



#### **Company Introduction**

Milestone Company Profile R&D Capabilities



#### **Business Overview**

Wind Power Solar System ESS



#### **Global Outlook**

Marching Global
Cooperative
Partners



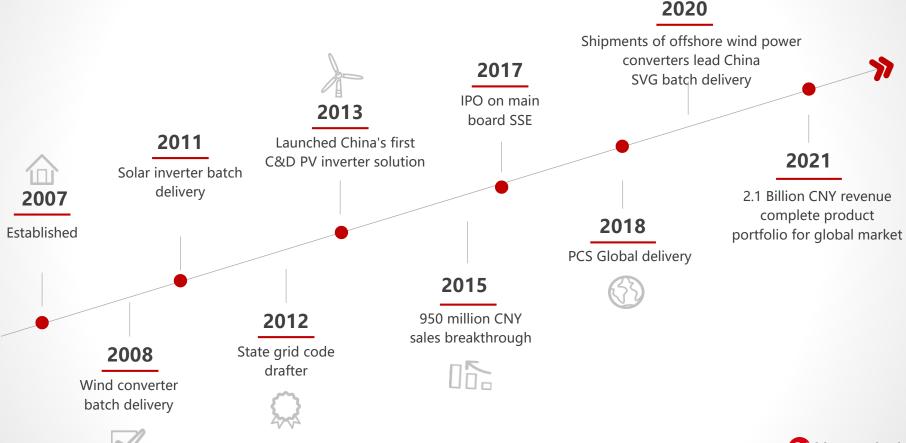
#### **Project Reference**

**Project Cases** 



# 1 Company Introduction

## **Company Milestone**





## **Company Profile**





## **R&D Capabilities**

#### - IEC and GB Membership

- 4 key members in **China National Standard Committee**
- Participated in 12 China national standards Drafting
- Participated in 3 IEC standards Drafting

#### - Patents Authorized

- 410 China patents and 5 international patents



NSC	Full Name	Corresponding IEC	Member
TC50	National Wind Power Standardization Technical Committee	IEC/TC88	Dangsheng Zhou
TC90	National Solar Photovoltaic Energy System Standardization Technical Committee	IEC/TC82	Dapeng Zheng
TC518	National Standardization Technical Committee for Frequency Control Equipment	NA	Sufei Wang
TC60/SC1	Speed Control Electric Drive Systems Containing Semiconductor Power Converters Sub-Technical Committee of National Power Electronic System and Equipment Standardization Technical Committee	IEC/SC22G	Yunjie Wang
TC424	National Short-Circuit Current Calculation Standardization Technical Committee	IEC/TC73	Dangsheng Zhou



## **R&D Capabilities**



Core R&D team has more than 15 years power and electrical development experience



Ph.D and Master



More than 10% of annual revenue was spent



## **R&D Capabilities**



> 3MW Aging Test



> 6MW Aging Test



> Medium Voltage Test



> 3.2MW DFIG Test



> FRT Testing Platform



> 3MW PMSM



> Temp & Humidity Test



> Salty Mist Test



> Vibration Test



## **Company Facilities**



Shenzhen HQ, R&D center



Suzhou Manuf Base



Dongguan, New R&D Center



Xi'an Base



Heyuan Manuf Base



Beijing Sales & Service Office

HQ R&D: Shenzhen

5 R&D and manufacturing bases: Shenzhen, Suzhou, Dongguan, Xi'an, Heyuan

30 Sales & Service Center established globally

6 overseas sales and service centers: Netherlands, Brazil, South Korea, Turkey, Vietnam, Pakistan



Brazil subsidiary



Netherlands Sales & Service Center



Korea Sales & Service Center



Turkey Sales & Service Center



## **Manufacturing Base**

- > Shenzhen 23000m²
- **Suzhou** 70000m<sup>2</sup>
- > Dongguan 5000m<sup>2</sup>
- **Heyuan** 189000m<sup>2</sup>



**Solar & Hybrid Inverter**: 20GW/year **Wind Converter**: 20GW/year

**ESS Capacity**: 10GW/year **SVG:** 1.8Gvar/year **VFD:** 20000sets/year

**7** Hopewind

## **Quality System**

**>** Corporation Certification

ISO9001, ISO14001, OHSAS 18001, IATF 16949

> Lab Certification

CNAS certified, TUV witness

> Product Certification

TÜV, CE, CGC, LVRT, CQC, UL, CNAS......

**>** Corporative Institute

























## 2 Business Overview

## **Wind Power**



**Leading Wind Power Converter Enterprise** 

Leading the Chinese market



**Globalization Strategy** 

Develop the international market; Export to Europe, America, Southeast Asia and other regions

- > National Science and Technology Progress Award from the State Council, with a complete product series
- > The ONLY Chinese manufacturer achieved medium-voltage offshore wind power converter applications and the first manufacturer achieved offshore wind power converter with serial applications
- > The 1st one Converter member organization of **APQP4Wind** in China



## **PV System**



Ranked among the top 10 shipments in China's inverter market



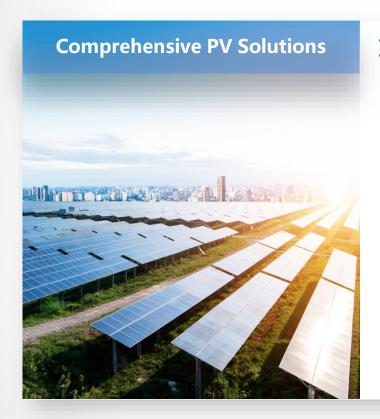
String, Centralized and C&D types, Inverter power coverage **5kW-3.125MW**Inverters are listed, certified in global areas.



Developed distribution channel through on-line and off-line channels in **South America**, **APAC** and **European** areas.



## **PV System**



#### String Inverter

> Multi-MPPTs, decentralized grid -connection

5-8kW (550V) 8-125kW(1100V) 225kW (1500V)



#### **Distributed Inverter**

> Multi-MPPTs, centralized grid-connected 1/1.25MW (1100V)



#### Central Inverter

> Single MPPT, centralized gridconnected

500/630kW (1100V) 1.25/1.5625/2.5/3.125MW (1500V)



## > Inverter-transformer integrated solutions, MW-class

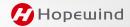
> 1.0MW~6.25MW





## **Grid Simulator**

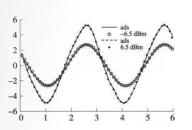




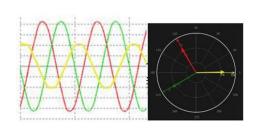
## **Grid Simulator**

#### **Grid Adaptability Test**

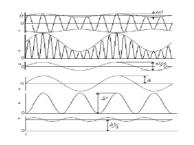
#### > V/F adaptability testing



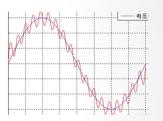
#### > Voltage unbalance testing



#### > Flicker suitability test

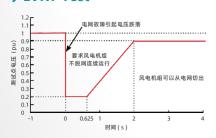


#### > Harmonic suitability test

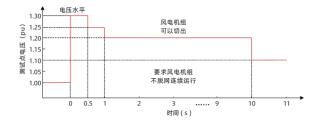


#### **Fault Voltage Ride Through Test**

#### > LVRT Test



#### > HVRT Test





## **Energy Storage System**

#### **Integration Capabilities**

2021 Best Renewable Energy Storage **Project Award** 

2021 Best System Integration Solution **Provider Award** 

#### **Large Shipment**

First shipment in 2017, cumulative shipment volume exceeded 400MW+

#### **Complete Solutions**

PCS, EMS, All-in-one BESS

Solution covers all scenarios including: Power generation side, Grid side, User side and Micro-grid

#### **Battery Suppliers**

Suppliers including: Ganfeng, EVE, HIGEE, **Great Power** 

The medium includes lead-acid batteries. lithium-ion batteries, super capacitors, flywheels, etc



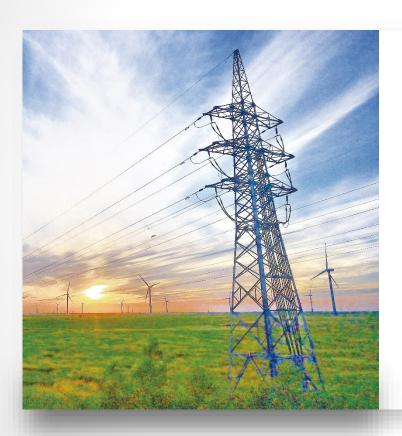




GanfengLithium



## **Static Var Generator**



There are application cases in wind power generation, photovoltaic power generation, rail transit, petroleum and petrochemical, coal, metallurgy and other industries

#### > Static Var Generator/SVG (3kV~10kV~35kV)

#### 1Mvar~100Mvar

Direct-connection type & step-down type
Air cooling & water cooling & air conditioning-cooling
Indoor & outdoor (container type, prefabricated cabin type)
Conventional & customized (high prototype, offshore type, automatic bypass redundant type)









## **Variable Frequency Drive**



Focus on high-end industrial industries such as metallurgical steel rolling, oil drilling, mining machinery, ship drives; Manufacturer of 5000m/7000m/9000m oil drilling platform units in batches

#### **>** hopeDrive

- > HD2000
- > HD8000



#### **>** hopeVert

- > HV300
- > HV350
- > HV500



#### **>** Customization

- > Oil and gas fields
- > Mining electric shovel
- > Mining dump truck
- > Pitch inverter







## 3 Global Outlook

## **Marching Global**

- > The cumulative shipment of renewable energy products reaches 85GW+1
- **> 6 Local Service Center** are planned for global markets









































































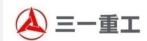






















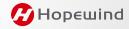






















































## 4 Project Reference



### **>** 4.5MW Project

2021

Shandong, China

hopeSun60KTL

hopeSun70KTL

hopeSun100KTL





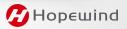


## **>** 2.5MW Project

2021 Anhui, China

hopeSun60KTL hopeSun70KTL hopeSun100KTL







## **>** 1MW Project

2021

Guangdong, China

hopeSun100KTL







### > 200MW Project

2020

Ningxia, China

hopeSunHV250KTL







## **>** 100MW Project

2020

Shanxi, China

hopeSunHV250KTL







### > 1MW Project

2020

Zhejiang, China

HopeSun 70KTL







### > 600kW Project

2020

Shanghai, China

HopeSun 30KTL







### > 3.8MW Project

2019 Shandong, China

HopeSun 70KTL







### > 6MW Project

2019 Anhui, China

HopeSun 50/60/70KTL







#### > Solar Plant 14MW

2019

Ukraine

hopeSun60KTL





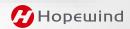
## > 360kW

2020

Turkey

hopeSun60KTL







## > Risidential case

2020

Vietnam

hopeSun8KTL







## > Risidential case

2020

Vietnam

hopeSun8KTL







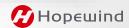
## **>** Commercial case

2020

Vietnam

hopeSun70KTL







## > 1MW Project

2020

Vietnam

hopeSun70KTL







## **>** Commercial cases

2020

Brazil

HopeSun 12KTL

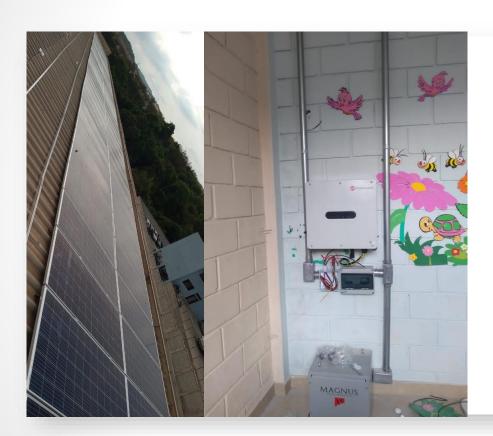
HopeSun 20KTL

HopeSun 30KTL

HopeSun 60KTL







## **>** Commercial cases

2020

Brazil

HopeSun 20KTL

HopeSun 30KTL

HopeSun 36KTL

HopeSun 75KTL







## **>** 550kW Project

2020

Korea

HopeSun 50KTL







## > 700kW Project

2019

Korea

HopeSun 50KTL







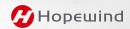
## **>** Solar Power Plant

2018

Korea

HopeSun 50KTL





> Batch application in complex mountains

2014 till now China









➤ Application in high sandstorm and high temperature (50°C) area

2014~2016 China





➤ Batch application in ultra-low temperature area (-30°C~-45°C)

2014 til now China, Korea







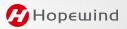




> Application in high humidity and high salt spray environment

> 2015~2019 China







## > ESS Plant

2017~2019

Korea

8MWh







## > ESS Project

2020

China

24MW/12MWh







## > ESS Project

2020

China

800kW







## > Wind Power Plant

2019

India

Full power 750kW Converter







## > Onshore Wind Farm 61.2MW

2013 United States

Full Power Converter 3.6MW Chinese turbine in U.S. Market







## **>** Offshore Wind Farm

2016 2017 2018 China

Offshore Batch Application







## > SVG/STATCOM in the wind

2019

China

High Altitude







## > 10MW Project

2020 China

HD8000 10MW medium voltage IGCT VFD to the main drive of high-speed wire finishing mill







# > Rolling Machine in Steel Company

2018~2020

China

HD8000 12MVA







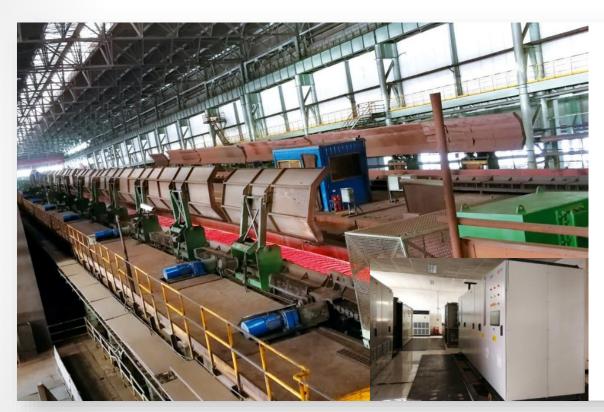
## > Drilling Rig Drive

2018 China

The Application of Engineering VFD in 7000-meter Oil Well Drilling Rig







## > 7000m Oil Well Drilling Rig

2018

China

HD2000





# 5 EMO





**User Friendly** 

· Built-in zero export function interface

· Touch free commissioning via APP · AC and DC redundant power supply

## **FEATURES**

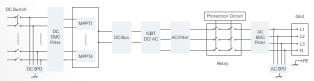


- 4 MPPTs with Max. efficiency 98.60%
- 20A input current, compatible with 210mm PV
- · Night SVG function (optional)



- · Smart air cooling
- Built-in Type II DC&AC SPD
- · Built-in PID recovery function (optional)

## **TOPOLOGICAL GRAPH**



Model	hopeSun 60KTL	hopeSun 70KTL	hopeSun 75KTL	hopeSun 100KTL	hopeSun 110KTL	
DCInput						
Max. PV Input Power	90kW	105kW	112.5kW	150kW	165kW	
Max. Input Voltage			1100V	1		
Starting Voltage	180V					
MPPT Voltage Range			200 ~ 1000V			
MPPT Range Full Load	520 ~ 850V 550 ~ 850V					
Max. Input Current Per MPPT	45A / 45A / 45A			65A / 65A / 65A / 65A		
Max. Short-circuit Current		60A / 60A / 60A / 60A		100A / 100A / 100A / 100A		
Number of DC Inputs	3/3	/3/3	4/3/3/4	5/5/5/5		
Number of MPP Trackers	4					
ACOutput						
Rated Output Power	60kW	70kW	75kW	100kW	110kW	
Max. Output Power	66kW	77kW	82.5kW	110kW	121kW	
Rated Output Voltage	230V / 400V (3P + N + PE)					
Operating Voltage Range	300 - 520V					
Rated Output Current	86.6A	101.0A	108.3A	144.3A	158.8A	
Max. Output Current	95A	111A	119A	158.8A	174.6A	
Rated Grid Frequency	SOFT	1111	50Hz / 60Hz	100.01	114.01	
Power Factor	~00	>0.99 (0.8 leading ~ 0.8 lagging) >0.99 (0.9 leading ~ 0.9 lagg			a = 0.9 lagging)	
Harmonic (THD)	20.0	5 (6.5 reading - 6.6 rags	<3% (at rated power)	20.00 (0.0 1000)	g - 0.5 lagging)	
Efficiency	L					
Max. Efficiency		98.50%		98.0	50%	
European Efficiency		98.20%		98.30%		
Protection	l .					
Surge Protection			DCtype II / ACtype II			
Insulation Impedance Detection	DCtype II / ACtype II  Yes					
Residual Leakage Current Detection	Yes Yes					
PV String Fault Detection	Yes Yes					
PV Reverse Polarity Protection	Yes					
Anti-Islanding Protection	Yes					
Output Overcurrent Protection		Yes Yes				
DC Switch	Yes					
Zero Export Function		1		Y	98	
General Parameters		· · · · · · · · · · · · · · · · · · ·				
Dimensions (W*H*D)		705*650*285mm		800*680	*330mm	
Weight	705°650°285mm ≤75kg			≤89kg		
Protection Degree		ar ong	IP65		mg .	
Operating Temperature Range			-40 ~ +60°C			
Cooling System	-40 ~ +00°C Smart air cooling					
Topology		Smart air cooling Transformerless				
Operating Altitude	4000m (>3000m derating)					
Display	4000m (>3000m derating)  LED. WLAN + APP					
Communication	R\$485 / W-Fi					
DC Connection Type	MC4					
AC Connection Type	MC4 OT / DT terminal					
ACCOMMECTION Type	L		Or / Di terminal			





## **FEATURES**



- 12 MPPTs with Max. efficiency 99.01%
- Compatible with 500Wp + bifacial modules
- · Highly-precise intelligent string detection



- Built-in Type II DC&AC SPD
- · Built-in PID recovery function (optional)
- · Compatible in harsh environmental conditions



## User Friendly

- · Active and reactive power regulation
- · Compatible with weak grid situation
- Remote firmware upgrade



#### Low Cost

- · Compatible with Aluminium cable
- · PLC communication to reduce cost
- · Night SVG function (optional)

## **TOPOLOGICAL GRAPH**



Model	hopeSunHV 250KTL						
DC Input							
Max. PV Input Power	375kW						
Max. Input Voltage	1500V						
Starting Voltage	500V						
MPPT Voltage Range	500 ~ 1500V						
MPPT Range Full Load	820 ~ 1320V						
Max. Input Current Per MPPT	12 * 30A						
Max. Short-circuit Current	12 * 45A						
Number of DCInputs	12*2						
Number of MPP Trackers	12						
ACOutout							
Rated Output Power	250kW						
Max. Output Power	255kW						
Rated Output Voltage	800V (3P + PE)						
Operating Voltage Range	680 ~ 880V						
Rated Output Current	180.4A						
Max. Output Current	184A						
Rated Grid Frequency	50Hz / 60Hz						
Power Factor	>0.99 (0.8 leading ~ 0.8 lagging)						
Harmonic (THD)	<3% (at rated power)						
	C3/6 (at faled power)						
Max. Efficiency	99.01%						
European Efficiency	98.52%						
Protection	90.32%						
Surge Protection	DCtype II / ACtype III						
Insulation Impedance Detection	Yes						
Residual Leakage Current Detection	Yes						
PV String Fault Detection	**						
PV Reverse Polarity Protection	Yes						
Anti-Islanding Protection	Yes Yes						
Output Overcurrent Protection	Yes						
DCSwitch	Yes						
General Parameters	165						
Dimensions (W*H*D)	1090*809*337.5mm						
Weight	1090 809 357.5mm ≤115kg						
Protection Degree	IP66						
	-25 ~ +60°C						
Operating Temperature Range							
Cooling System	Smart air cooling						
Standby Power Consumption	<10W						
Topology	Transformerless						
Operating Altitude	4000m (>3000m derating)						
Display	LED indicator						
Communication	RS485 / PLC						
DC Connection Type	MC4						
AC Connection Type	OT/ DT terminal						





## **FEATURES**



- 8 MPPTs with Max. efficiency 99.01%
- Up to 20A PV input current supports 210mm
   bifacial PV modules
- · Highly-precise intelligent string detection



- · Built-in SPD modules
- · Built-in PID recovery function (optional)
- · Compatible in harsh environmental conditions

## Convenient O&M

- · Active and reactive power regulation
- Compatible with weak grid situation
- companio with weak grid areation
- $extbf{ iny 24/7}$  continuously monitoring
- · Remote firmware upgrade



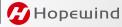
#### **Economy Friendly**

- AC-side Aluminium cable compatibility
- PLC communication
- · Night SVG function (optional)

## **TOPOLOGICAL GRAPH**



Model	HSHV 350K							
DCInput								
Max. PV Input Power	525kW							
Max. Input Voltage	1500V							
Starting Voltage	500V							
MPPT Voltage Range	500 ~ 1500V							
MPPT Range Full Load	860 - 1300V							
Max. Input Current Per MPPT	60A							
Max. Short-circuit Current	8*90A							
Number of DCInputs	4*8							
Number of MPP Trackers	8							
AC Output								
Rated Output Power	350kW							
Max. Output Power	385kW							
Rated Output Voltage	800V (3P + PE)							
Operating Voltage Range	680 ~ 880V							
Rated Output Current	252.6A							
Max. Output Current	277.9A							
Rated Grid Frequency	50Hz / 60Hz							
Power Factor	>0.99 (0.8 leading ~ 0.8 lagging)							
Harmonic (THD)	<3% (at rated power)							
Efficiency								
Max. Efficiency	99.01%							
European Efficiency	98.52%							
Protection								
Surge Protection	DCtype II / ACtype III							
Insulation Impedance Detection	Yes							
Residual Leakage Current Detection	Yes							
PV String Fault Detection	Yes							
PV Reverse Polarity Protection	Yes							
Anti-Islanding Protection	Yes							
Output Overcurrent Protection	Yes							
DC Switch	Yes							
General Parameters								
Dimensions (W*H*D)	1135*919*416mm							
Weight	≤135kg							
Protection Degree	IP66							
Operating Temperature Range	-25 ~+60°C							
Cooling System	Smart air cooling							
Standby Power Consumption	10W							
Topology	Transformeriess							
Operating Altitude	4000m (>3000m derating)							
Display	LED indicator							
Communication	RS485 / PLC							
DC Connection Type	MC4							
AC Connection Type	OT/ DTterminal							
	1							





## **FEATURES**



- · Integrated arc fault circuit interrupter (AFCI)
- · Natural cooling design with low noise
- · Real-time monitoring and precise fault location



- · Up to 20A of MPPT current input to support 210mm & bifacial PV modules
- 100 ~ 800V wide battery voltage range

#### **User Friendly**

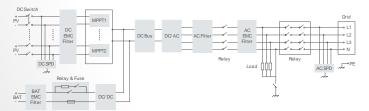
- · Plug and play convenient installation
- · All-in-one independent status display panel
- · Quick and easy inverter commissioning via App



#### Intelligent

- · Full house backup by managing both PV production battery storage and operation
- · Seamless transition for on & off-grid operation mode

## **TOPOLOGICAL GRAPH**



Model	HYNV5K-G01	HYNV6K-G01	HYNV8K-G01	HYNV10K-G01	HYNV12K-G01	
PV Input		<u>'</u>				
Recommended Max. PV power	7.5kW	9kW	12kW	15kW	18kW	
Max. PV Input Voltage			1000V			
Operating Voltage Range		140 - 950V		200 -	950V	
Startup Voltage	180V 250V					
Rated Input Voltage		1004	600V	2.0	•	
Number of MPP Trackers			2			
Max. Input Number Per MPP Tracker		1/1		2/	1	
Max. Input Current Per MPPT		20/20A		27/		
Max. Short-circuit Current		30/30A		40.5/30A		
Battery	30/30A 40.5/30A					
Battery Type			Lithium battery			
Battery Voltage	Lithium battery 100 ~ 800V					
Max. Charge / Discharge Current	100 – 800V					
Max. Charge / Discharge Power	5kW	6kW	8kW	10kW	12kW	
Communication	JAVV	UNIV	CAN / RS485	TORVV	IZKVV	
AC Output (Grid)			CAN / R3405			
Rated Output Power	5kW	6kW	8kW	10kW	12kW	
Max. Apparent Output Power	5.5kVA	6.6kVA	8.8kVA	10kW 11kVA	12KVV 13.2kVA	
Rated Grid Voltage	D.DKVA				IJ.ZKVA	
	380V / 400V (3P + N + PE) 50Hz / 60Hz					
Rated Grid Frequency	0.44	10A	13.3A	40.74	20A	
Max. Output Current	8.4A			16.7A	20A	
Power Factor	>0.99 (0.8 leading ~ 0.8 lagging)					
THDi	<3% (at rated power)					
ACOutput (Backup)						
Rated Output Power	5kW	6kW	8kW	10kW	12kW	
Max. Apparent Output Power	5.5kVA	6.6kVA	8.8kVA	11kVA	13.2kVA	
Back-up Switch Time	4ms					
Rated Output Voltage	380V / 400V (3P + N + PE)					
Rated Frequency	50Hz / 60Hz					
THDv (Linear Load)			<3%			
ACInput (Grid)						
Max. Input Power	10kW	12kW	16kW	20kW	24kW	
Rated Input Current	15.2A	18.2A	24.2A	30.3A	36.4A	
Rated Input Voltage			880V / 400V (3P + N + PE	)		
Rated Input Frequency			50Hz / 60Hz			
Efficiency						
Max. Efficiency	98.0% 98.4%					
European Efficiency	97.3%	97.	6%	97.	8%	
Protection & Function						
Grid Monitoring			Yes			
AC Short-circuit Protection			Yes			
DC Reverse Polarity Protection			Yes			
DC Overcurrent Protection (Battery)			Yes			
DC Switch (PV)			Yes			
Surge Protection	Yes					
Integrated AFCI			Yes			
General Datas						
Topology (Solar / Battery)		Trans	formerless / transforme	erless		
Dimensions (W*H*D)			508*588*203mm			
Weight		20kg		25	kg	
Degree of Protection		-	IP66			
Operating Temperature Range			-25 ~ +60°C			
Operating Humidity Range		0	- 100% (non-condensin	g)		
Max. Operating Altitude	4000m (>3000m derating)					
Noise (Typical)			30dB (A)			
Cooling Method	Natural cooling					
Display	LED, APP, Web					
Communication	CAN / RS485					
DC Connection Type	MC4					
AC Connection Type	Plug and play connector					
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#### PROJECT

In an era where environmental sustainability is paramount, businesses across the globe are increasingly adopting renewable energy solutions to reduce their carbon footprint and optimize operational efficiency. This case study delves into the remarkable success story of HOPEWIND, a leading solar inverter manufacturer, and its partnership with local distribution partner Insight Energy, a prominent player in the C&I industry. Together, they have spearheaded the installation of a groundbreaking solar power plant that has revolutionized energy consumption and paved the way for a greener future of a Glass Factory in Turkey.

#### **ACTIONS TAKEN**

#### ZERO Export Adaptation to TK Market

Changing regulations and need for zero feed in to the system requested from customer. Hopewind Local Team find the right solution and act swiftly to manage

#### CONTINOUS SUPPORT

Internationally expert team both in EU HQ and China HQ monitored together with the local team support to efficiency and quality of the work on site.

#### Challenges

- · Investor is new to the
- investment · Glass Cutting Machines are sensitive and business is sensitive to electricity prices

#### Benefits

- · Solar Plant Capacity
- 550kWp · Return on Investment
- 4 Years · Solar Inverter
- 5 x Hopewind 100kW String Inverters



## **7** Норешіпо AT A GLANCE CASE STUDY **Automotive Spare Parts** Challenges Factory in Turkey · AC Capacity needs different types of products. DC: 334 kWp/ AC: 330 kW . Automotive industry Machines are sensitive and business is

sensitive to electricity prices

3 x Hopewind 100kW String Inverters

1 x hopewind 30 kW String Inverter

. Solar Plant Capacity :

· Return on investment :

Benefits

334kWn

· Solar Inverter

#### PROJECT

In an era where environmental sustainability is paramount, transformative renewable energy projects.

Having limited capacity on rooftop need maximizing the AC capacity with different types of inverter types to give flexibility and high efficiency in output. Hopewind offers a wide range of solutions in C&I segment for PV.

#### CONTINOUS SUPPORT

Internationally expert team both in EU HQ and China HQ monitored together with the local team support to

businesses across the globe are increasingly adopting renewable energy solutions to reduce their carbon footprint and optimize operational efficiency. This case study delves into the remarkable success story of HOPEWIND, a leading solar inverter manufacturer, and its partnership with local distribution partner Insight Energy, a prominent player in the C&I industry. With a shared commitment to sustainability, investor recognized the immense potential of solar power as a means to achieve their energy goals. They sought a reliable and innovative partner to implement a solar power plant, capable of meeting their escalating power demands while adhering to the highest standards of efficiency and reliability. Hopewind, renowned for its cutting-edge solar inverter solutions and a proven track record of delivering

#### CHALLANGE & SOLUTION

efficiency and quality of the work on site.







