

Fusionsolar

Making the Most of Every Ray



*Email: Victor.koyier@huawei.com
Tel: 0254736844671*

Victor Koyier

Vice President of Southern Africa Digital Power Smart PV

17 years' experience in renewable industry in Sub Saharan Africa

Successful deployed and Supported deployment of 2 GW across Africa- Distribution / C&I /Utility projects

Enthusiastic about the Solar Energy Growth and Transition in Africa

A Successful 2022 with Customers and Partners

80%

Smart PV Inverter shipments
worldwide

326%

Smart String ESS shipments
worldwide

77% @2022
65% @2021

Sales attributed to
1000+ partners

* The data is based on Huawei's internal growth data in 2022 compared with in 2021.

A Return to Earth with Decades of Accumulation



300 GW

Smart PV Inverter shipments
worldwide (Until 2022)



770 Billion kWh

Green electricity
production



355 Million tons

Carbon emissions
reduced



485 Million

Equivalent trees
planted

Technologies Are Here to Enable PV + ESS to Become the Main Energy Source

Technology Drivers

Lower LCOE, Higher Grid Stability

Module

Higher Efficiency

PERC
21%~23%

Topcon/HJT/XBC
24%~27%

Tandem
>30%

MLPE/Inverter

Higher Yields

Central Inverter
2000+ Modules/MPPT

String Inverter
100+ Modules/MPPT

MLPE
Each Module

Battery

Longer Calendar Life

280 Ah-320 Ah
15 Years

320 Ah-700 Ah
20 Years

Customize
25 Years+

Storage System

Higher Capacity

System-level Management
2000+ Cells

Pack/Rack-level Management
10+/300+ Cells

Cell Level Power Electronics
Each Cell

Grid

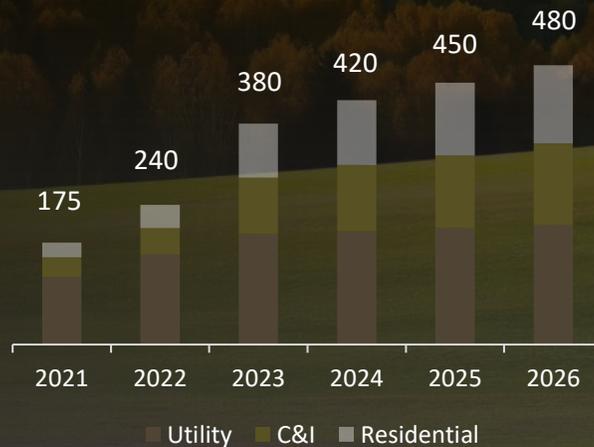
Higher Penetration

Grid Following
30%~40%

Grid Supporting
40%~50%

Grid Forming
60%+

Global PV installations forecast (GW)



Global ESS installation forecast (GWh)



Insist on Three Global Strategies to Accelerate the Progress

Continuous innovation and technology leadership

Accelerating PV Development

Actively participate in standards development

Promoting High-quality Development of PV Industry

Consolidating global ecosystems

Shared Efforts, Shared Prosperity

Convergence and Innovation through 4T Technologies



Utility Scenario: Leading Smart String Solutions to Become Mainstream



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24%

Market share of string inverters worldwide

80%

Breakthrough

Decline of Subsidies

Grid Parity

Carbon Neutrality

Recognition of string solution values

2013–2016
No. 1 in global shipments

2017–2020
Optimal choice of grid parity plants

2020–
Leading benchmark for carbon neutrality



Germany
Photon Dual-A+ Test

Germany
3 MW
> 3.47%
higher yields

Brazil
Nova Olinda 2.2 MW
> 4.4%
higher yields

India
Madurai 50 MW
> 2.38%
higher yields



UK
Cowdown 40 MW



Japan
150 MW

Thailand
60 MW
Dominican
Monte Plata 66 MW

Germany
Krempendorf 20 MW
France
Amrenco 8 MW



Spain
Don Rodrigo 175 MW



KSA
SAKAKA 300 MW

Argentina
Jujuy 315 MW
India
Rajasthan 450 MW

Mexico
Navojoa 220 MW
Japan
Carolina 120 MW



France
Montmédy-Marville 152 MW



Australia
Victoria 106 MW

Germany
Ganzling 65 MW
Netherlands
Floating 27.3 MW

Singapore
Offshore 5 MW
...

Smart PV & ESS Generator: A Cornerstone Technology Towards Main Energy Source



The World's First Smart PV & ESS Generator Performance Test

Smart PV & ESS Generator Plant

In Qinghai, China

≥ 180 grid tests, including steep frequency and voltage fluctuation tests

Smart PV & ESS Generator From Concept to Reality

The World's Largest PV & ESS Microgrid Project

400 MW + 1.3 GWh Microgrid Plant

Red Sea Project, Saudi Arabia

Resilient, 100% renewable energy for 1 million people

青海电科院、青海电科院助力华为公司完成全球首次构网型光+储变流器发电

C&I Scenario: Leading Active Safety to Become Industry Standard

1

Before 2015

Higher Reliability
Maintenance-free



No fuse
Natural cooling

IP65, fully sealed



Supermarket



School



Farm



Logistic centers

2

2016-2019

Higher Safety
Wider Applications



Industry-leading
Leading AFCI

First inverter
with PID recovery



Chemical industry



Flourmill factory



Office building



Textile factory

3

2020-2022

Active Safety
Fits for Most Industries



Module-level optimization

Module-level
rapid shutdown



Gas station



Steel making



Non-ferrous metal



Papermaking



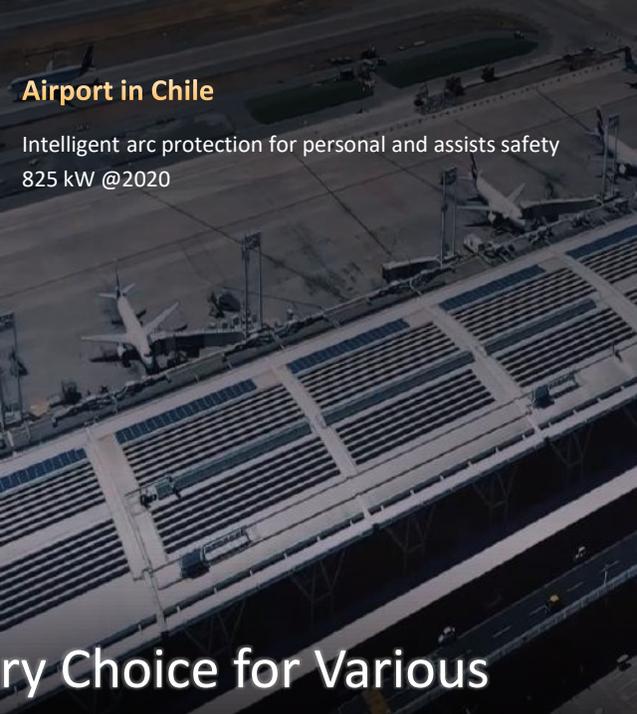
AAU University, Jordan

Low-noise natural heat dissipation
280 kW@2013



Porcelain Painting Factory, Netherlands

AFCI technique ensures safety
2.54 MW@2019



Airport in Chile

Intelligent arc protection for personal and assists safety
825 kW @2020



Food Factory in China

Optimizers with 15% more installed capacity and 14.8%
higher yield
1.1 MW@2022



Ranch Project, Thailand

Dust-proof natural heat dissipation
42 kW@2015



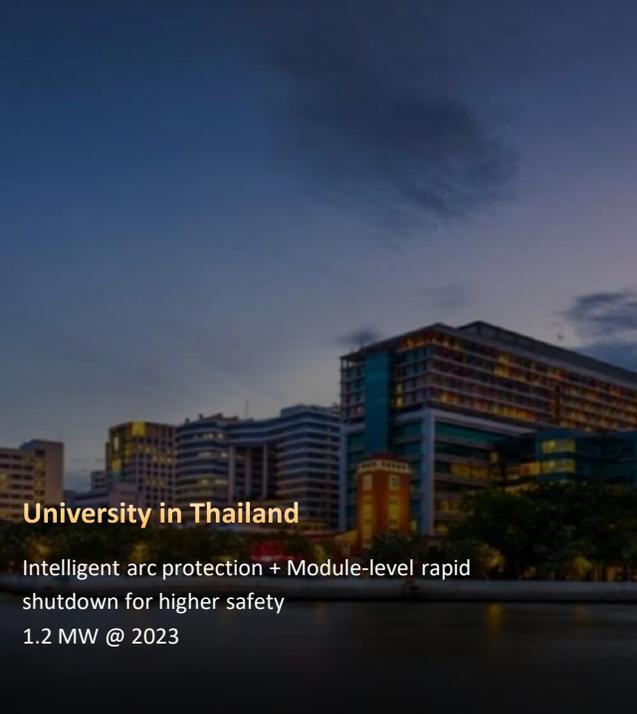
Dubai Port, Middle East

Built-in PID recovery enables operation in high temperature
environments
25.8 MW@2017



VivoCity, the Largest Mall in Singapore

Built-in PID recovery enables operation in humid environments
100 kW@2019



University in Thailand

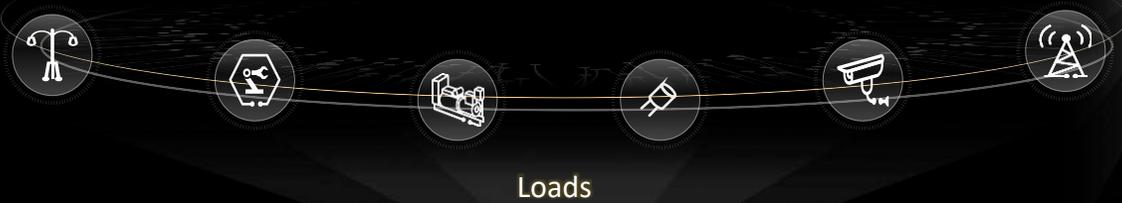
Intelligent arc protection + Module-level rapid
shutdown for higher safety
1.2 MW @ 2023

FusionSolar as Primary Choice for Various Commercials and Industries

C&I Scenario: One-Stop Solution to Achieve 100% Self-sufficiency

C&I Smart PV Solution

SmartPVMS



Eco-System

Prosumer

Interconnection

Smart PV Grid-forming

+

VPP Energy Connection

2020-2022

2023-2024

2024-2025

1.0

Single Business
100% Self-consumption

2.0

Single Business
100% Self-sufficiency

3.0

Various Industries
100% Self-sufficiency

With ESS, to storage excess PV energy during day and use it when necessary to improve self-consumption rate

Integration of "PV + ESS + Loads Management +Grid-forming", keep business running under power outage

Integration of "PV+ESS+VPP" participate in electricity trading purchase or sell green electricity

Residential Scenario: Leading Home Energy Management with Future-Ready Architecture

Smooth evolution from inverter to home energy management

30%

Self-consumption rate

Residential 1.0

Inverter + SmartPVMS



2017

70%

Self-consumption rate

Residential 2.0: 1 + 3 + X

Optimizer + Inverter + ESS + Load + SmartPVMS



2021

90%

Self-consumption rate

Residential 3.0: 1 + 4 + X

Optimizer + Inverter + ESS + Charger + Load + SmartPVMS



2022

Easier Job for Installers, Higher Satisfaction for Homeowners

For Homeowners

1+4+X Solution provides 100% green energy-using prospect



@ Valencia. Spain

Configuration:

SUN2000-6KTL-M1, SUN2000-450W-P2, LUNA-10-S0, SCharger-7KS-S0, EMMA



Charge the battery with extra PV energy

PV-preferred Charge Mode for EV

Battery discharge at night

Yield: 519.81 kWh

Feed-in energy (6.14%)

Self-consumption (93.86%)

For Installers

One-fits-all Solution provides full journey convenience

Easy Design

Easy design in 10 minutes with SmartDesign 2.0

One-stop Purchase

One solution for all scenarios

Fast Installation

50% installation time saved

One-stop Commissioning

One-stop Commissioning on one App

Time Saved

Less time for each site, More time for more site

Residential Scenario: Enjoy 100% Green Power as You Wish

1 + 4 + X



New

Inverter

Optimizer

New

Smart String ESS

Smart Charger

SmartPVMS

New

SmartGuard

New

EMMA



Whole-home Backup



EMMA Intelligent Scheduling



VPP Energy Connection

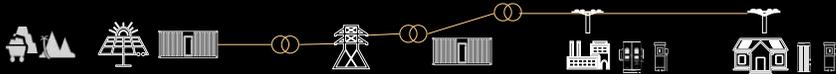
Future Oriented High Quality Standard to Ensure Healthy Industry Development

New Power System with High Penetration of Renewable Energy and Power Electronics

Power generation

Power distribution

Power consumption



Grid connection

Power flexibility and stability

Safety standard

New energy storage standard

Government

Think tank

Enterprise

University

Trade Association

Industry Alliance

Standards Organization



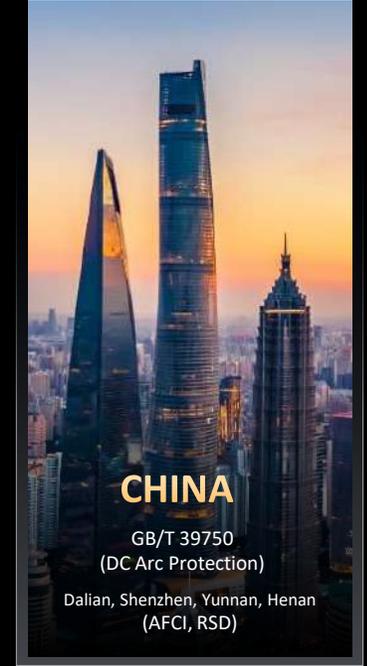
BRAZIL

Mining and Energy Sectors
(AFCI)



THAILAND

EIT
(RSD)



CHINA

GB/T 39750
(DC Arc Protection)

Dalian, Shenzhen, Yunnan, Henan
(AFCI, RSD)

Working Together to Accelerate Ecosystem Development and Create a Thriving Industry



A scenic view of a Swiss town with red-tiled roofs, a lake, and mountains in the background. The town features several prominent church spires and a mix of traditional and modern architecture. The lake is calm, reflecting the clear blue sky. The mountains in the distance are partially covered in greenery, suggesting a lush environment.

Our Vision

**Combine PV and Energy Storage, Make the Green PV
a Main Energy Source for Every Home and Business**