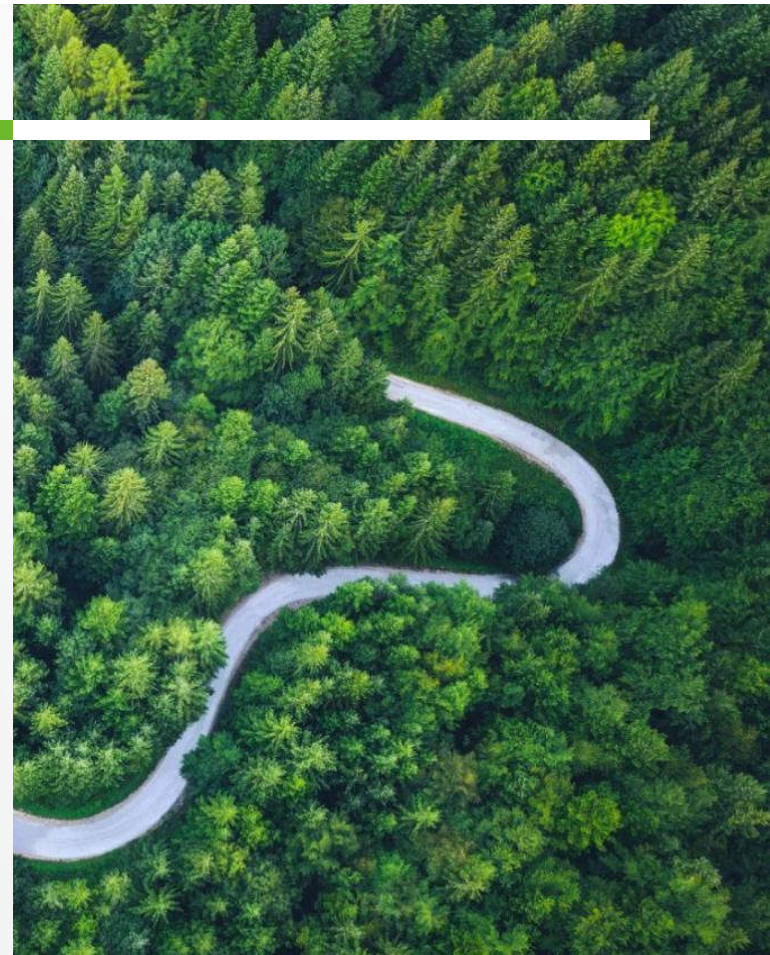


# GROWATT COMPANY PROFILE



SHENZHEN GROWATT NEW ENERGY CO.,LTD

**G**GROWATT



# Content

---

01

Company Profile

02

Product & Solutions

03

Global Reference

# 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

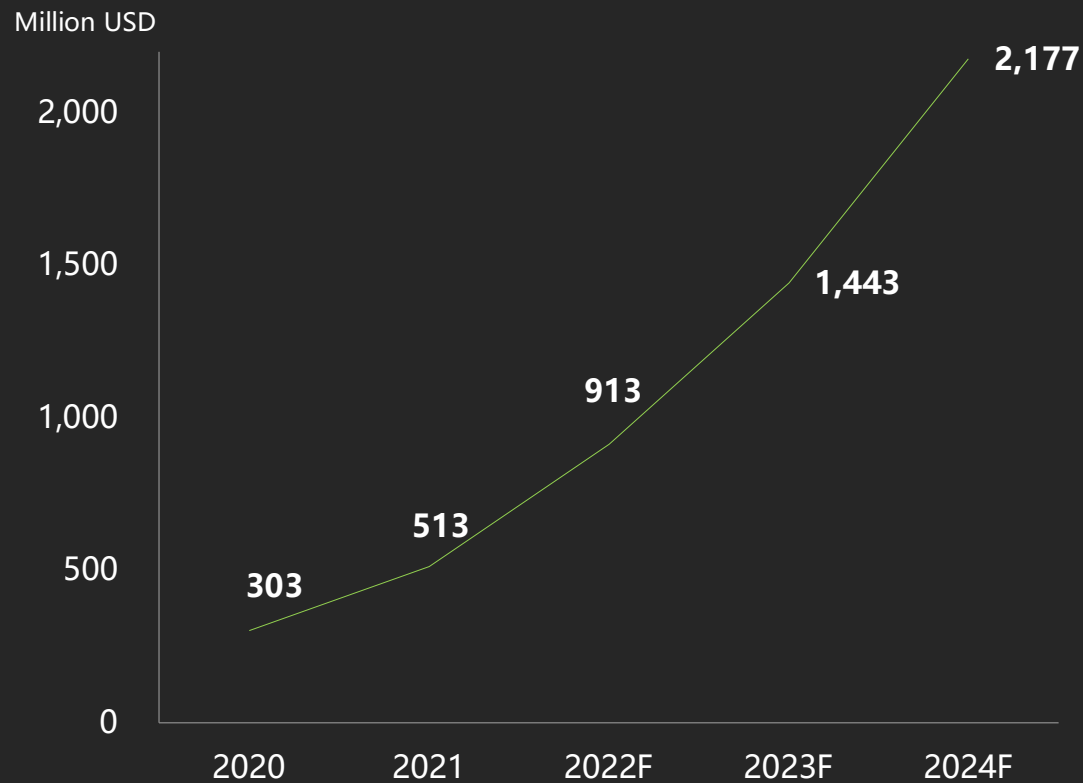
**2020**

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

# India No.1 Inverter for Rooftop



# Global No.1 Shipment of Distributed PV Inverters

Champion the top DPV markets in globe

Poland DPV	<b>TOP1</b>	Asia DPV	<b>TOP1</b>
Netherlands DPV	<b>TOP2</b>	China Residential	<b>TOP1</b>
Italy DPV	<b>TOP3</b>	India Rooftop	<b>TOP1</b>
Mexico DPV	<b>TOP1</b>	Vietnam DPV	<b>TOP1</b>
Brazil DPV	<b>TOP1</b>	Australia DPV	<b>TOP2</b>

# Global Leader of PV Industry

## 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	2021	Company Name	2021
-	7	8	>15	>15	15	6	7	3	2	1	1	Growatt	13.7%
-	>15	15	9	7	4	2	2	1	1	2	2	SolarEdge	13.2%
-	3	3	5	5	7	3	5	7	4	4	3	Enphase Energy	11.0%
-	>15	>15	>15	>15	>15	>15	>15	>15	10	9	4	Huawei	7.0%
-	1	1	1	3	1	1	1	2	3	3	5	SMA	6.9%
-	>15	>15	>15	>15	11	7	4	6	7	7	6	GoodWe	6.8%
-	>15	>15	>15	>15	10	8	3	4	5	6	7	Ginlong	6.5%
-	4	10	11	10	8	4	6	5	6	5	8	Fronius	5.9%
-	>15	>15	>15	>15	>15	>15	>15	>15	15	8	9	Sofar Solar	5.7%
-	>15	>15	>15	>15	>15	>15	>15	>15	>15	>15	10	Deye	3.8%
-	>15	>15	>15	>15	>15	>15	10	9	8	10	11	Sungrow	3.6%
												Others	15.9%
												<b>Total MW Shipped</b>	<b>24,655</b>

Source: IHS Markit

© 2022 IHS Markit

## 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	2021	Company Name	2021
-	>15	>15	>15	1	1	1	1	1	1	1	1	Huawei	23.1%
-	7	6	1	2	2	3	3	2	2	2	2	Sungrow	16.3%
-	>15	>15	>15	>15	>15	>15	13	10	8	3	3	Ginlong	10.9%
-	>15	>15	>15	>15	14	>15	6	14	10	5	4	Growatt	10.6%
-	>15	>15	>15	>15	>15	14	4	9	9	7	5	GoodWe	6.8%
-	1	1	2	3	3	2	2	3	3	4	6	SMA	4.0%
-	>15	>15	>15	>15	>15	11	9	4	4	6	7	SolarEdge	3.9%
-	>15	>15	>15	>15	>15	>15	>15	>15	>15	>15	8	Aiswei	3.8%
-	>15	>15	8	14	7	>15	14	>15	12	11	9	Chint Power	2.8%
-	5	7	>15	>15	10	6	7	7	6	8	10	Fronius	2.5%
-	>15	>15	>15	>15	>15	>15	>15	>15	>15	12	11	Sofar Solar	2.4%
-	15	>15	>15	>15	>15	7	8	5	5	9	12	Delta	2.1%
												Others	10.7%
												<b>Total MW Shipped</b>	<b>84,422</b>

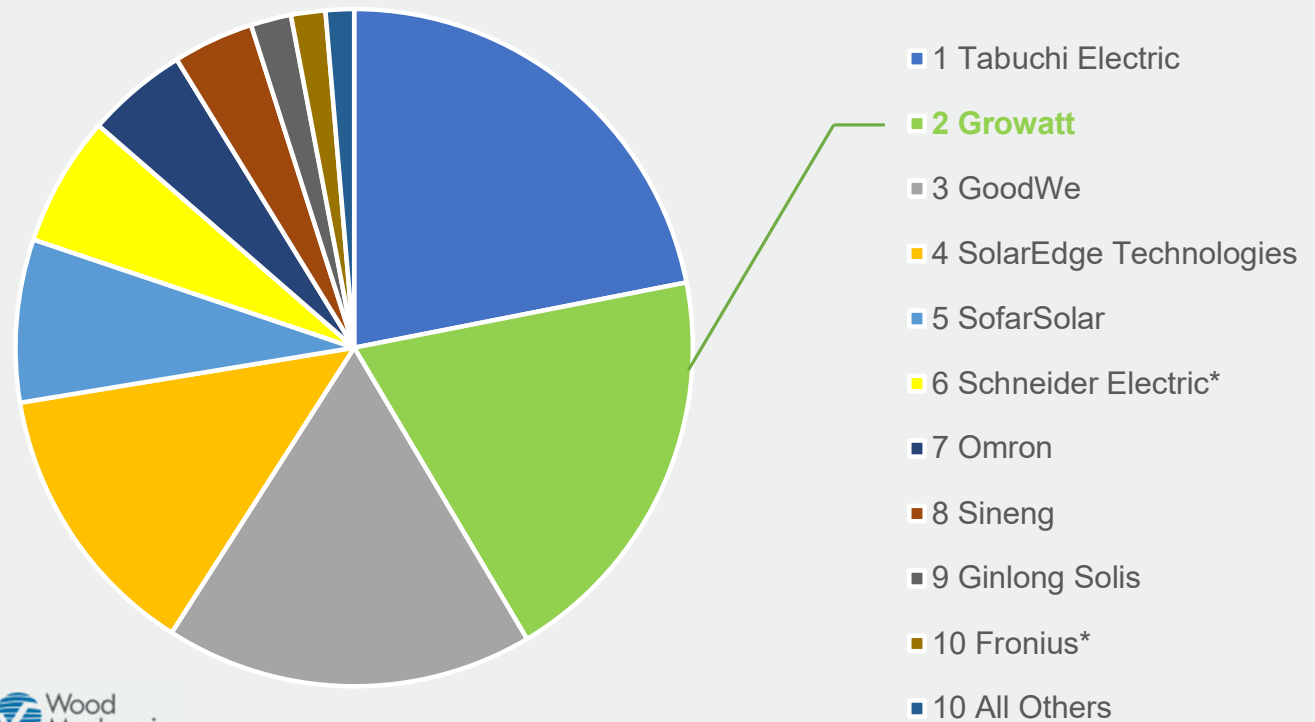
Source: IHS Markit

© 2022 IHS Markit



# Global Top 2 of Energy Storage Inverter

Global Storage Hybrid Inverter Market Share by Shipments  
- 2021 Full Year (MWac)



# EUPD Research

## TOP BRAND PV SEALS

### EUROPE



### AFRICA



### THE AMERICAS



### ASIA PACIFIC



## Sustained High Investment in R&D that Brings Technology Breakthroughs

6.1%

Sales Revenue

\$100M

Cumulative R&D  
Investment of 2016-2021

20%

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

### 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





## Cooperation & Joint Innovation Support the Technology Breakthroughs



Established Research Center of National Electric Power Conversion and Control (NEPC) with China's Ministry of Science and Technology



Growatt sets up a joint lab with Texas Instruments for sustainable energy applications



# Advanced Manufacturing Center

---

200,000m<sup>2</sup>, Annual Capacity of 20GW Inverters and 400K Battery Modules  
Highly Automated Production Line  
Execute Growatt 5-Steps Quality System

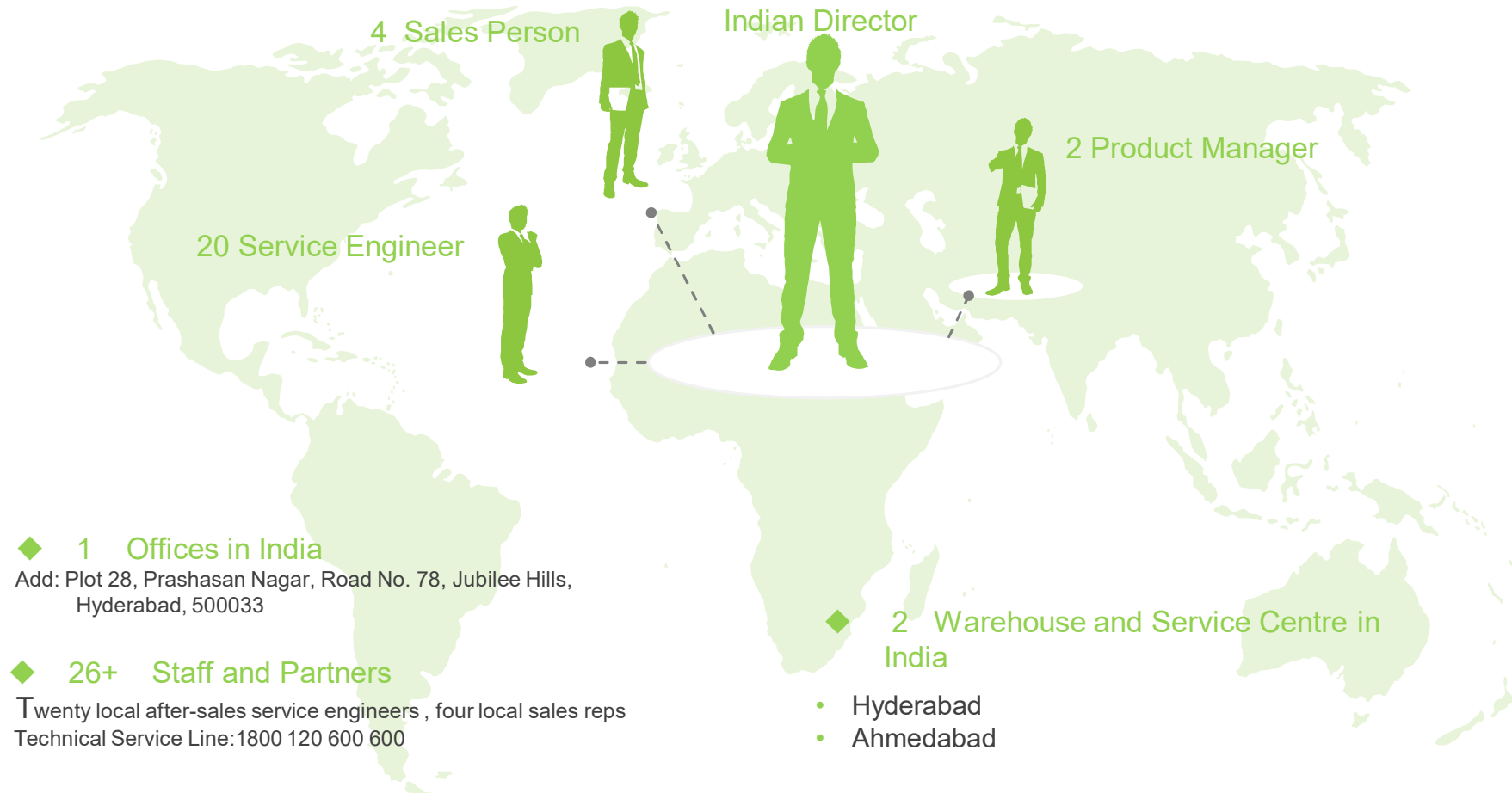


# Global Presence

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



# Growatt India



**Growatt India**

---

# 10 Years Operation In India



**Growatt India**

---

2,50,000+  
Shipments Till Date

# 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/XH  
(2.5-6kW)

\* Also have 7-11.4kW models for America

## Three Phase



MOD 3000-10000TL3-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, Utility PV Products

## Commercial and Industrial



MID 15-25KTL3-X  
(15-25kW)



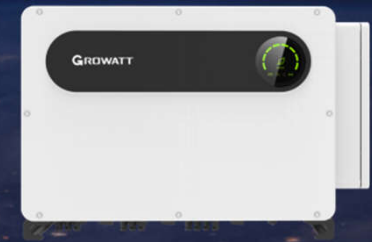
MID 30-50KTL3-X  
(30-50kW)



MAC 30-70KTL3-X LV/MV  
(30-70kW)



MAX 50-150KTL3 LV/MV  
(50-150kW)



MAX 185-253KTL3-X HV  
(185-253kW)

1500V



### 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

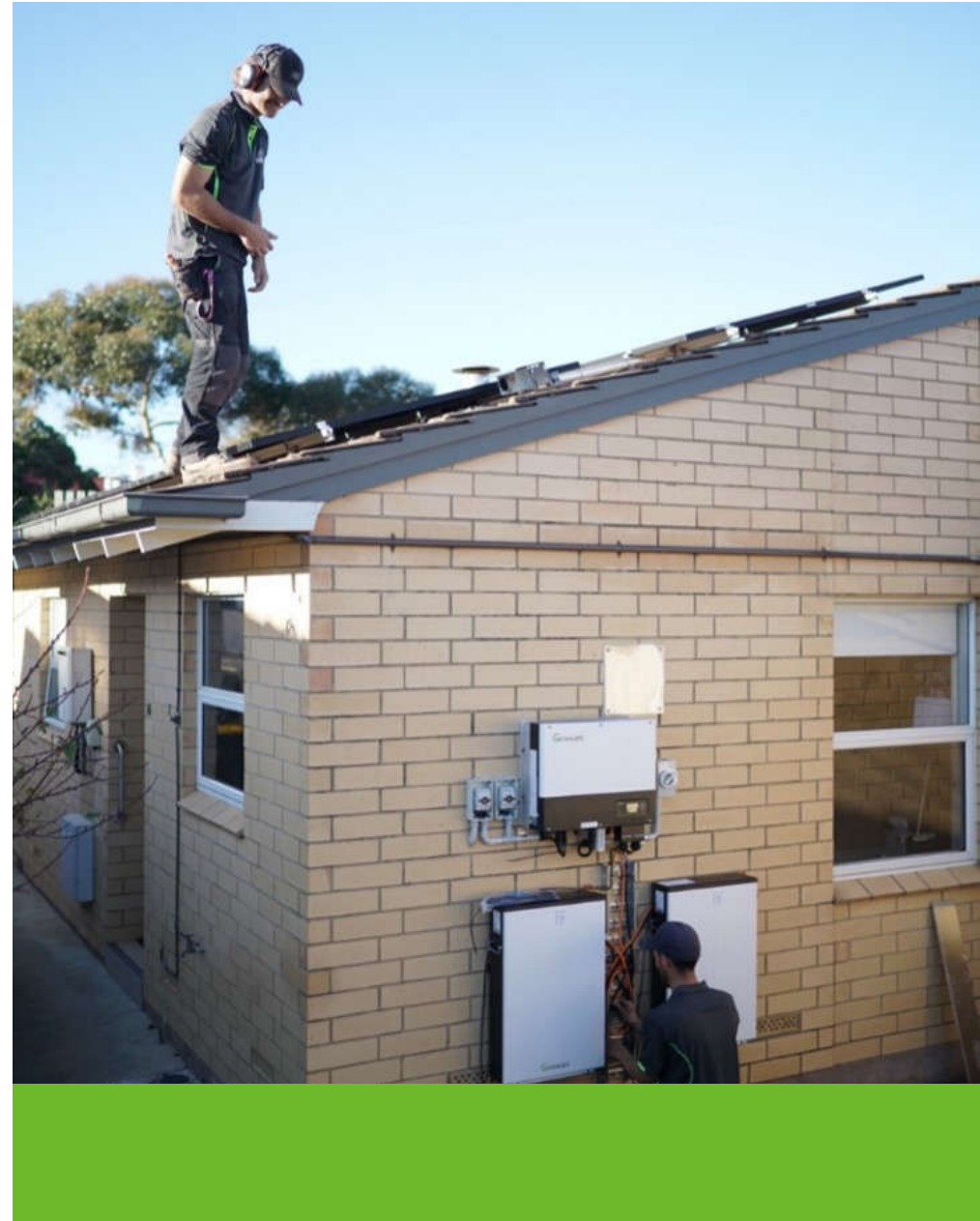


# Energy Storage System

---

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)



SPH 3-6KTL BL-UP  
(3 - 6kW)



SPA 1-3KTL BL  
(1 – 3kW)



SPH 4-10KTL3 BH-UP  
(4 – 10 kW)



SPA 4-10KTL3 BH  
(4 – 10kW)



MIN 2.5-6KTL-XH  
(2.5- 6kW)

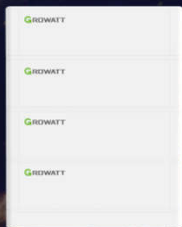


MOD 3-10KTL3 -XH  
(3 – 10kW)



MIN 3-11.4KTL-XH-US  
(3 – 11.4kW)

## LV Battery



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



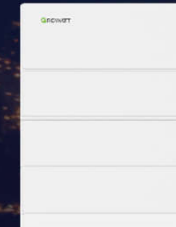
GBLI6532  
(Module: 6.5KWh)  
Max. 8pcs  
(6.5KWh-52KWh)

## HV Battery



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

## HV Battery

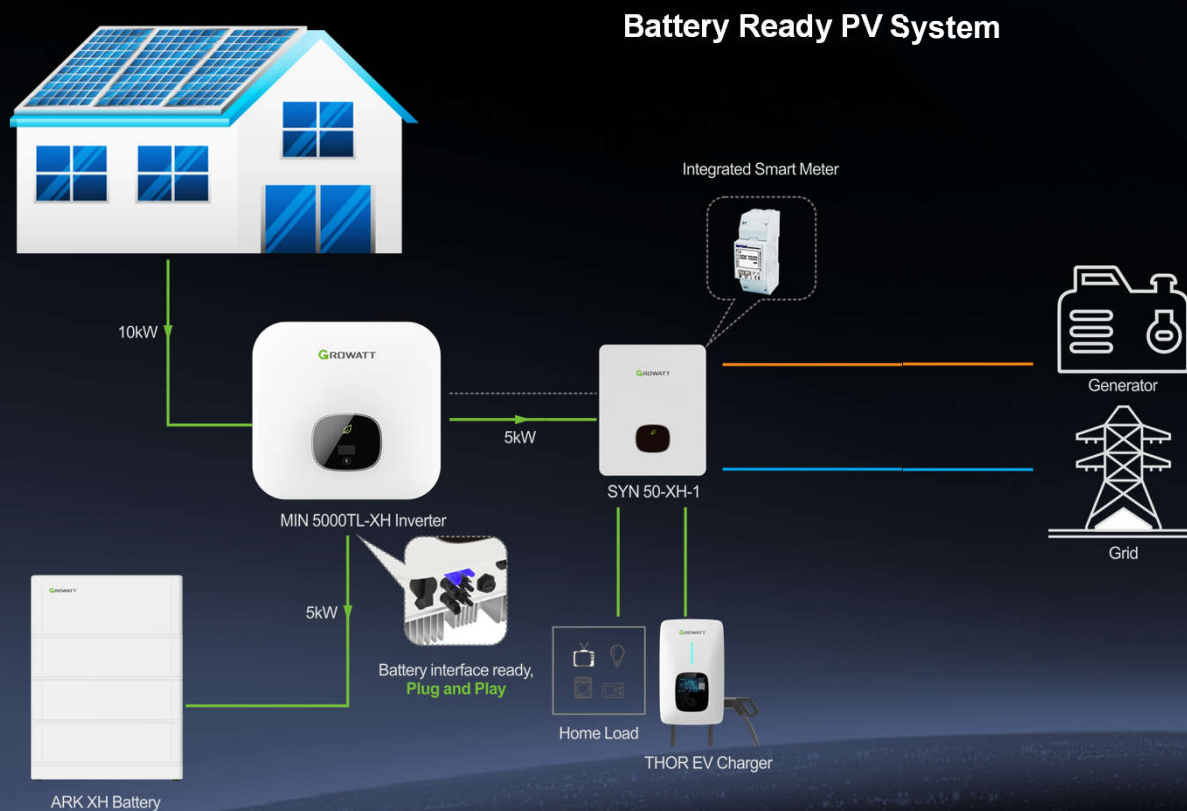


ARK XH Battery System  
(Module: 2.56kWh)  
Range 2 - 10 pcs  
(5.12KWh-25.6KWh)



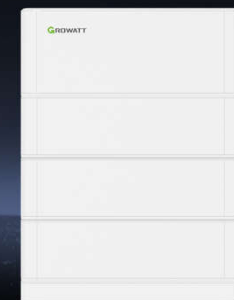
ARO HV Battery System  
(Module: 3.3kWh)  
Range 2 - 6 pcs  
(6.6KWh-19.8KWh)

# Battery Ready PV System for Your Home



- Future-proofed 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

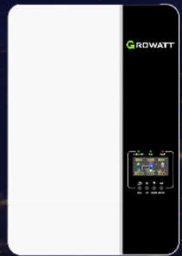


# Micro-Grid Storage System

Gain the fully energy independence

2kW ~ 30kW Off-grid ESS

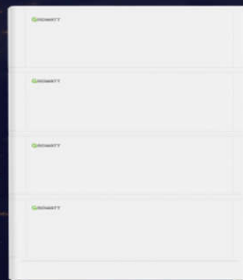
50kW ~ 1MW Micro-grid ESS



SPF 5000ES



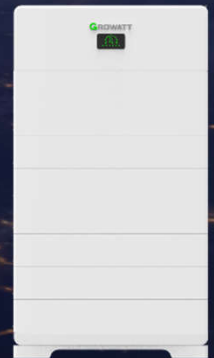
SPF 3000T HVM-G2



AXE 5.0L-A1 Battery



WIT 50~100KTL3-H/A



APX Battery System



Residential Off-grid ESS



Micro-grid System for Isolated Islands



Network Microgrid for C&I



# 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



ShineMaster/-4G



Smart Energy  
Manager

## Smart Monitoring Platform & OSS



ShinePhone APP



ShineServer



Online Smart Service (OSS)



# Global Reference

---



# Growatt 10 years sustainable service, Australia

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



**15KW**  
**Adelaide , Australia**



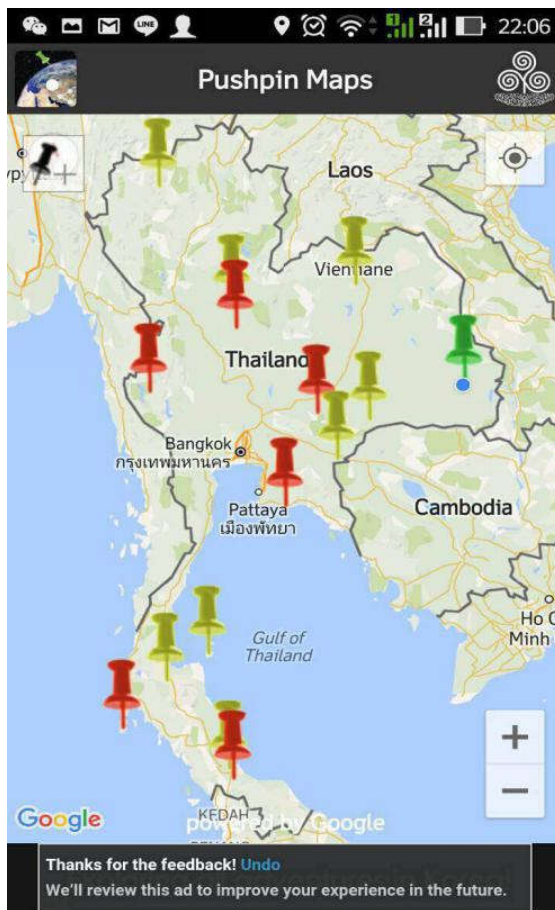


## 3kW/6.5kWh Residential ESS in South Australia

SPA 3000TL BL + GBLI 6531 Battery

# 100kW Micro Grid Solution in Thailand

Growatt 100KW micro-grid storage system was installed in 15 bases of Royal Thai Airforce across Thailand.





# 1.2MW C&I Rooftop Project in Switzerland

Growatt 40000TL3-NS, Growatt 30000TL3-S



## 3MW Solar Farm, Maldives



► 93 x 30KTL3-S & 27 x 11KTL3-S



## 3MW Solar Farm, Ninh Thuan, Vietnam

---



Growatt MAX 80KTL3 x 36



## 4MW Solar Plant, Anhui, China



► **Growatt 40KTL3-NS x 100**





## 5MW Ground Solar Plant in Ukraine

---

MAX 50KTL3 LV



# 5.5MW Solar Plant Maharashtra, India

---



Plant Owned by Kirloskar  
(60K-HE )





# 10MW Ground Solar Plant Gansu, China



► MAX 60KTL3 LV



## 90MW Solar Farm EA, Thailand



▼  
Growatt 20000TL3-HE





# 100MW Foxconn Hill Solar Farm



► **Growatt 40000TL3-NS**  
**Henan, China**

## Growatt 20KTL3-HE X 200 PCS, India



**4MW Solar Plant Chevella, Hyderabad**

## MAX 80 KTL3 installed at BBMB, India



Power House New Delhi





## **Growatt MAX60KTL3-LV X 8 pieces**



**500 KW at IIIT Hyderabad**



# Growatt MAX60KTL3-LV & MAX50KTL3-LV



**1MW at Forbes Aurangabad**

# Growatt MAX253KTL3-X HV



**7.5MW at Solapur**

# Growatt MAX250KTL3-X HV



**10MW at Jhansi**



# 1 MW Solar Plant in MP

## 13 nos of 60KTL3-HE and MAX70KTL3



**Satguru Cement in MP**

# Growatt 60KTL3-HE, 84 numbers



**6MW Solar Plant Solapur**

# THANKS



Copyright© 2022 Growatt New Energy CO., LTD

All Rights Reserved. The information contained in this document is only for reference purpose and subject to change by company officials.



 Growatt New Energy