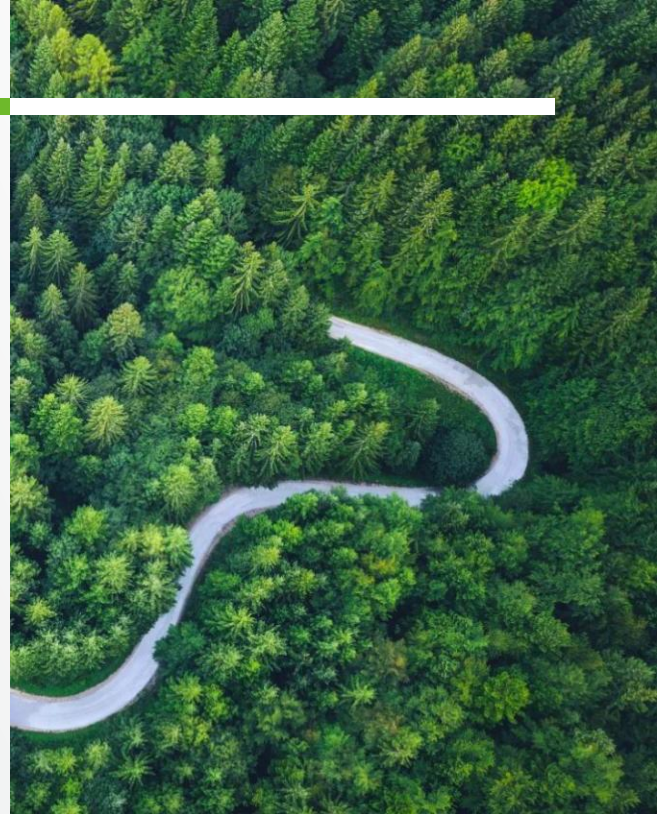

GROWATT COMPANY PROFILE



SHENZHEN GROWATT NEW ENERGY CO.,LTD

GROWATT

Content



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Company Profile

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Product & Solutions

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Global Reference



Dedicated to Becoming

The World's Largest Supplier of Smart Energy Solutions

Business Focus

Growatt is a new energy enterprise dedicated to the R&D and manufacturing of PV inverters, Energy Storage and EV Charger as well as Smart Energy Management solutions.



PV Inverter

Energy Storage

EV Charger

Smart Energy
Management

Milestone History

2010

Founded in Shenzhen 2010

2012

Became the No.1 brand for string inverter in China

2015

Launched residential hybrid storage inverter

2017

Global shipment exceeded one million units

2019

Wood Mackenzie global Top 2 hybrid storage inverter supplier

2011

The earliest inverter exporter in China

Established subsidiaries in Australia, Germany and Hong Kong

2013

Established subsidiaries in US and UK

2016

Being No.1 residential PV inverter brand in China since 2016

2018

IHS Markit global Top 10 PV inverter supplier

Launched residential off-grid and micro-grid storage solutions

2020

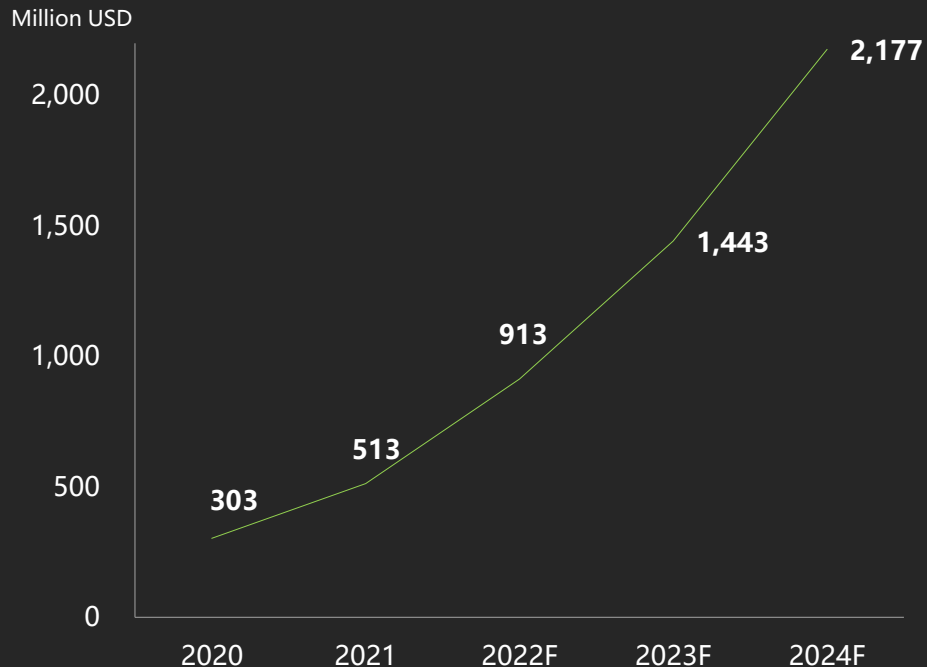
Established new manufacturing plant of 20GW annual capacity

IHS Markit global No.1 residential PV inverter supplier

Launched 2nd generation smart home energy management solution GroHome

Sustainable Growth

Considerable Growth in Revenue



3.8M+

Total shipment (units)

40GW

Global shipment capacity

100+

Countries with systems installed

3,000+

Employees

600+

R&D engineers

6.1%

Revenue invested in R&D

*By end of 2021

Global No.1 Shipment of Distributed PV Inverters

Champion the top DPV markets in globe

Poland DPV

TOP1

Asia DPV

TOP1

Netherlands DPV

TOP2

China Residential

TOP1

Italy DPV

TOP3

India Rooftop

TOP1

Mexico DPV

TOP1

Vietnam DPV

TOP1

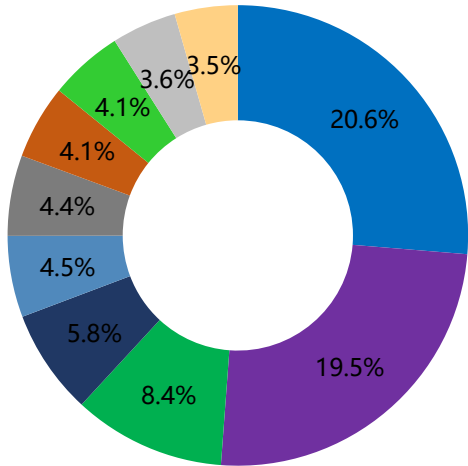
Brazil DPV

TOP1

Australia DPV

TOP2

Global Leader of PV Industry



- Huawei
- SunGrow
- SMA
- Power Electronics
- Fimer
- TMEIC
- Ginlong
- Growatt
- SolarEdge
- Sineng Electric

GLOBAL NO. 1 FOR RESIDENTIAL

Table 4.10 - PV inverter supplier market share estimates for residential projects
Shipments (MW)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Company Name	2020	Change 19-20	
-	7	8	>15	>15	15	6	7	3	2	1	Growatt	16.6%	+3.0%	
-	>15	>15	>15	>15	10	8	3	4	5	2	Ginlong	11.3%	+4.0%	
-	>15	>15	>15	>15	>15	>15	10	9	8	3	Sungrow	10.5%	+5.7%	
-	>15	15	9	7	4	2	2	1	1	4	SolarEdge	9.8%	-5.8%	
-	1	1	1	3	1	1	1	2	3	5	SMA	9.8%	-3.8%	
-	>15	>15	>15	>15	11	7	4	6	7	6	Goodwe	6.9%	+1.2%	
-	3	3	5	5	7	3	5	7	4	7	Enphase Energy	6.2%	-3.1%	
-	4	10	11	10	8	4	6	5	6	8	Fronius	5.1%	-1.8%	
-	>15	>15	>15	>15	>15	>15	>15	>15	>15	9	Sofar Solar	4.6%	+0.0%	
-	>15	>15	>15	>15	>15	>15	>15	>15	10	10	Huawei	4.1%	+1.1%	
												Others	15.0%	+1.1%
												Total MW Shipped	27,368	61.4%

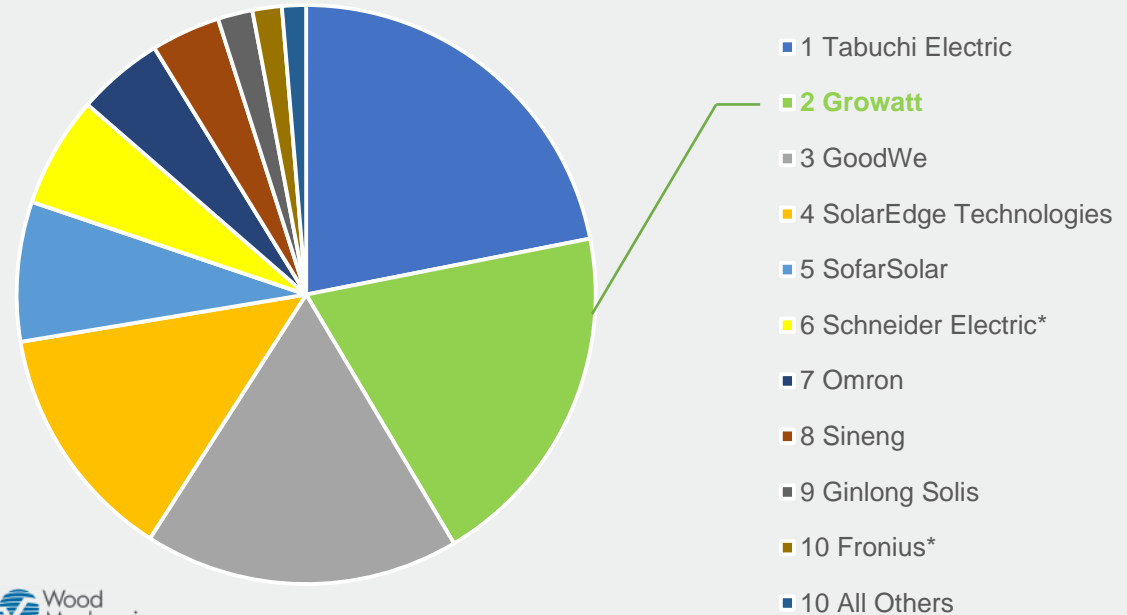
GLOBAL TOP 5 FOR COMMERCIAL

Table 4.11 - PV inverter supplier market share estimates for commercial projects
Shipments (MW)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Company Name	2020	
-	>15	>15	>15	1	1	1	1	1	1	1	Huawei	23.4%	
-	7	6	1	2	2	3	3	2	2	2	Sungrow	20.5%	
-	>15	>15	>15	>15	>15	>15	13	10	8	3	Ginlong	8.2%	
-	1	1	2	3	3	2	2	3	3	4	SMA	7.7%	
-	>15	>15	>15	>15	14	>15	6	14	10	5	Growatt	6.6%	
-	>15	>15	>15	>15	>15	11	9	4	4	6	SolarEdge	4.3%	
-	>15	>15	>15	>15	>15	14	4	9	9	7	Goodwe	4.3%	
-	5	7	>15	>15	10	6	7	7	6	8	Fronius	3.7%	
-	15	>15	>15	>15	>15	7	8	5	5	9	Delta	3.7%	
-	2	2	3	4	5	5	5	6	7	10	Fimer	2.9%	
-	>15	>15	8	14	7	>15	14	>15	12	11	Chint Power	2.3%	
-	>15	>15	>15	>15	>15	>15	>15	>15	>15	12	Sofar Solar	2.0%	
												Others	10.3%
												Total MW Shipped	58,523

Global Top 2 of Energy Storage Inverter

Global Storage Hybrid Inverter Market Share by Shipments
- 2020 Full Year (MWac)



Global Top Brand



EUROPE



POLAND



NETHERLANDS



HUNGARY



SWITZERLAND



SCANDINAVIA



SOUTH AFRICA



MENA



AMERICAS



USA



MEXICO



BRAZIL



VIETNAM



AUSTRALIA

Sustained High Investment in R&D that Brings Technology Breakthroughs

6.1%

\$100M

20%

Sales Revenue

Cumulative R&D
Investment of 2016-2021

CAGR of
R&D Investment

*By end of 2021

Achieved Patents **110+**

PHOTON Lab

2010 5000TL, the first Asian inverter manufacturer to receive A rating by PHOTON Lab

2014 20KTL3-HE, Double A+ rating, created the world highest efficiency record up to 99.06%

TUV Rheinland Quality Award

2018 Rank No. 1 for commercial inverters

The Smarter E

2020 GroHome ranks The Smarter E Award Finalist

pv magazine Award

2020 MIN-XH inverter won pv magazine AWARD 2020

Solar Power World Top Products in US

2021 MIN-XH-US inverter and ARO-XH battery



Advanced Manufacturing Center

200,000m², Annual Capacity of 20GW Inverters and 400K Battery Modules
Highly Automated Production Line
Execute Growatt 5-Steps Quality System



Global Presence

23 Offices and Warehouses. Products installed in more than 100 countries worldwide.



Growatt Europe-Netherlands

Growatt Europe with 2 branch offices, which also are the training centers and service stock warehouse
Locate in Netherlands, Germany



Rotterdam, Netherlands
Tel: +31(0)85 040 9967



Training Center



Service Stock

Growatt Europe-Germany

Growatt Europe with 2 branch offices, which also are the training centers and service stock warehouse
Locate in Netherlands, Germany



Bad Homburg, Germany
Tel: +49 6172 2675500



Training Center



Service Stock

Growatt Europe-Partner offices

Growatt Europe with 3 partner offices and training centers
Locate in Italy, Hungary and Poland



Pecs, Hungary
Tel : +36 208004000



Rome/Perugia, Italy
Tel: +39 (0)6 88399453/452



Ruda Slaska, Poland
Tel : +48 513 388 399

Professional trainings

Growatt provides professional technical training, via online Webinar or at the training center. Growatt technical engineer will share information of how to install, configure inverter and monitor , also the troubleshooting.



Online Webinar



At Training Center



Practical Operation

Logistics in Europe

Growatt's Europe warehouse located in **Rotterdam**, we always keep more than **200MW+/60,000+** inverters on stock, delivery time within 2-5 days.



Awards in Europe

From 2018 to 2021, Growatt has been awarded TOP BRAND PV INVERTERS by EuPD Research in Europe, Australia, South Africa, Middle East and North Africa, Poland, Netherlands, Belgium, Switzerland, Hungary and Scandinavia.



Social Media Partner

pv magazine



PLEIN SOLEIL
L'HEBDO DE L'ENERGIE SOLAIRE



SOLAR MAGAZINE

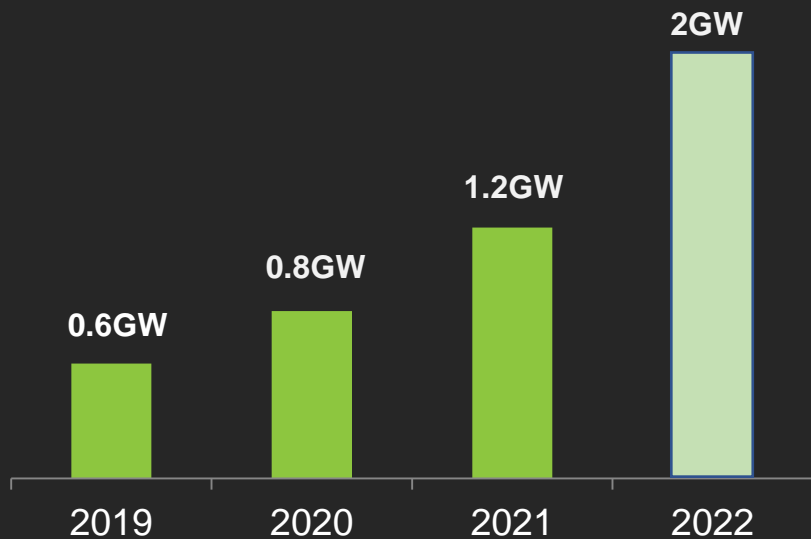
FuturENERGY
EFICIENCIA, PROYECTOS Y ACTUALIDAD ENERGÉTICA
ENERGY EFFICIENCY, PROJECTS AND NEWS



ENERGI
SOLENERGI nyheter.se

Shipments-Europe

Considerable Growth in Shipments



600,000+

Total shipment (units)

50+

Countries
with systems installed

50+

Employees

200MW+

Stock in Europe

PV Inverters

Growatt provides a wide range of smart PV solutions for residential, C&I and utility-scale solar plants. Growatt's smart string PV inverters, capacity ranging from 0.75kW to 253kW, along with Online Smart Service(OSS) platform achieve higher yields and provide superior safety and smarter O&M for customers.



Residential



Commercial & Industrial



Utility Scale

Residential Products

Single Phase



MIC 750-3300TL-X
(0.75-3.3kW)



MIN 2500-6000TL-X/XE/XH
(2.5-6kW)

Three Phase



MOD 3-10TL3-X/XH
(3-10kW)



MOD 10-15KTL3-X
(10-15kW)

NO.1

Global NO. 1

Over 1.8 million residential PV inverters installed worldwide



Compact & Convenient

Smaller and lighter for easy transport and installation

Touch key & OLED



Safe & Reliable

Type II SPD, AFCI, Fuseless



Smart & Flexible

Online remote service
Future proofed battery ready

C&I PV Products

Commercial and Industrial



MID 17-22KTL3-X
(17-22kW)



MID 25-40KTL3-X
(25-40kW)



MAX 50-80KTL3 LV
(50-80kW)



MAX 100-125KTL3-X LV
(100-125kW)



Optimal LCOE
Multiple MPPTs
Higher DC/AC Ratio
Support Bi-Facial Modules
.....



Safe & Reliable
Type II SPD, AFCI, Fuseless



Smart Maintenance
I/V curve scan
One-click diagnose
Online remote service

Energy Storage System

Growatt's 'Solar + Storage' package solution can be used in various scenarios including new installation and retrofit, covering residential ESS, micro-grid diverse applications. Its capacity ranges of 2k-1MW/2.56kWh-4MWh and customers can have warranty for the whole system. The smart micro-grid system can utilize multiple power sources and support diverse electrical loads. It's an ideal independent energy solutions for isolated islands and remote areas where there's limited or even no access to the grid.

Growatt energy storage system also supports access to VPP (Virtual Power Plant) and IoT devices, could provide 24-hour uninterrupted clean energy, maximize PV self-consumption and return for customers.



Residential Energy Storage Products

Single Phase Storage



SPH 3-6K
(3 – 6kW)

3-Phase Storage



SPH 5-10KTL3 BH-UP
(5 – 10 kW)



SPA 5-10KTL3 BH
(5 – 10kW)

Battery Ready Storage

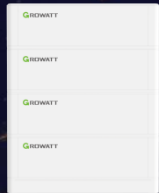


MIN 2500-6000TL-XH/XA
(2.5-6kW)

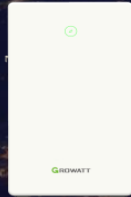


MOD 3-10KTL3 -XH
(3 – 10kW)

LV Battery



ARK LV Battery System
(Module: 2.56kWh)
Max. 10pcs
(2.56KWh-25.6KWh)



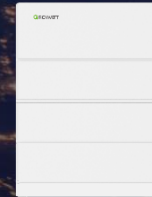
GBLI6532
(Module: 6.5KWh)
Max. 2pcs
(6.5KWh-13KWh)

HV Battery



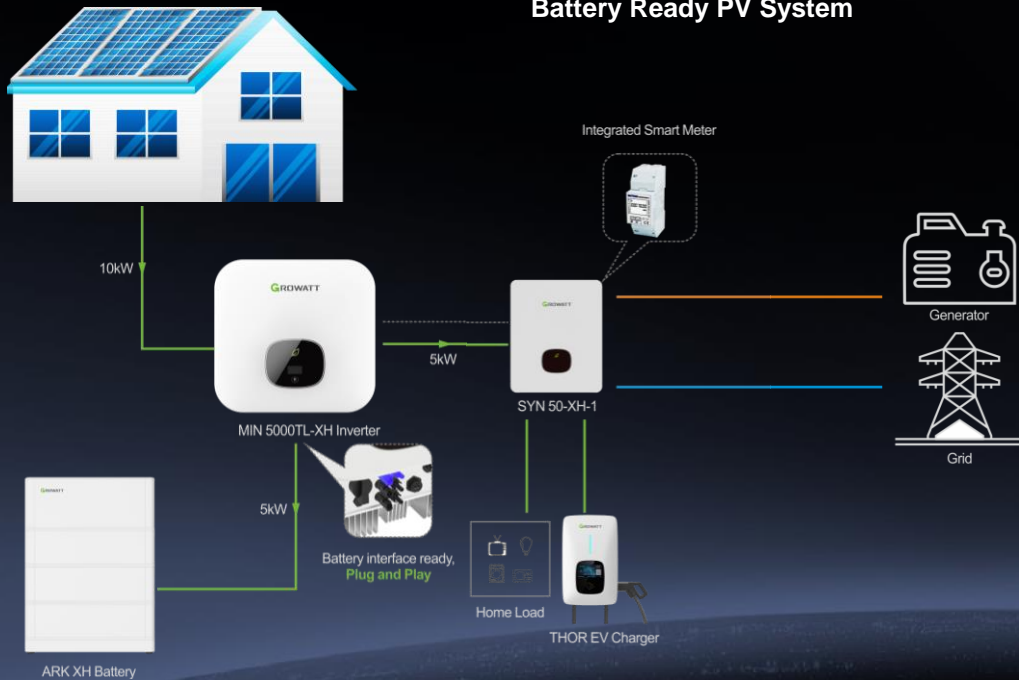
ARK HV Battery System
(Module: 2.56kWh)
Range 3 - 10 pcs
(7.68KWh-25.6KWh)

HV Battery



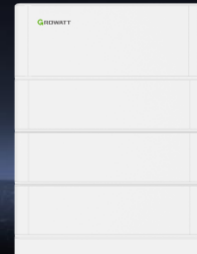
ARK XH Battery System
(Module: 2.56kWh)
Range 2 - 10 pcs
(5.12KWh-25.6KWh)

Battery Ready PV System for Your Home



- Future-proof Battery Ready, Plug & Play
- 2 x Power, 5kW inverter provides 5kW full power AC output plus 5kW full power battery charge
- Modular LFP Battery won All Quality Matters Award 2020
- Supply emergency power to critical loads while power outage, also support to extend EV Charger, Generator etc.
- Smart Management, access to VPP and IoT devices.

All Quality Matters Award BESS for Home Use

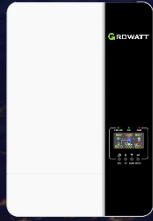


ARK XH Battery

Off-Grid Storage System

Gain the fully energy independence

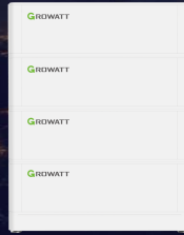
2kW ~ 30kW Off-grid ESS



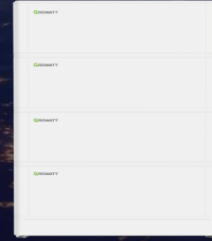
SPF 5000ES



SPF 3000T HVM-G2



ARK LV Battery System
(Module: 2.56kWh)



AXE 5.0L-A1 Battery
Module: 5kWh



Residential Off-grid ESS



Micro-grid System for Isolated Islands

Growatt Energy Storage System

Guarantee your 24/7 uninterruptable green energy with best whole system



Whole system supplier
Whole system warranty



Superior Safety
LFP Battery, multi-level protections



Smart Management
Remote monitoring & online service



Future Proofed
Ready for VPP & IoT devices



Smart EV Charger

Growatt's smart EV charger can be used in various scenarios including residential and commercial. Its capacity ranges of 3-22kW AC charger and 20/40kW DC. With the highlighted GroHome system and PV linkage charge mode, users can remotely control and charge their EVs with 100% clean power.



EV Charger Products

AC EV Charger



THOR 03/07AS-S, THOR 03/07AS-P
(230Vac, 3/7kW)



THOR 11/22AS-S, THOR 11/22AS-P
(400Vac, 11/22kW)

DC EV Charger



THOR 40DS-P, THOR 40DD-P
(DC, 40kW)



Charge with 100% Solar

Integration with existing & new-installed PV system



Suitable for All Brand EVs

Compatible with Tesla, BMW, Renault, Nissan, BYD ...



Smart Management

Remote Control and Smart Scheduling thru the Shinephone APP



Strong Security

IP65, 6mA DC Fault Current Protection, Overload/Short Full Protection

Smart Energy Management

Growatt's smart energy solution is built upon Big Data, AI and IoT. By using multi-point data monitoring and smart cloud platform, it supports the prediction of energy generation and consumption and can achieve smart management and distribution of energy. It's the ideal solution to provide clean energy for households and businesses.



Smart Monitoring & Maintenance



Smart Home



Smart Facility

Smart Monitoring & OSS

- ◆ One-click diagnosis
- ◆ Remote parameter setting
- ◆ 24*7 online scanning & failure report
- ◆ Remote firmware upgrading

Diverse Monitoring Devices



Shine
WiFi/GPRS/4G



ShineLAN-X



ShineLink-X



ShineMaster/-4G



Smart Energy
Manager

Smart Monitoring Platform & OSS



ShinePhone APP



ShineServer



Online Smart Service (OSS)

Data Security

Growatt always paid great attention to data security

Database in European Union, local in **Frankfurt , Germany**

Comply with GDPR

Growatt monitoring platform complied with GDPR with SGS guidance.

Secure communication

Encrypted transfer of data to the solar portal

Data encryption in line with SSL and AES standard



General Data
Protection Regulation

Smart Home

GroHome

is a smart home system that integrates solar, energy storage, smart EV charger, water heater controller, VPP interface and IoT devices to increase a household's rate of PV self-consumption, also support the prediction of energy generation and consumption based on Big Data and AI technology, allowing you to enjoy the new lifestyle of green, comfort and smart.

100% Green Energy Powering Your Home.





Global Reference





3.6kW Residential Solar System in Italy

MIN 3600T-XE



3.6kW/6.5kWh Residential ESS in Denmark

SPH 3600 + GBLI 6531 Battery



**6kW/25.6kWh Residential
ESS in Italy**

SPH 6000 + ARK LV Battery



**6kW Residential Storage
System + 7kW EV charger in
Italy**

SPH 6000+GBLI6532*2

THOR 7-AS-P

Growatt 10 years sustainable service, Australia

5000MTL (installed in 2010), 2pcs MIN 5000TL-X (installed in 2020)



15KW
Adelaide , Australia



3kW/6.5kWh Residential ESS in South Australia

SPA 3000TL BL + GBLI 6531 Battery

15kW Residential Off-grid System in South Africa

SPF5000TL-HVM-P



1MW Solar Rooftop Netherlands

Growatt 15pcs MAX 60KTL3 LV



500KW Solar Rooftop, Netherlands



MAX 60KTL3 LV x 8 Units



500KW Solar Rooftop, Netherlands

MAX 60KTL3 LV x 8 Units



1.2MW C&I Rooftop Project in Switzerland

Growatt 40000TL3-NS, Growatt 30000TL3-S



3MW Ground Mounted Project in Vietnam

MAX 80KTL3 LV *36pcs





5MW Ground Solar Plant in Ukraine

MAX 50KTL3 LV



10MW Ground Solar Plant Gansu, China



► MAX 60KTL3 LV



90MW Solar Farm EA, Thailand



▼
Growatt 20000TL3-HE



100MW Foxconn Hill Solar Farm



▶ **Growatt 4000TL3-NS**
Henan, China

127MW Ground Solar Plant, EA, Thailand

► Growatt CP500



THANKS

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Growatt New Energy CO., LTD

SOLSOL s.r.o.
Králova 298/4
Brno, 616 00
sales@solsol.cz
www.solsol.cz

SOL+ SOL-