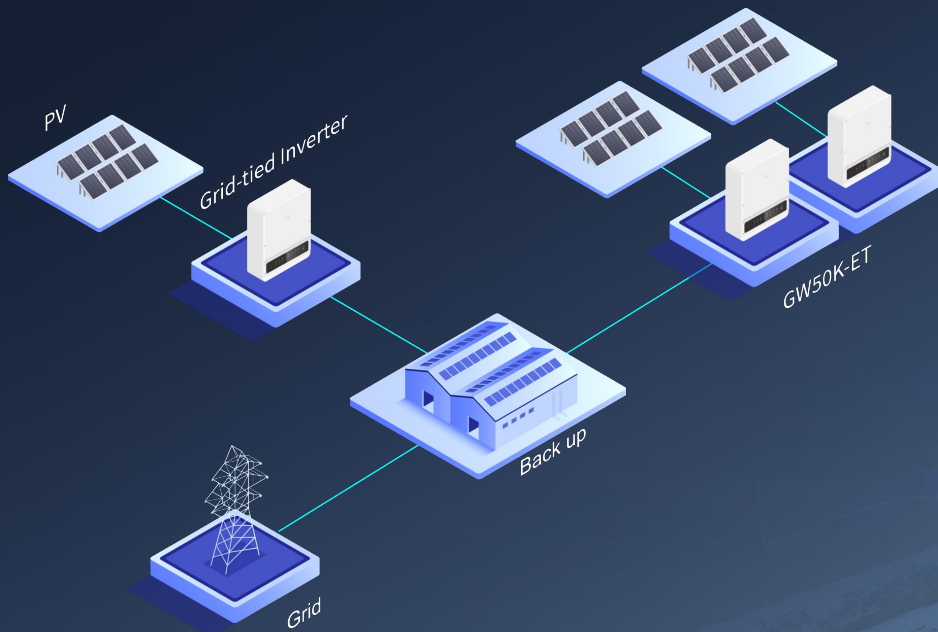
In peak-shaving mode, storage system detects power at grid connection point, once the power exceeds the limitation, storage system will discharge and reduce buy power from grid.

Backup Solution



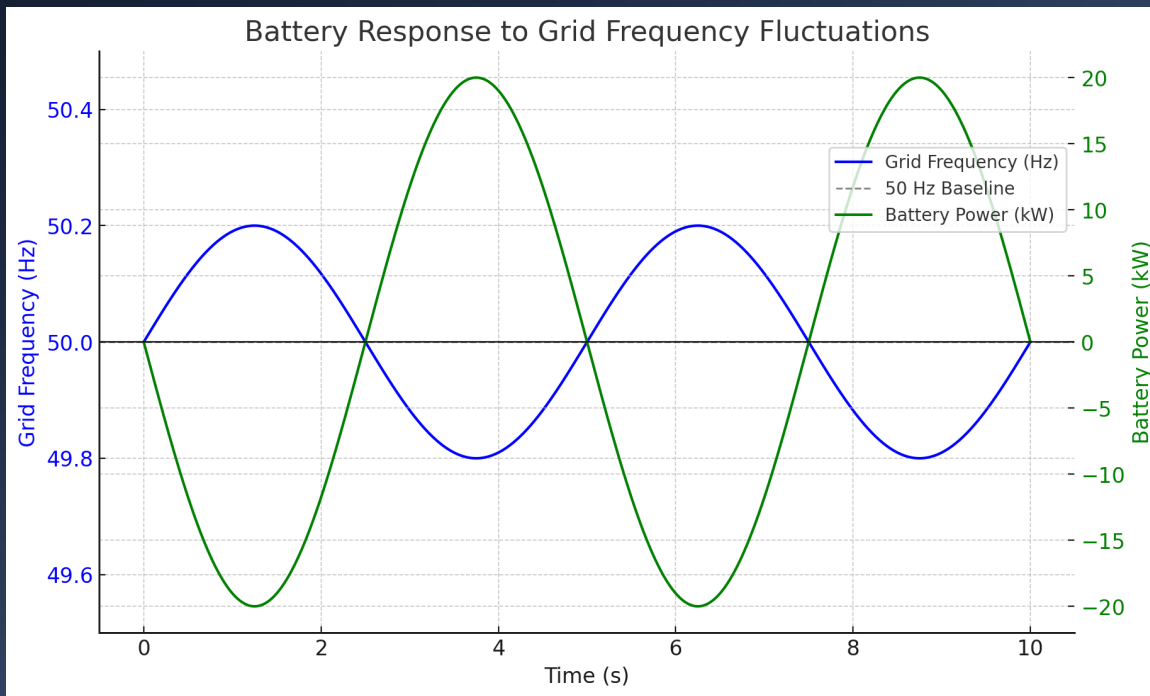
In backup mode, battery will reserve power for emergency use.

Micro-grid Solution



Connect the grid-tied inverter to the backup output of storage system to realize the system working when grid outage.

Frequency Regulation



From Residential to C&I: Benefits and Challenges

RESIDENTIAL

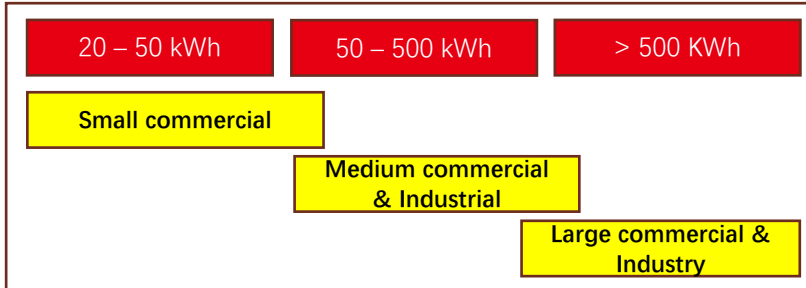
Customer's Focus:

- ✓ Cost-saving --> Self-consumption

C&I

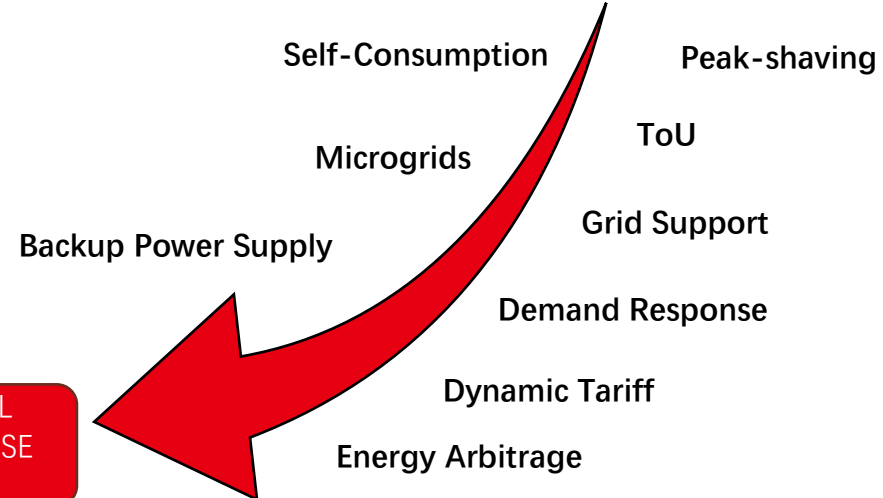
Customer's Focus:

- ✓ Cost saving --> Self-consumption
- ✓ System Reliability
- ✓ Seamless scalability
- ✓ Mid-long term ROI



C&I covers a large variety of applications across a wide battery capacity range

NEW TECHNICAL CHALLENGES & USE CASES: EMS



Contents

- 1 GoodWE Presentation
- 2 C&I current and future trends
- 3 **C&I new product launches**
- 4 GW C&I solutions
- 5 Use Case: Frequency market participation, by Niklas Knöppel

GoodWe Portfolio



String Inverters

Residential	C&I	Utility
0,7 – 20 kW	25 – 250 kW	225 – 350 kW
XS G3 DNS G3 MS G3	MT/ SMT HT (1100)	HT (1500) UT
SDT G2 Plus+	GT (1100)	MVS

Storage Solutions

EcoSmart Home			EcoSmart Commercial	
Inverters	Storage	EV Chargers	Hybrid Inverters	Storage
3,6 – 30 kW	5,4 – 230 kWh	7 – 22 kW	15 – 100 kW	~ 4,6 MWh
ES G2 / SBP G2	Lynx U	HCA	ET30	Lynx C60
EH+ / BH ET+ / BT ET30	Lynx D		ET50	Lynx C 101-156kWh
	Lynx F Lynx F Plus+		ETC / BTC	Lynx D & F+

C&I STRING INVERTERS 25 – 125 kW

Available December 2024



GT

100 -125 kW: 400Vac
| Up to 10 MPPT



Up to 12 MPPT



Up to 42A
Per MPPT



110%
Overload
(45°C Amb.
Temp)



AFCI 3.0
(optional)



HT

100 -120 kW: 400Vac | 250 kW: 800Vac
| Up to 12 MPPT



MT

80 kW | 4 MPPT



SMT

25 - 60 kW
| Up to 6 MPPT



C&I Hybrid Inverters & Batteries



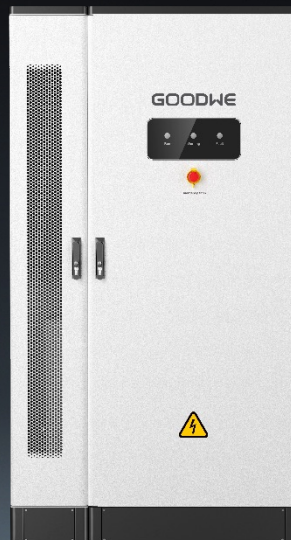
Lynx D
5 – 80kwh



ET30
15-30kW



ET50 + STS
40/50kW



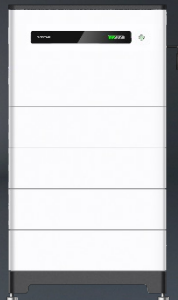
Lynx C Outdoor
60kWh



ETC/BTC
50kW / 100kW



Lynx C
101kWh –156 kWh



Lynx F+
6.6 - 264kWh

GT Series – Technical specifications

- **Max. Input voltage (V): 1100**
- **MPPT Operating Voltage Range (V) : 180 – 1000**
- **MPPT Trackers:**
 - 8 for 100kW
 - 10 for 110 & 125 kW
- **Number Strings per MPPT : 2**
- **Max. Input Current per MPPT (A): 42 (21A per string)**
- **150% DC Oversizing**
- **Smart and Low Noise fan (< 70dB)**
- **AFCI 3.0 (Optional)**
- **C5 Anti-corrosion (Optional)**

- **DC SPD Type II (Standard) + I (Optional)**
- **PID Recovery (Optional)**
- **Power Supply at Night & SVG (Optional)**
- **Paralleled with ET50 Series, adding storage solution capabilities**
- **WIFI/LAN Kit-2.0 (EU Cyber Security Compliant)**



GT Series Grid Tied Inverter

GT

Compared to HT, weight reduce by **10%**, volume reduce by **10%**



	HT	GT
W×H×D (mm)	1008×678×34	930×650×30
Weight (kg)	98.5	88.5
Noise Level	<80dB	<70dB

ET50 Hybrid Inverter

40/50kW | 3/4 MPPTs | Three phase | HV

- 2 strings / MPPT
- Up to 150% DC input oversizing
- 110% unbalanced output per phase (18.3kW)
- Efficiency of 98.1%

- Battery voltage range 200V – 850V
- Max charge / discharge current 100A

- Outdoor installation IP66
- DC Surge protection Type II
- Optional AFCI

- **WIFI LAN 2.0 Cybersecurity Compliant**
- OpenAPI Interface Compatible



STS BOX – Main Features

GOODWE

- Maximum Output Power: 138 kW
- Paired with ET 50kW for UPS-level and off-grid switching (**<10ms**)
- **One STS box per** ET40/50 inverter
- Supports the connection of large loads
- Supports control of diesel generator (dry contact)
- IP65 ingress protection for outdoor installations



Lynx C Battery for C&I (Indoor)



Capacity of a battery cabinet of
100kWh to 156kWh

(11/13/15/17 battery modules)



100% DOD
(Depth of Discharge)



Easy Transport and Installation



Up to 3 cabinets per inverter



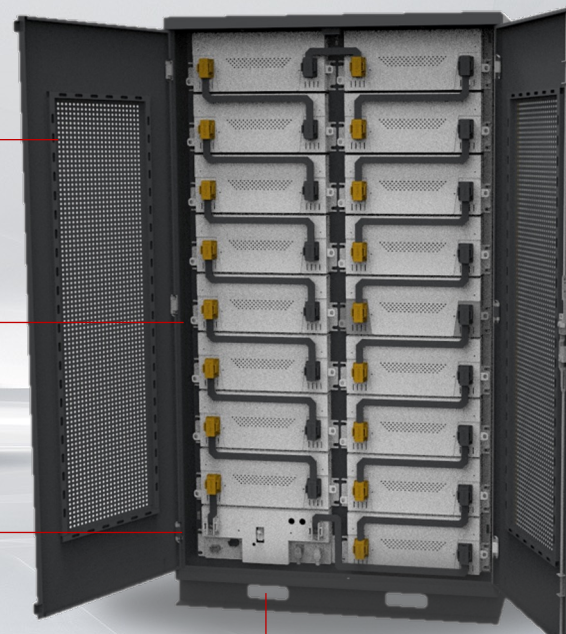
LFB Battery technology for maximum
safety and durability

Cabinet

Batterie-Module

PCU (Power
Control Unit)

Forklift



Contents

- 1 GoodWE Presentation
- 2 C&I current and future trends
- 3 C&I new product launches
- 4 **GW C&I solutions**
- 5 Use Case: Frequency market participation, by Niklas Knöppel

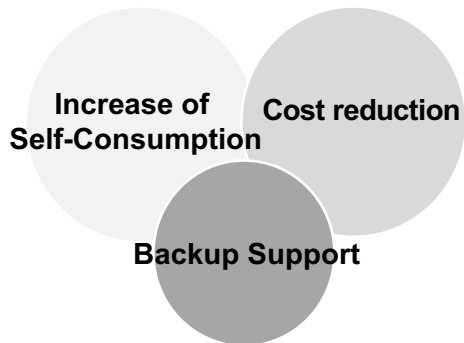
Project Solutions with Goodwe Products

- What are the Use Cases and the related customer base?
- Which solution for which project size?
- Can I combine PV Inverters & Hybrid inverters?
- How is Goodwe supporting C&I projects?

Today's C&I Segment

Today's Situation

Reasons
to add C&I
storage

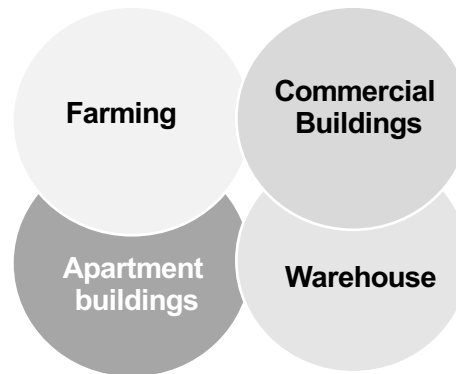


Challenges

- New Segment + new regulations
- How to add additional electrical equipment as ex. Generator
- Monitoring & Control increase

Realization &
challenge

Current Segments



Realization

- Starting with PV systems extension and retrofit systems
- Build convince in products and solution from Goodwe
- Having partner with all-in-one solution & flexible solutions

GoodWe Outdoor ESS: ET 30kW/Lynx C 60kWh



ET 30 Hybrid Inverter
(15~30)

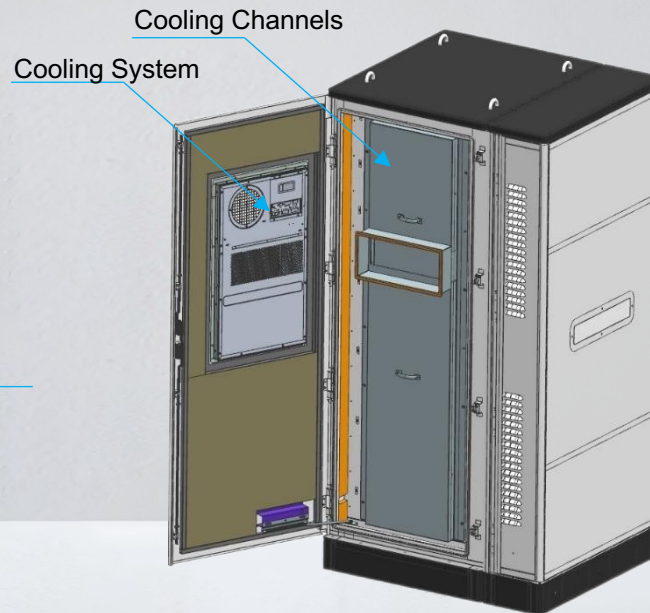
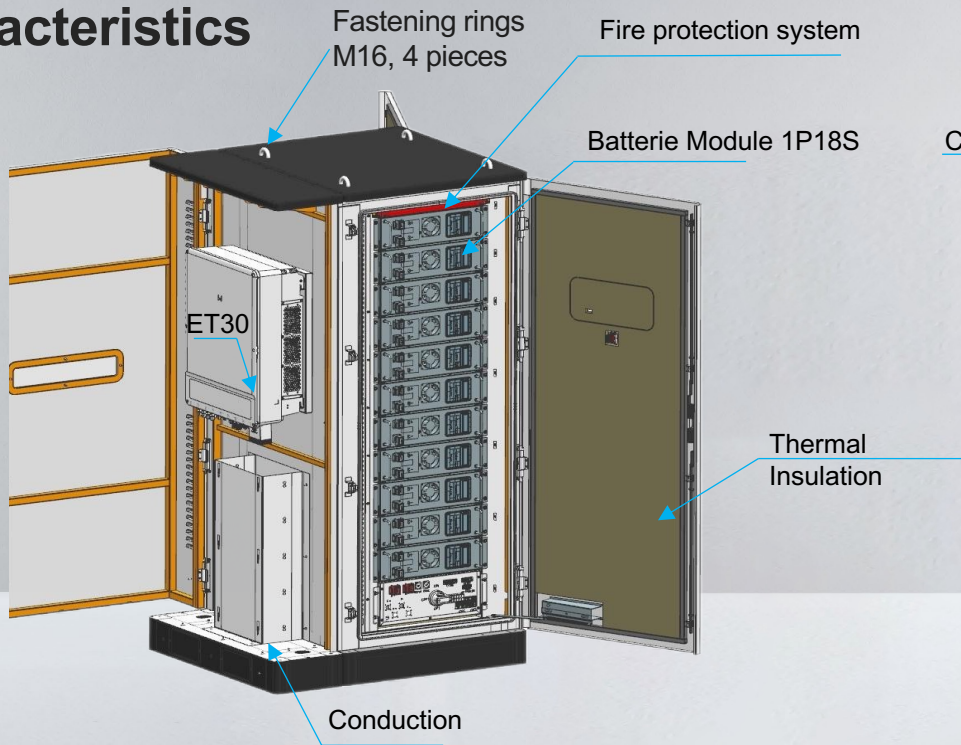


Lynx C 60kWh Outdoor Battery



- ✓ Great fit for small and medium C&I scenario
- ✓ Integrated On-grid/off-grid function
- ✓ Compartment for the inverter included
- ✓ Load Back-up input
- ✓ Outdoor cabinet with temperature management
- ✓ Battery Capacity: 60kWh

Characteristics



Inverter installation: simply open the AC element door and hang the device on the mounting rail

- Cells 100Ah LFP, 60kWh, 30kW
- Air conditioning – cooling and heating
- Corrosion resistance C4 (C5 optional)
- Aerosol + perfluorohexanone fire protection system

ET30/50 Series – How to extend your power output

Easy parallel extension with our two products

Ezlink3000 & SEC3000C

With communication device **Ezlink3000**:

- max 4 inverters in parallel
- ET30 up to 120kW power
- ET50 up to 200kW power

With communication device **SEC3000C**:

- max 10 inverters in parallel
- ET30 up to 300kW
- ET50 up to 500kW



4 inverters



10 inverters



Parallel Functionality for Inverter and Battery



With EZLINK 3000:

- Parallel connection of up to **4 inverters**, enabling further system expansions
- Largest configuration ET30: **120 kW/ 720 kWh**
- Largest configuration ET50: **200 kW/ 1.872 MWh**

With SEC 3000C:

- Parallel connection of up to **10 inverters**, enabling further system expansions
- Largest configuration ET30: **300 kW/ 1.8 MWh**
- Largest configuration ET50: **500 kW/ 4.680 MWh**

Our Hybrid Solutions for your project

For apartment buildings & small C&I project



ET 15-30 kW
Up to 120kW
2 / 3 MPPT



IP66



Lynx Home F PLUS+
Up to 16,6 kWh
x 2 battery input
x 8 parallel (260kWh)



Lynx C60 Outdoor
60kWh
up to 3x parallel (180kWh)



IP55

The C&I Outdoor Solution



IP66



ET 30 kW
Up to 4x parallel 120kW
2 / 3 MPPT



IP55



Lynx C60 Outdoor
60kWh
up to 3x parallel (180kWh)

The C&I Indoor Solution



IP66



ET 50 kW
Up to 4x parallel 200 kW
3 / 4 MPPT



Lynx C
101-156kWh
Up to 3x parallel (468Wh)

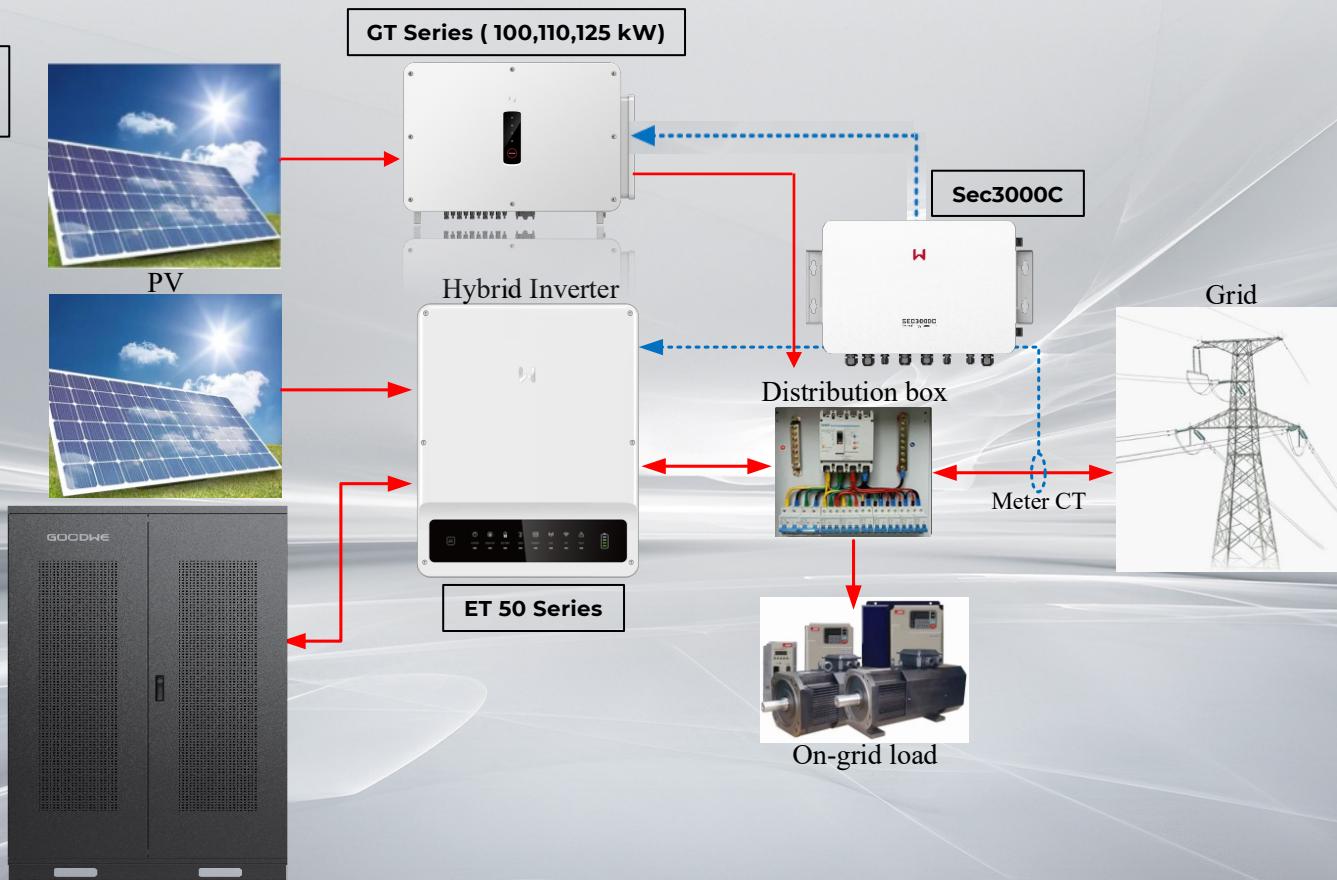


IP21

Solution Configuration ET50 + GT

GOODWE

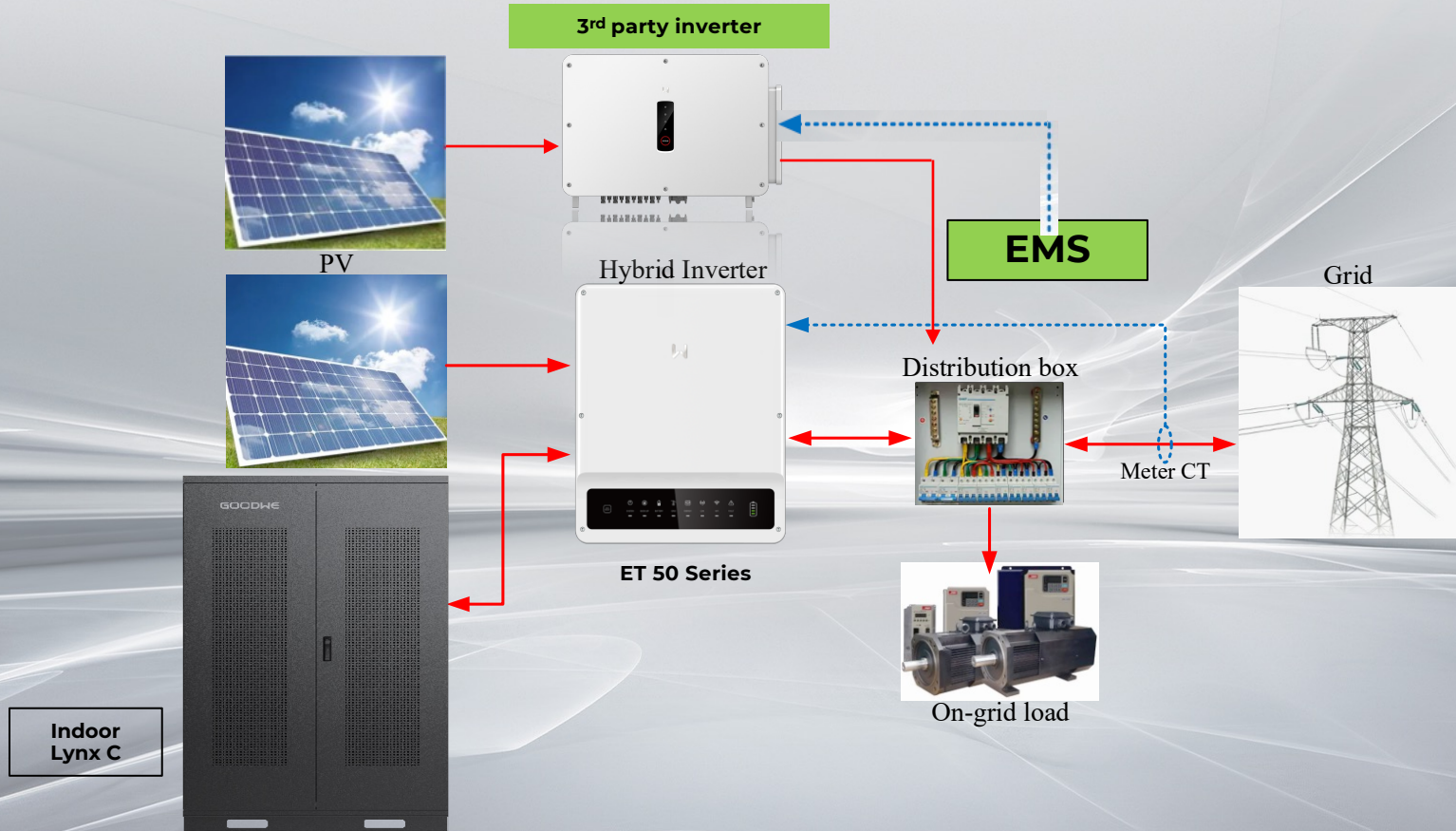
- Up to 60 GT series Inverters
- Up to 10 ET series Systems



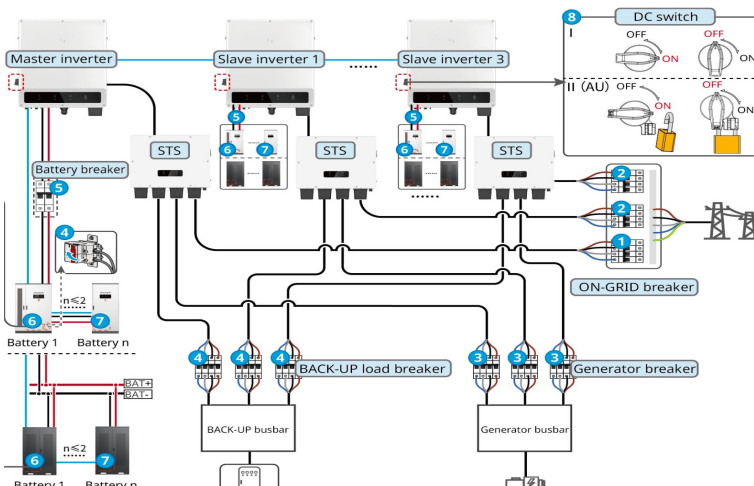
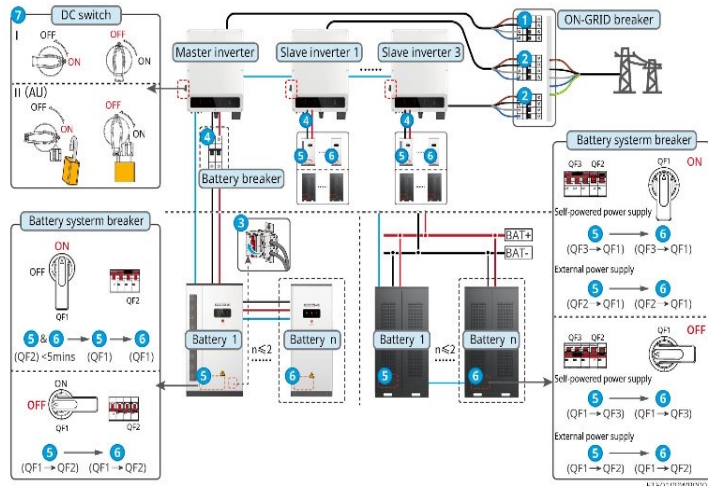
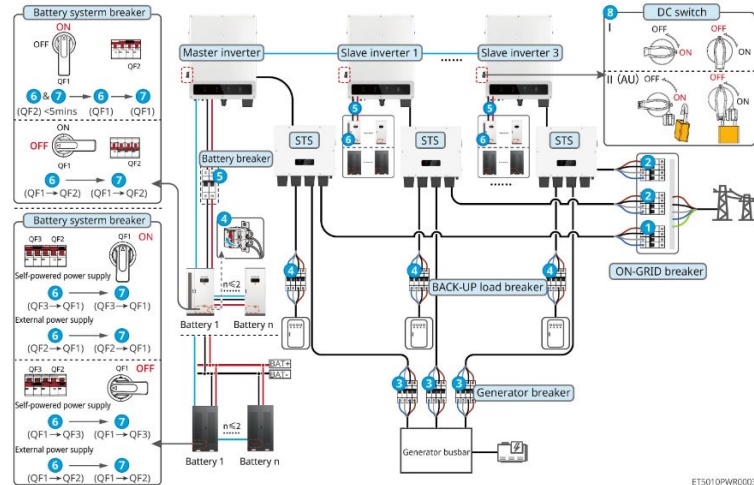
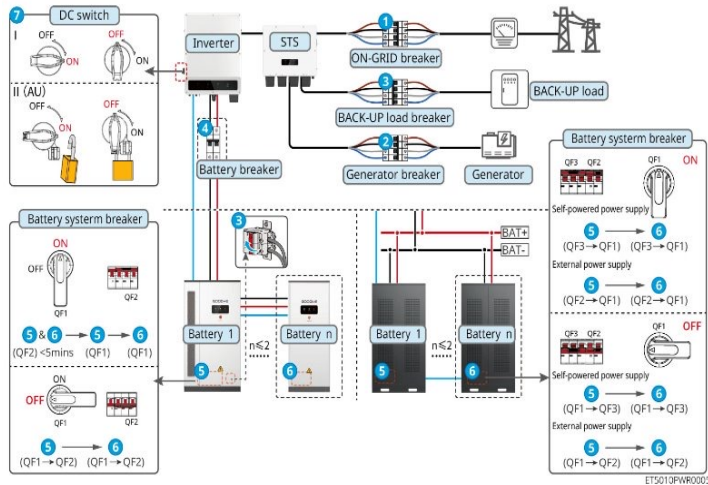
Indoor
Lynx C

Possible Solutions with 3rd party inverters

GOODWE



All Solutions with ET50 possible



How does Goodwe support you for C&I Projects?

How to select the products and solutions?

Goodwe Designer Tool

- Completely renewed design tool
- Supports you in the preparation of quotations

Pre-Sales Support in cooperation with our distribution partner

Monitoring & EMS Solutions

- Own monitoring platform SEMS+ with features as Remote FW Update
- Dynamic Tariffs will be supported in Q1 2025
- Solutions with EMS as **Solarlog, Solarmanager**
- Extending EMS Partner List in 2025

Installation & After Sales Support

- Different package for installation or commissioning support will be offered in 2025
- Dedicated After Sales Team
- Training for C&I products

Contents

- 1 GoodWE Presentation
- 2 C&I current and future trends
- 3 C&I new product launches
- 4 GW C&I solutions
- 5 **Use Case: Frequency market participation,
by Niklas Knöppel**

GREEN BALANCE

1
Solarcells

2
EV Charger

3
Heatpump

4
Inverter

5
Battery

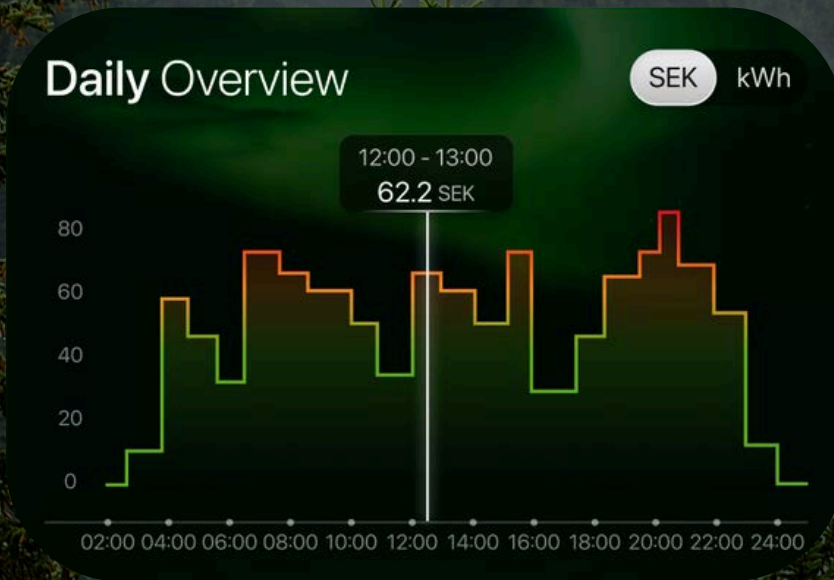


Green Balance Control functions

Experience the technology of the future today - a powerful solution that is both innovative and market leading.



Energy price optimization



Intelligent Peak Shaving



Frequency Market



Intelligent Charging



Intelligent Heating



Energystorage

Frequency market

Automatic bidding on the support market to regulate the frequency in the electricity grid

ELECTRICITY PRICE OPTIMIZATION

Optimize the electricity price by using when it is cheap and reducing consumption when it is expensive.

Combination of services

By combining all the different service over the day maximum earnings or savings can be achieved

ELECTRICITY PRICE ARBITRATION

automatically buys electricity for you when the electricity is cheap and uses the electricity when it is expensive, mainly so solar electricity is stored for use later.

Peakshaving

Reduce high power costs by cutting your power peaks. Green Balance gives you the opportunity to both cut your peaks and balance your loads.

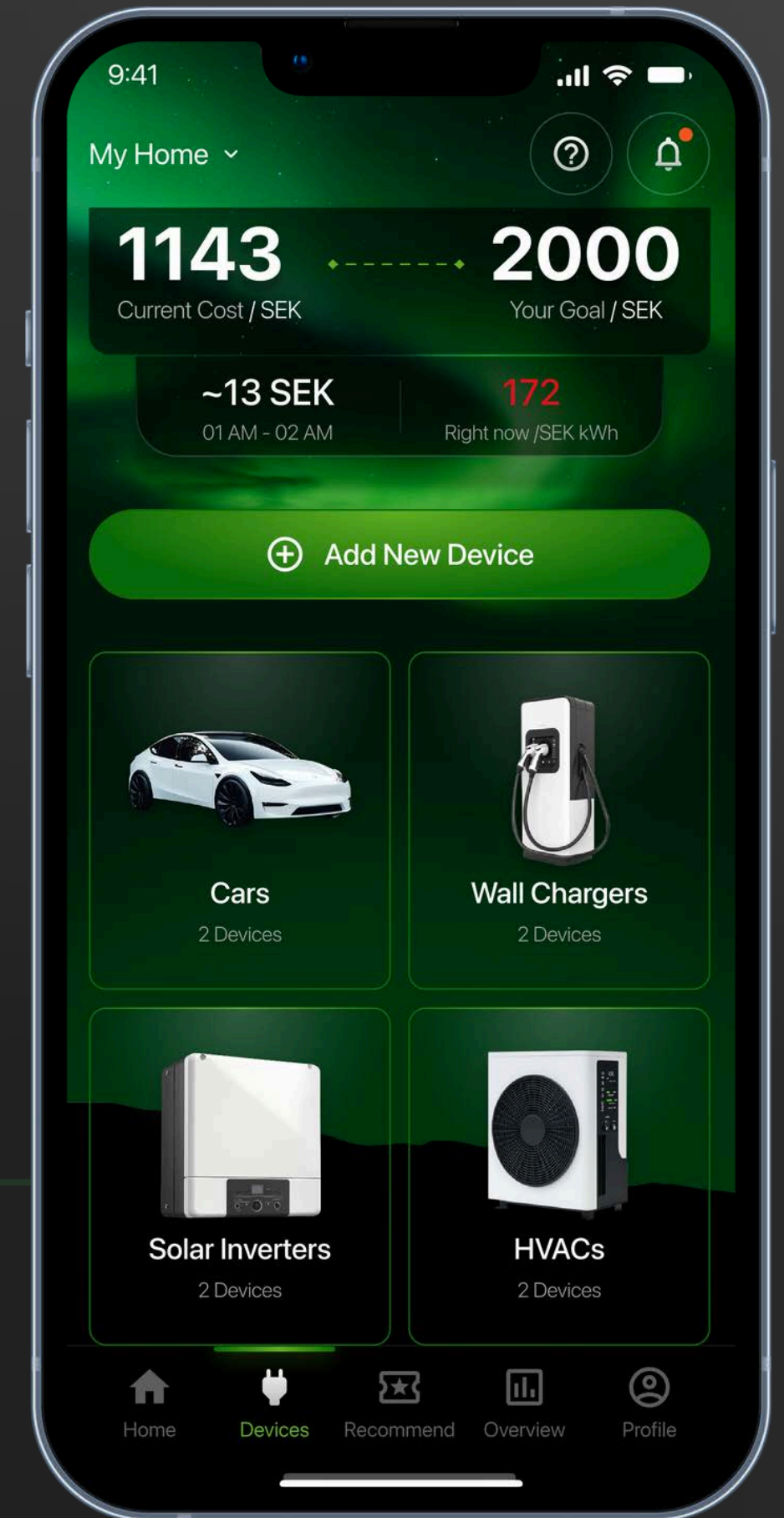
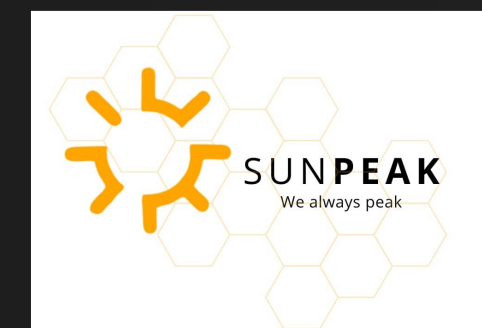
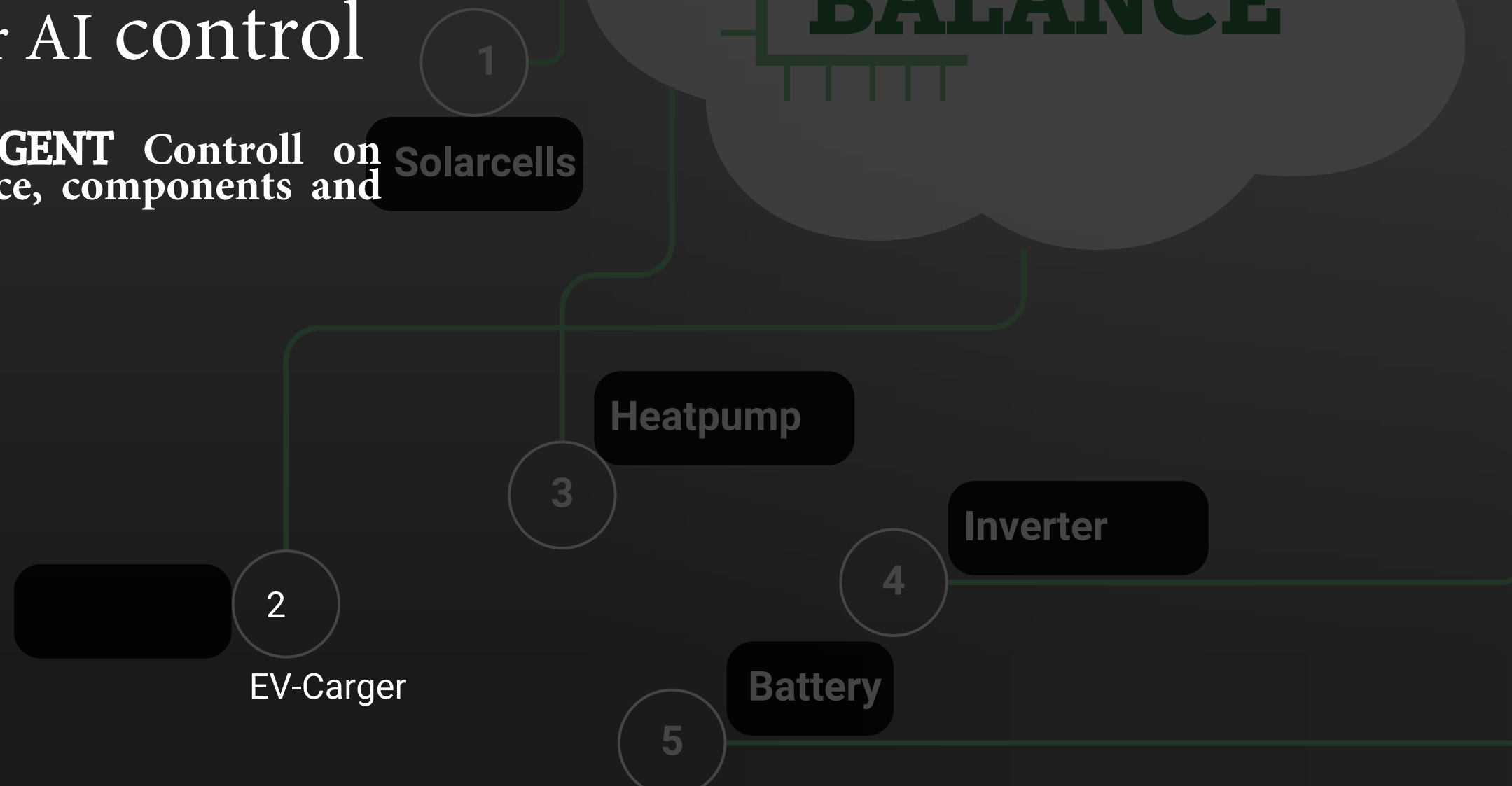
Solceller

Batteri



Clever AI control

INTELLIGENT Control on all Service, components and devices



this
Webinar is powered by
GoodWe

25 November 2024

2:00 pm – 3:00 pm | GMT, London
3:00 pm – 4:00 pm | CET, Berlin
6:00 pm – 7:00 pm | Dubai

pv magazine
webinars

Guide for Installers: Expanding into C&I with Flexible Storage Solutions

Q&A



Tristan Rayner

Editor
pv magazine



Faisal Bouchotrouch

Product Manager C&I Europe
GoodWe



Michael Gutwein

Solution Manager for the DACH region
GoodWe



Niklas Knöppel

CEO
Solelgrossisten Sverige AB

The latest news | print & online



10% off
your subscription
with
Webinars10



Solar LED streetlight with integrated PV panels, battery

by Valerie Thompson



Most-read online!

All solar cell efficiencies at a glance – updated

by Emiliano Bellini



Coming up next...

Wednesday, 27 November 2024

9:00 am - 10:00 EST, New York City

3:00 pm - 4:00 pm CET, Berlin

Monday, 9. December 2024

14:00 - 15:00 CET, Paris, Berlin

Many more to come!

Smarter trackers: Real data insights from TrinaTracker's smart control system applications

Autoconsommation solaire et stockage : Solutions innovantes pour les C&I

(Webinar in French)

In the next weeks, we will continuously add further webinars with innovative partners and the latest topics.

Check out our pv magazine Webinar program at:

www.pv-magazine.com/webinars

Registration, downloads & recordings are also be found there.



pv magazine
roundtables
EUROPE



pv magazine
group

DEC 5, 2024 | VIRTUAL EVENT

**Explore the latest developments
and trends in the European
solar + storage industries.**



REGISTER NOW

this
webinar is powered by
GoodWe

pv magazine
webinars



Tristan Rayner
Editor
pv magazine

**Thank you for
joining today!**