HUAWEI

Building a Fully Connected, Intelligent World

Fusionsolar

Solar Connect Uniting Solar Experts

Huawei FusionSolar C&I Solution

Herman Fourie
Senior Solution Architect of Commercial and Industrial Smart PV Business

Integrated PV&ESS to Accelerate Energy Transformation

PV & ESS become the solution due to imposing of carbon tax

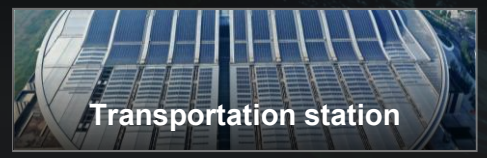
America	Africa	Europe	Asia
5 countries	1 country	19 countries	3countries

South Africa

- Imposed a carbon tax in **2025**
- **R236** per ton CO_2

Carbon tariffs will be levied on imports of energy-intensive products in some areas

Ubiquitous PV&ESS raise safety requirements for power plants



Personal Safety

Assets Safety

Improving Safety Standard has Become a Global Trend

GLOBAL IEC 63027

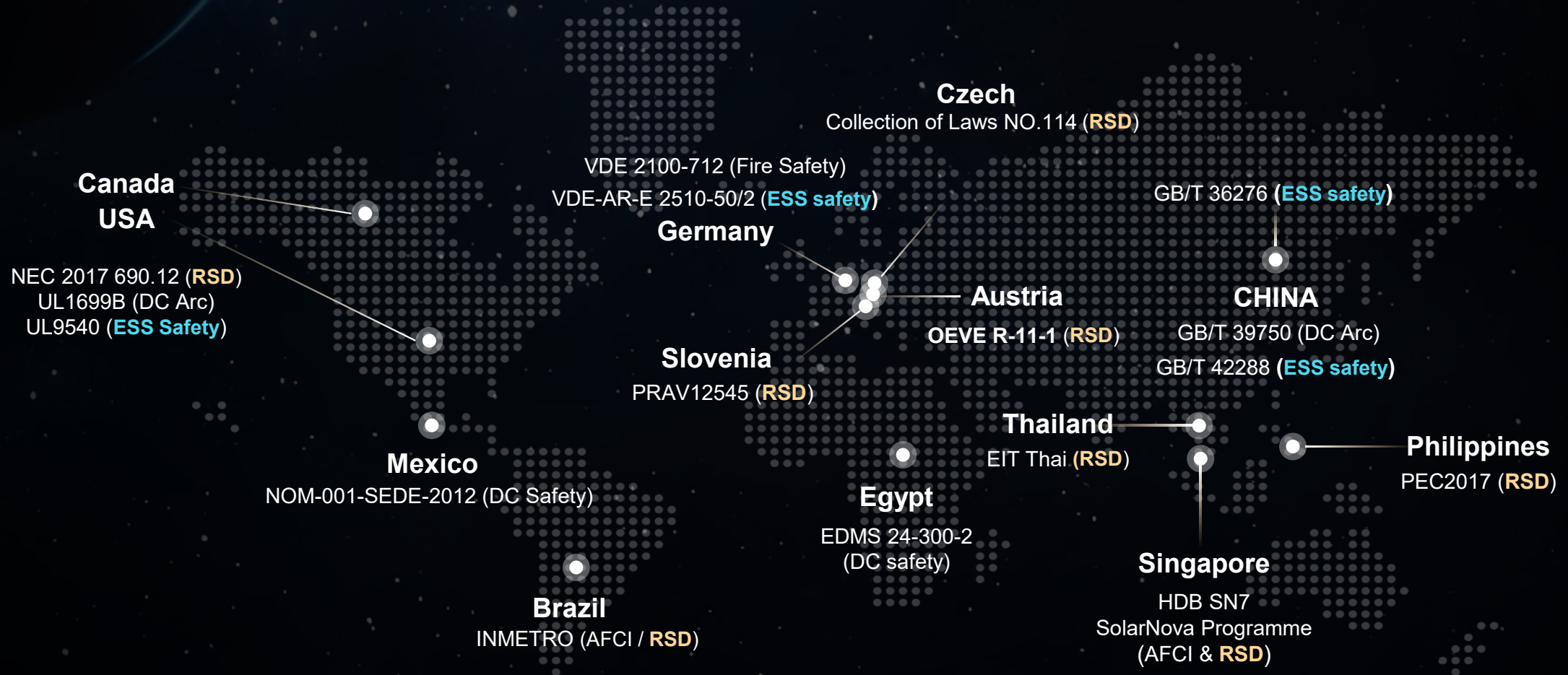
(DC Arc)

GLOBAL IEC 62548

(DC Arc)

GLOBAL IEC 62933

(ESS Safety)



More and More Insurance Companies Take PV Safety Regulations into Consideration

FM Global launches renewable energy insurance

- The leader for C&I insurance in US and EU
- Preferred insurers by the US and EU manufacturers
- Around **25%** of companies in **Malaysia** are multinational corporations(US/EU owned)

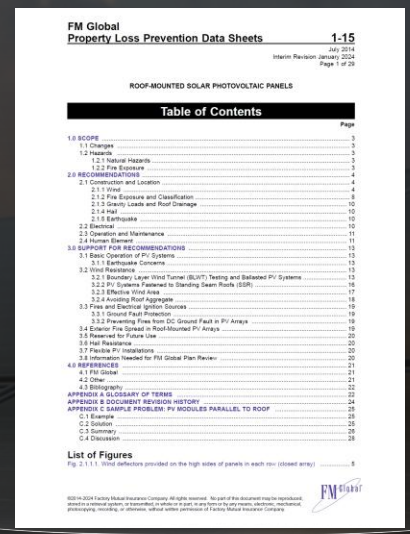
Most top global companies purchase insurance from FM Global

SEAGATE

Celestica™

ESSILOR INSTRUMENTS

RSD is one of the requirement for property loss insurance


FM Global
Property Loss Prevention Data Sheets 1-15

ROOF-MOUNTED SOLAR PHOTOVOLTAIC PANELS

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Provide Module Level Power Electronics

Be able to sense and isolate faults and deenergize the array at the module level

Be able to alarm such faults

Device safety is Easy to Fail and Cause Fire, PV Plant Must Meet System Safety in Future

Device Safety cannot Effectively Prevent Risks from Spreading

Because of high voltage on the rooftop, firefighters can only extinguish after the roof burns down, caused the death of more than 20,000 chickens in sheds.

The assembly solution lacks system safety measures. Internal short-circuit occurs and causes fire. The thermal runaway spreads and causes damage to assets nearby.

1100V | May cause personal injury | short-circuit | Thermal runaway

Power Plants have to Meet System-level Safety in Future

Device Safety

Just support single safety feature

System safety

Provides system safety from the power generation to the power consumption.

Huawei FusionSolar C&I Solution

Active Safety, Integrate Innovation
Accelerating PV + ESS + Charger to Become Ubiquitous

- Active safety
- Enhanced power supply
- Power grid support
- Lifecycle Intelligence

Never Stop Innovating on Safety Throughout Decade

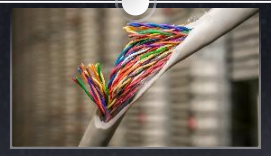
AFCI

- 2016: 80 m
- 2018: 200m
- 2024: 450m

SSLD

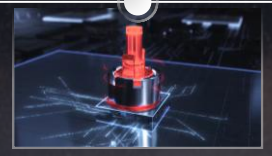
Protect high current PV module reverse connecting @2020

Module level ISO detection



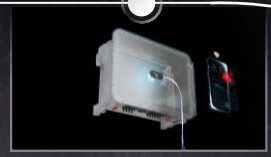
Module level ISO detection @2022

Smart Connector Temperature Detection

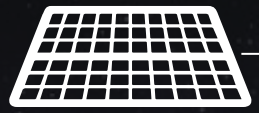


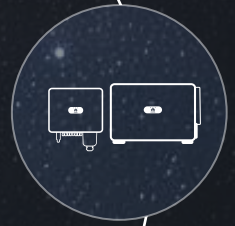
DC & AC connector over temperature supervision @2024

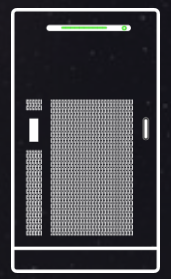
PV to ground short circuit protection



PV to ground short circuit protection @2024







Cell-to-Ground Short-Circuit Protection

- Industry Unique
- Millisecond-Level
@2024

Pack-level gas exhaust

Industry Unique @2024

Top explosion vent

Industry Leading @2022

SUN5000 Series SafeLink-Linkage between Features Ensure the Safety of Both Asset and Personal Safety

AFCI automatically triggers the RSD function to ensure asset and personal safety

SSLD automatically triggers the RSD function to ensure asset and personal safety

SUN5000 Series Provide Reliable Module-level Optimization and Safety

Higher Reliability

< 300 ppm
Failure Rate

VS

> 10%
Failure Rate

Unique architecture with 30% Less Components

25 years
Warranty

Module-level management

SUN5000 Series Solution

Module-level rapid shutdown to ensure personal safety, each module is under control

Conventional Solution

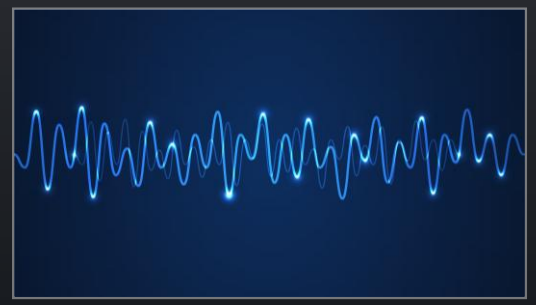
The health status and energy yield of each module is invisible, just support MPPT-level monitoring

More Reliable Communication

More reliable communication of PLC, no Signal interference

Different inverters can be routed in the same trough

AC and DC power supply, more accuracy of RSD triggering



ESS Safety: C2C Dual-link Safety Architecture

Comprehensive Safety from Cell to Consumption Based on Electrical-link and Heat-link

Electrical-link

Short-circuit
Prevention and Isolation

Heat-link

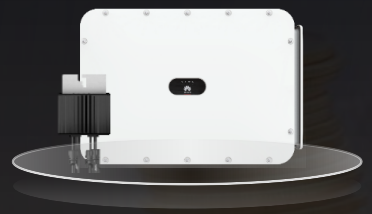
Thermal Runaway
Suppression and Protection

Enhanced Green Power Supply

Provide a powerful engine for green and low-carbon transformation for enterprises

More Panel, More Power

150K Series



50%

Improving Rooftop Utilization

photovoltaic glass

photovoltaic soundproof wall

slope photovoltaic

photovoltaic fence

Module-level optimization
From the rooftop to diversified installation scenarios

More Cycles, More Energy

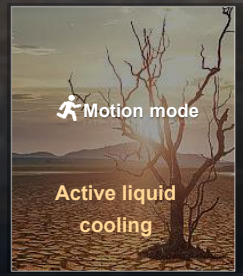
215kWh Series

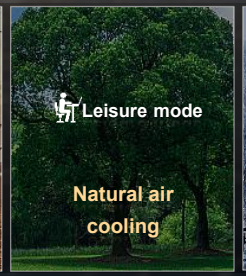
91.3%

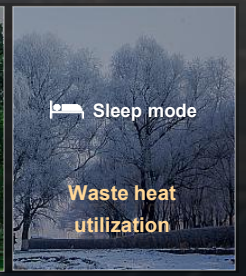
Higher cycle efficiency

15 years

System performance life







Hybrid cooling
From single-mode cooling to multi-mode intelligent cooling

Enhanced Power Grid Support

Provide a stable engine for the sustainable development of the industry

PV+ESS+Charger coordination improving the access capability of the grid

On-grid or off-grid, stable power supply, building microgrid capabilities

PV+ESS+Charger

Self-use rate

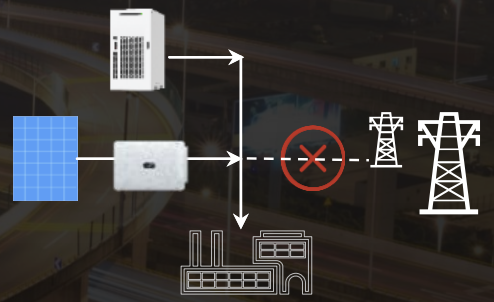
100%

Power grid reconstruction is saved.

Charging utilization rate

30%

PV+ESS On/Off-grid



PV and ESS

All grid forming

On/off-grid

Seamless switchover

System

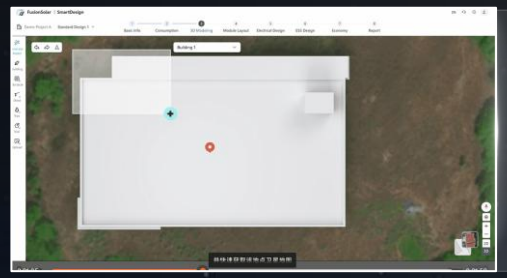
One-click black start

One Stop and Full Lifecycle Smart Management

Achieving Optimal Design, Higher Revenue, and Simplified O&M

Planning: PV+ESS+Charger one stop design

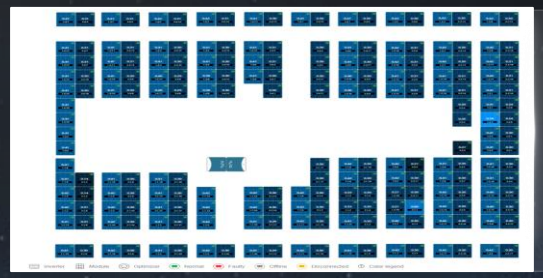
Highly automated design. Accurately evaluate benefits



<10 Mins
Design duration

Building: Auto generation of the plant

Import design result and automatically generate the physical layout diagram

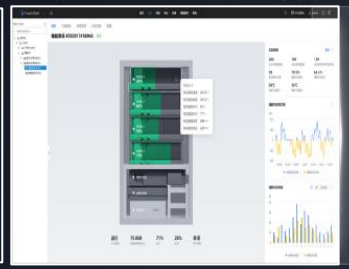


<1 Min
One-click physical layout diagram

Maintenance: Full-link management, 50% cost reduced

PV module level management

Cell level management

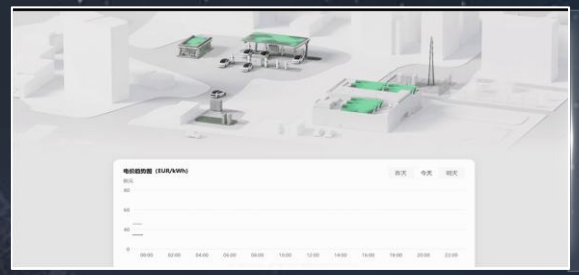


50%
Site inspection time

80%
Fault location efficiency

Operation: Smart Energy Management Optimization

Automatic energy management w/o manual setting
Smart optimization, maximizing benefits



10%
Increased benefits verified by real projects

0.5 year
ROI shorten time

Operation: Smart Energy Management Optimization

Automatic energy management w/o manual setting
Smart optimization, maximizing benefits

10%
Increased benefits
verified by real projects

0.5 year
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