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ALTENERGY POWER
POWERFUL
INNOVATION

Company Introduction

- Founded in Silicon Valley in 2010
- Global provider of MLPE (Module Level Power Electronics) equipment for the solar PV industry with R&D centers in USA and China
- Worldwide BUs and offices: EMEA (Rotterdam, Lyon), USA (Seattle, San-Francisco); LATAM (Guadalajara), Canada, Australia (Sydney), China (Shanghai, Jiaxing),

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Company Introduction

- Innovative – Widest multi-modules Microinverters range
  (duo & quad, single and 3-phase)
  Unique offering in the solar marketplace
- Bankable – Company profitable since 2012
- Reliable – Designed for over 25 years of life. MI reliability is >99.50%
- Proven – 1GW+ Shipped
- Global – Serving customers in more than 100 countries
  >150,000 residential & commercial solar installations worldwide.
- Dedicated – Local teams across the globe dedicated to serving customers
- MLPE Ecosystem – Widest MLPE offering worldwide: Micros, RSD, ESS (upcoming)

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Key Benefits of Using APsystems

- Faster Installation – 50% faster microinverter install time vs. single units
  - Single crew member installation
- Mix and Match – All DS3 and DS3D units can be mixed/matched on the same trunk line with multiple PV module types/sizes
  - Same trunk cable
  - Same connectors
  - Same ECU
- Reduced Stocking costs – Only 2 single-phase microinverter models. Covers all panel sizes from 300W – 670W
  - No need to stock multiple string inverters a various sizes
- Flexible sizing – System can easily grow just by adding more micros
  - Each ECU can manage up to 80 DS3 units (160 PV modules)

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Key Benefits of Using APsystems

- Simple system design – Microinverters easily adapt to module placement and scale to desired capacity
- Zigbee vs PLC – 2.4 GHz wireless Zigbee – up to 3X faster than PLC
  - Faster data communication
- Field Upgradeability – Firmware updates can be done remotely
- Rapid Shutdown compliant – Without any additional equipment
  - All APsystems microinverters are inherently compliant by design
- Local Support Team – 8am to 8pm
  - We don’t send calls overseas
- Financial Foundation – Strong financial backing, cash reserves, untouched warranty reserve, profitable every year past 10 years

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The advantages of the APsystems solution

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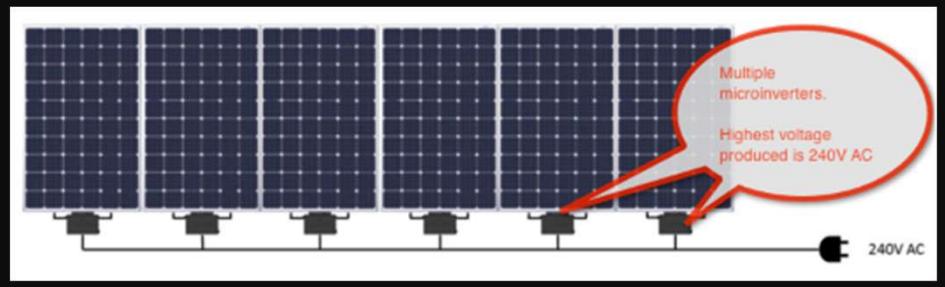
The inverter solution with safety built in

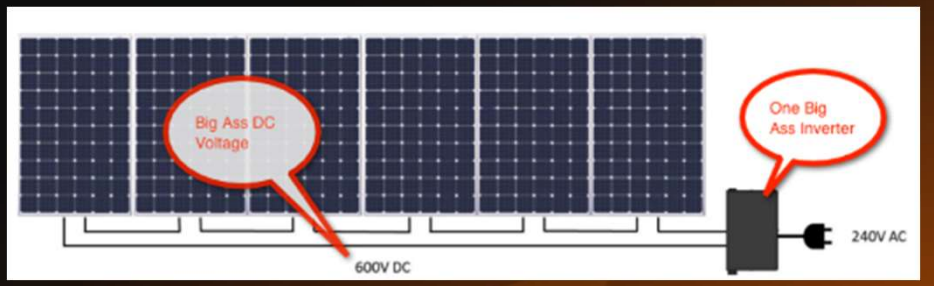


APsystems Microinverter

✓ 45-50 volt DC maximum on the roof

Safe

vs.



String inverter

✗ 600 to 1000 volt DC on the roof

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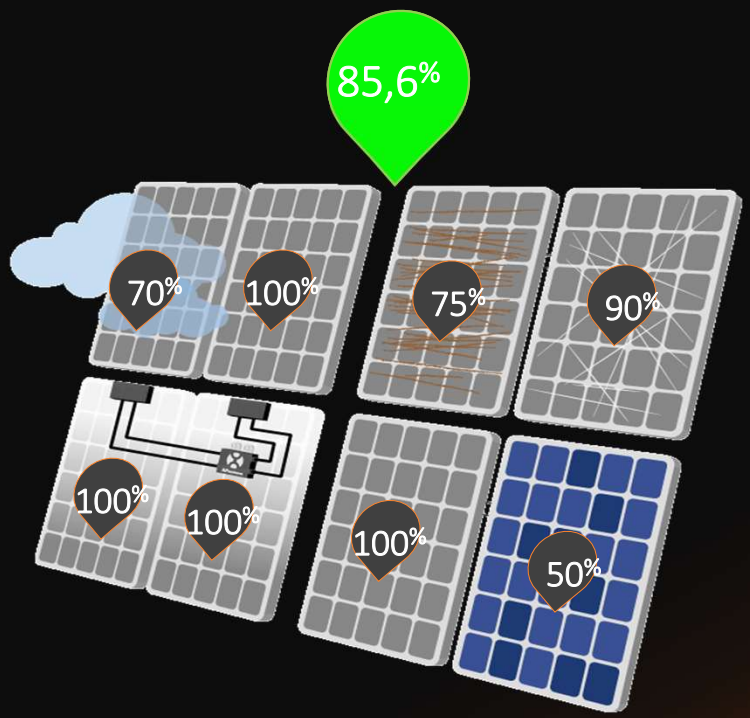
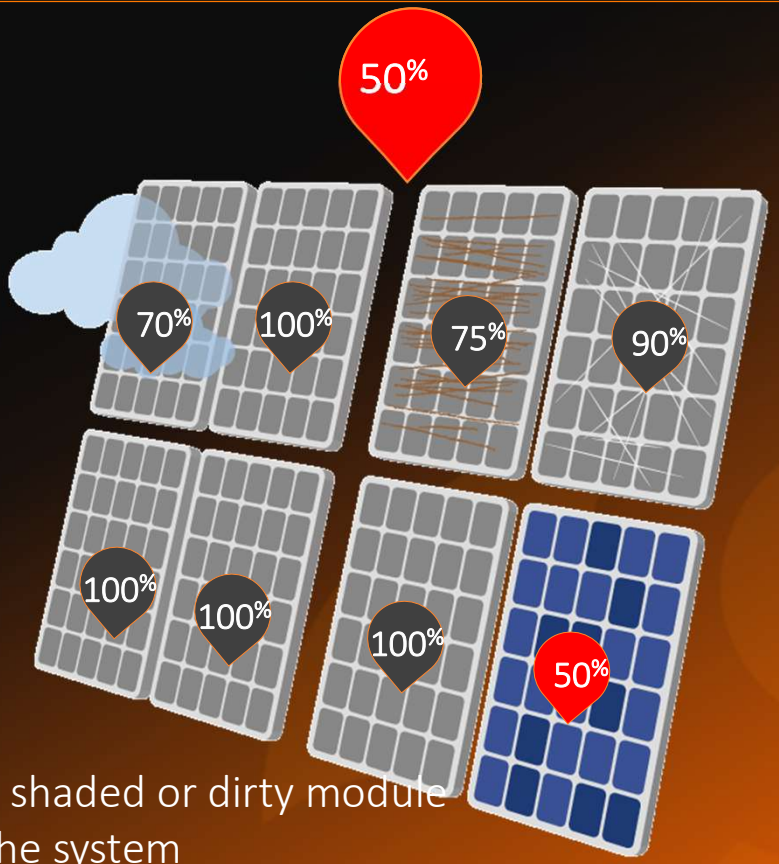
Maximum performance for every module, always!





Powerful

Microinverters operate independently: a shaded or dirty module will not affect the rest of the system

A longer solar day:

more energy from dawn to sunset even in low light conditions

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No single point of failure

If one module or microinverter fails, the others continue to produce energy.

Reliable

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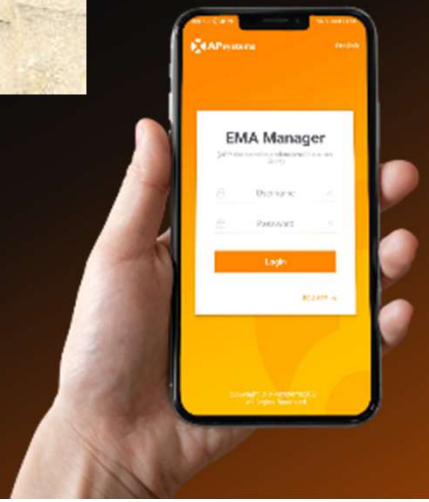
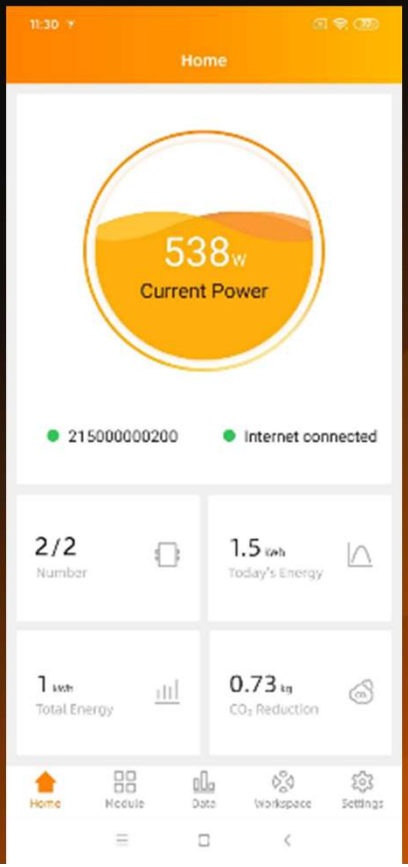
Quick installation using plug & play technology





Plug & Play

The most flexible solution available on the market

Add more modules at anytime

Modular

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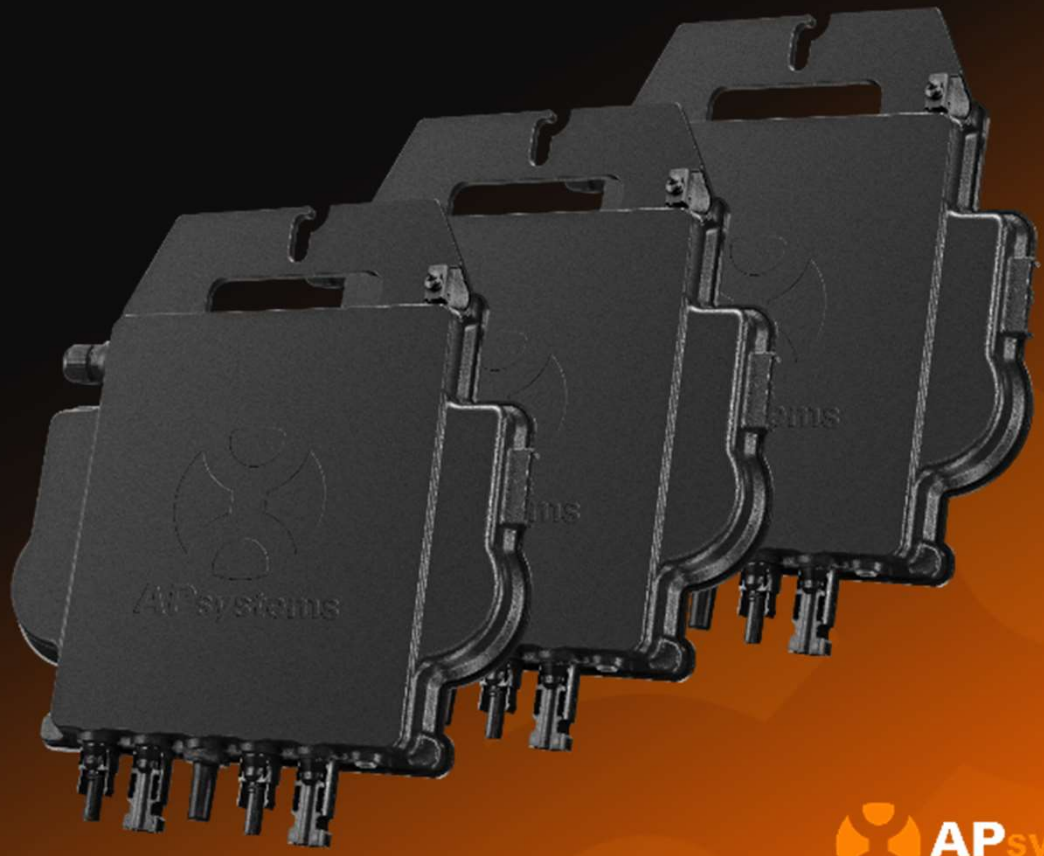
Designed and built to last over 25 years

Guaranteed up to
25 years



Guaranteed

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The advantages of APsystems microinverters …

Powerful

Reliable

Guaranteed

Modular

Safe

Plug & Play

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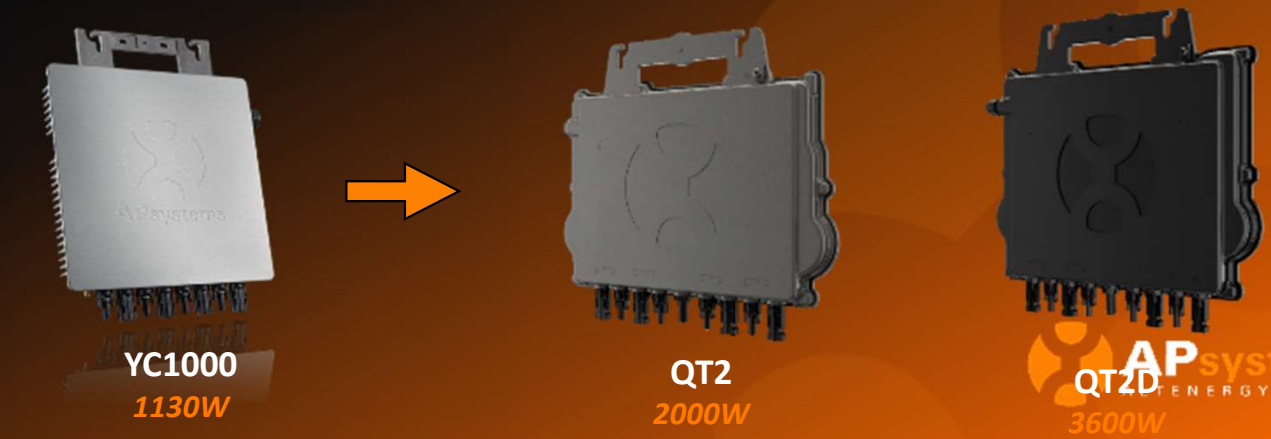
New MI Products offering

General statement : Doubling our Multi-module Microinverters options in the market

Product transition: x2 the power, x2 the range

- Single Phase:
  - Focus on DUAL MI range
  - High power modules
  - RPC, encrypted ZigBee
  - Integrated VDE relays
  - 2 MPPTs, 97% efficiency
  - PV module match : 315-670 Wp
  - DS3D connects 4 PV modules (2x2 in serie)

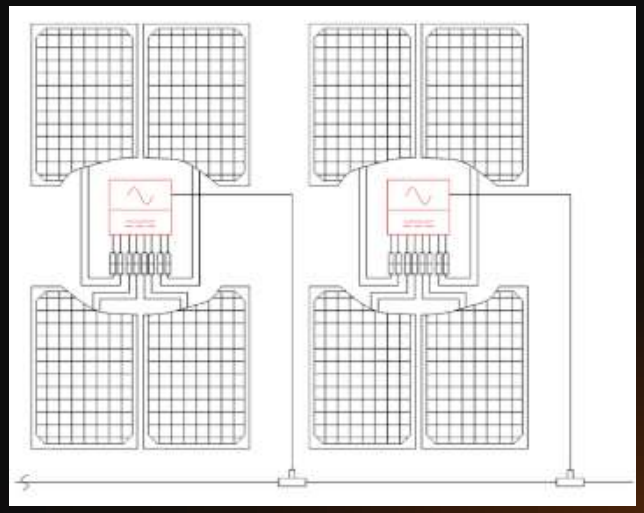
- 3-Phase:
  - Focus on QUAD MI range
  - High power modules
  - RPC, encrypted ZigBee
  - Integrated VDE relays
  - 2 MPPTs, 97% efficiency
  - PV module match : 400-670 Wp
  - QT2D connects 8 PV modules (4x2 in serie)

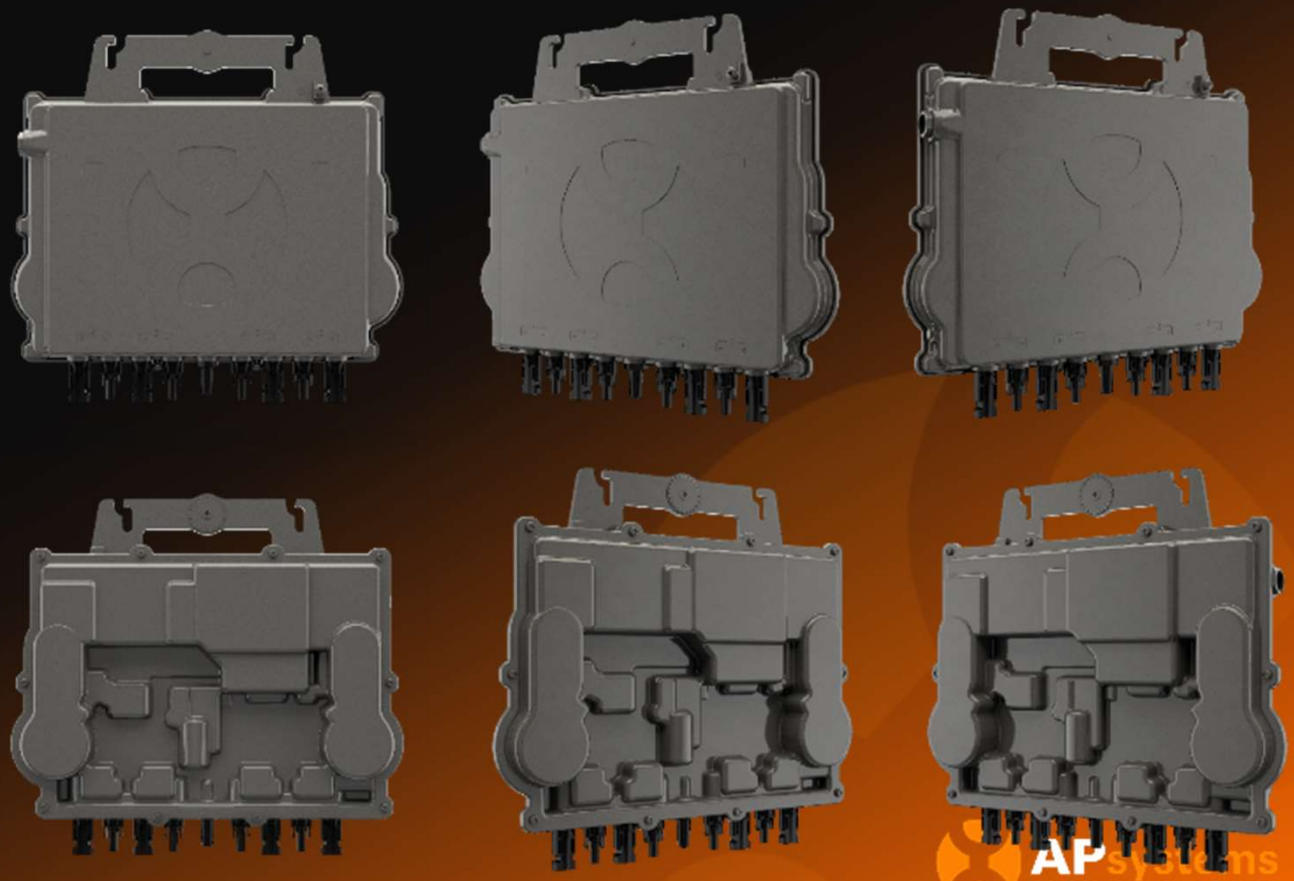


QT2 – The Most Powerful 3-phase Quad Micro

Model:

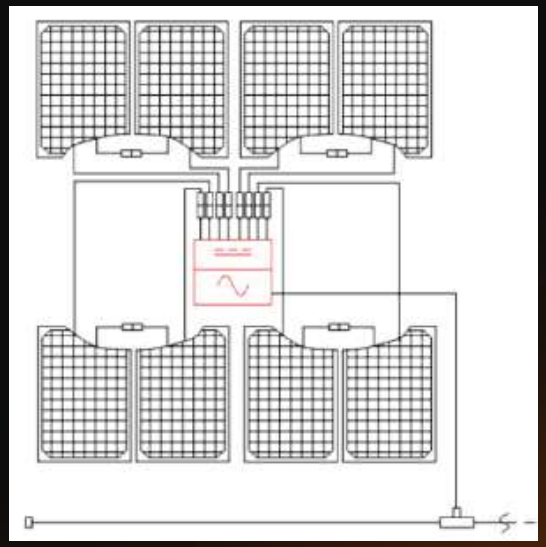
- QT2-2000VA
- 4 DC inputs, 4 PV Modules
- Native 3-phase, RPC
- 2 MPPTs, 97% efficiency
- PV module match : 400-670 Wp
- 9 units per 30a branch
- Peak Power Tracking Voltage : 33V-45V
- Max Input current : 20 A

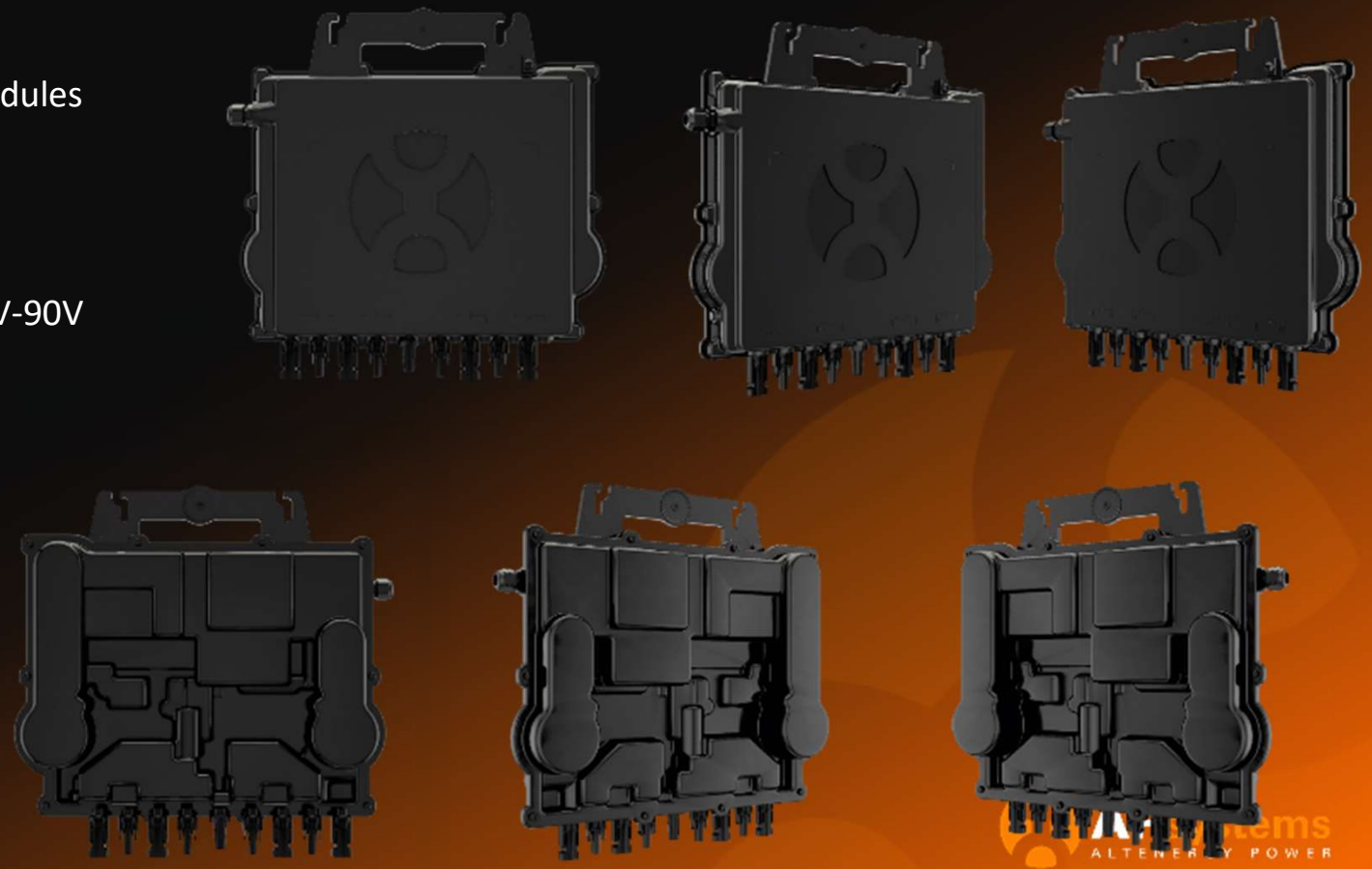




QT2D – Doubling the performance of the most powerful 3-phase QUAD microinverter – Unmatched cost-efficient ratio for commercial PV

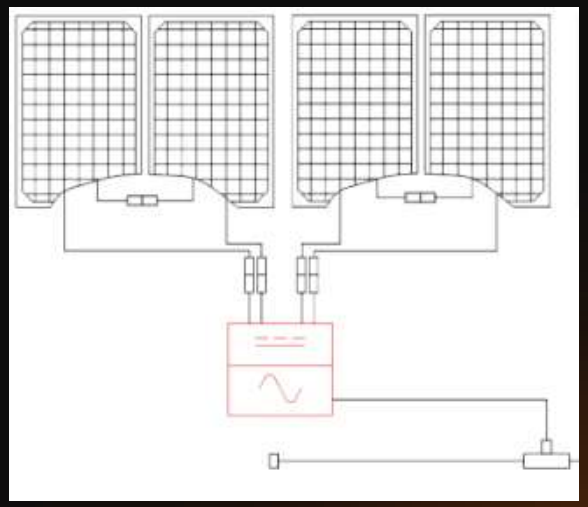
- Model:
  - QT2D-3600 VA
  - 4 DC inputs, Connects to 8 PV modules
  - Native 3-phase, RPC
  - 2 MPPTs, 97% efficiency
  - PV module match : 400-670 Wp
  - 5 units per 30a branch
  - Peak Power Tracking Voltage : 66V-90V
  - Max Input current : 20 A

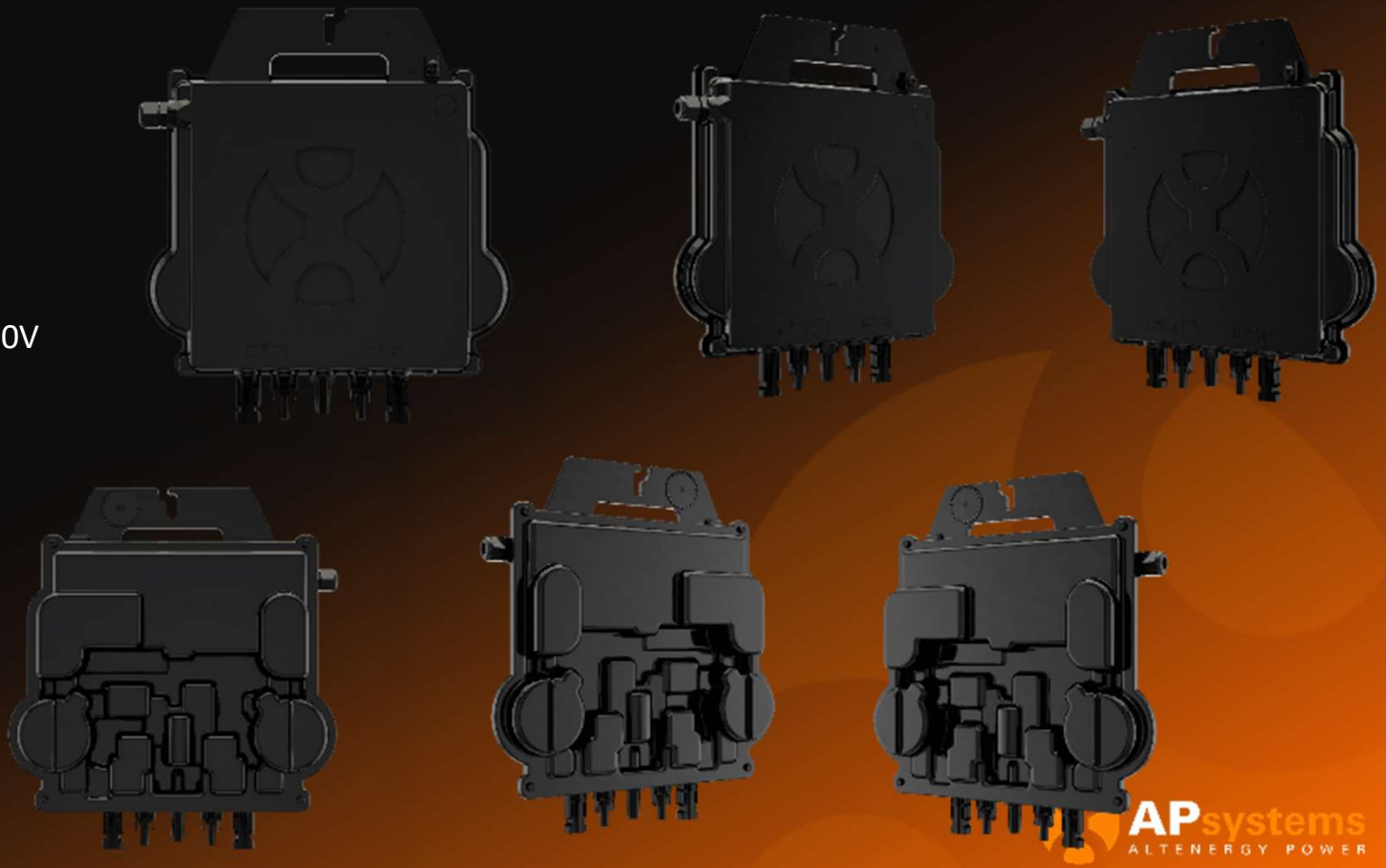




DS3D – Doubling the performance of the most powerful DUAL microinverter

- Model:
  - DS3D-2000 VA
  - 2 DC inputs
  - Connects to 4 PV modules
  - 2 MPPTs, 97% efficiency
  - PV module match : 400-670 Wp
  - 2 units per 20a branch
  - 3 units per 30a branch
  - Peak Power Tracking Voltage : 66V-90V
  - Max Input current : 20 A





DS3 Models – Driven by customer feedback

- DS3-S – 600W
  - For PV modules up to 360W
  - 7 microinverter units per 20A branch
- DS3-L – 730W
  - At 1.2x panel sizing, it's ideal for PV modules up to 440W
  - 6 microinverter units per 20A branch
  -
- DS3 – 880W
  - At 1.2x panel sizing, it's ideal for PV modules up to 540W
  - 5 microinverter units per 20A branch
- DS3-H – 960 W (On-demand only)
  - For PV modules over 550 W
  - 4 microinverter units per 20A branch

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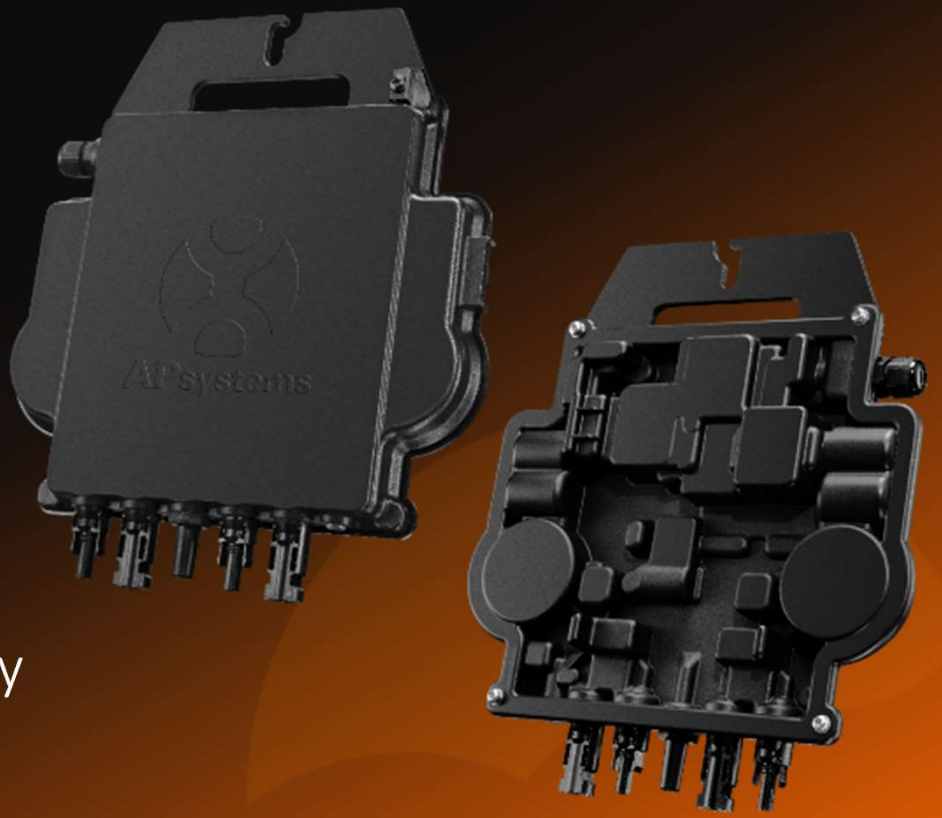
DS3 Series Benefits

- Connects to 2 PV modules for faster installation
- Designed for today's high-capacity PV modules
- Encrypted high speed Zigbee wireless (2.4GHz, mesh network, TI Karamba chip)
- New cooling topology for advanced heat mitigation
- 20% fewer components for higher reliability
- 10Y warranty + 10Y optional extension
- Single-phase inverters but can be used in 3-phase installations



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NEW Microinverter Series

All NEW Microinverters models

- 2 independent MPPTs
- 97% efficiency
- Reactive Power control
- Encrypted ZigBee
- Rapid shutdown compliant
- True MC4 connectors
- Integrated VDE relays

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Energy Communication Unit (ECU)

ECU-B for small systems

- UP to 4 PV modules max
- Compact
- Solar production monitoring
- Module level monitoring
- Wifi , ZigBee

ECU-R

- Compact
- Solar production monitoring
- Module level monitoring
- Wifi (or RJ485) , ZigBee

ECU-C

- Advanced functions
- Solar production monitoring
- Module level monitoring
- Consumption monitoring
- Zero re-injection
- Wifi (or RJ485) , ZigBee

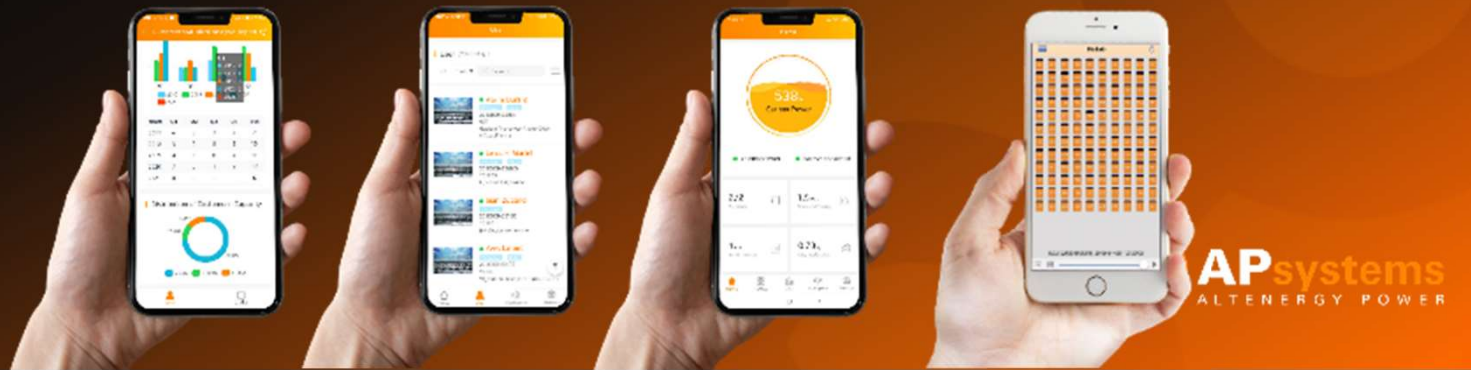
Powerful monitoring platform (EMA)

Real-time monitoring from computer or smartphone allowing module level monitoring and remote troubleshooting

android iOS Microsoft Windows

EMA APP for end users

EMA Manager APP for installers

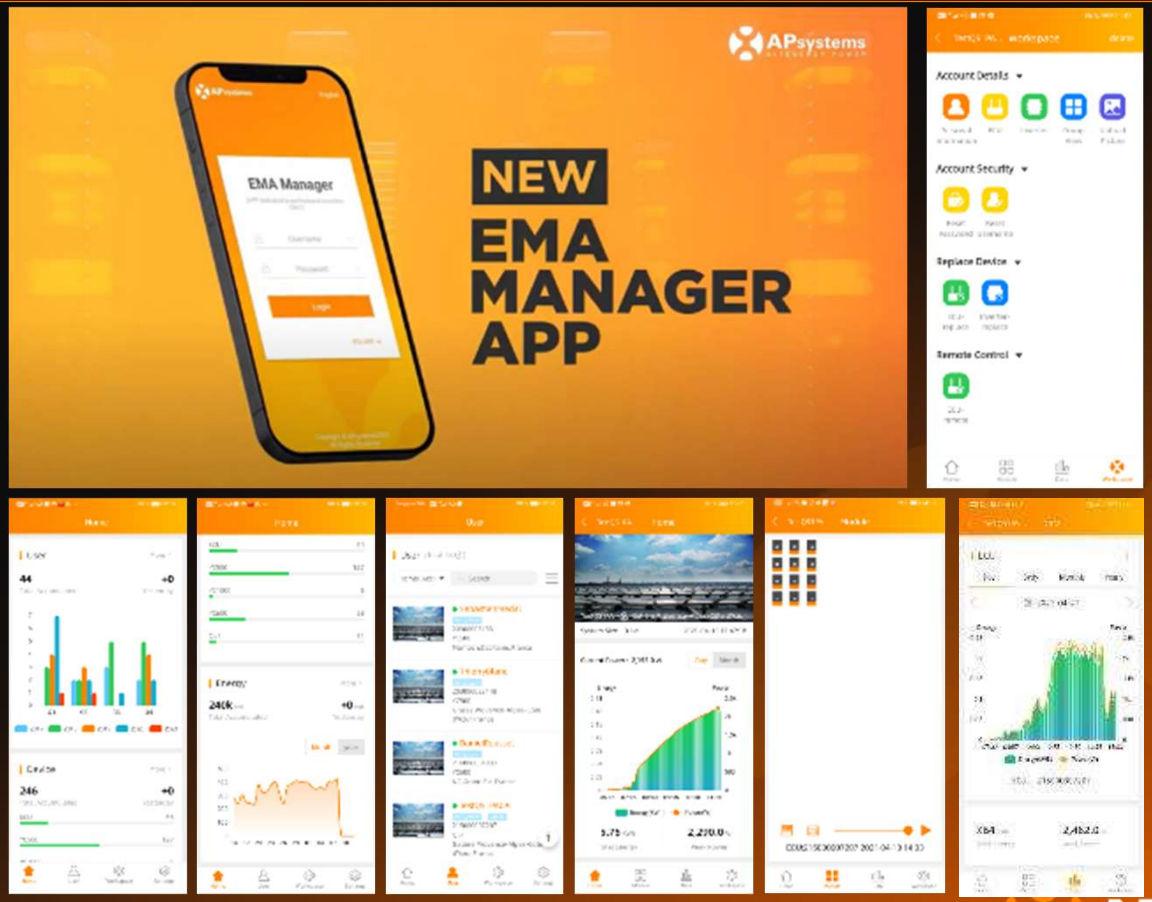


EMA Portal

- Installer “fleet view” of all installations
- Truck roll prevention tool
- Diagnose issues online
- Close look at W/V/A by module
- Determine
  - Disconnected cable
  - Bad panel
  - Poor communication
  - Breaker trip
  - Other issues

EMA Manager

- Available on
  - iOS App Store
  - Google Play Store
- Connects to EMA for data
- Connects to ECU for site commissioning
- Customer Navigator (fleet management)
- Admin capabilities
- Maintenance anytime, anywhere
- Data & statistics



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The APsystems Residential Solution

- Single or Tri-phase installations
- Zigbee (mesh network) communication between ECU and micro-inverters
- Module level monitoring 24/7
- Remote troubleshooting
- Firmware updates

DS3 Dual module microinverter series

Zigbee (wireless)

Wireless ECU-R gateway

Wi-Fi/ Ethernet

EMA online monitoring portal

Featured Installations

Residential solar made possible anywhere…

single-phase

Residential solar made possible anywhere…

3-phase

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C&I Gas Stations, New Jersey, US

Location: **New Jersey, US**
Size : **3 MW** across **33 stations**
Microinverters : **QS1**
Date**: started in 11 /2018**

APsystems microinverters have been installed across 33 Wawa gas stations in New Jersey to date for more than 3MW. The program plans the equipment of 200 gas stations overall.

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Multi-residential, Camping Igueldo, 60 kW, Spain

Location: **San Sebastian, Spain**
Size : 60 kW over 32 Bungalows
Microinverters : **QS1**
Date**: 06/2020**

"My opinion regarding the development of this project is very positive and we are very happy about how the entire installation has been executed. We have already seen that the the project and the installation with APsystems has a shown good result" has said ***Oscar Arana, Manager of Camping Igueldo***

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350 Zero energy houses New build, Poland

Location: **Poland**
Size : **3MW** across **350 houses**
Microinverters : **QS1**
Modules**: Ulica 400W**
Date**: 10 /2020** (2 years dvlp)
Construction: **Sendom**
Installer Stilo Energy

A house with photovoltaics as standard can be financed with a mortgage, provided that the purchase of both will take place simultaneously. It is a very attractive form of investment financing.In this way, customers benefit in two ways: they save on electricity bills and loan costs – **says Krzysztof Koronkiewicz from Stilo Energy**.

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2 MW+ Multi-residential, ALberta, Canada

Location: **Alberta, Canada**
Size : **2 MW** across **1 100 roofs**
Microinverters : **QS1**
Date**: 2020**
Modules: 6800

Winner of the North American APsystems Residential Project Award for 2020

366 kw, Energy Neutral Homes, Nijkerk, NL

Location: Nijkerk**, Netherlands**
Size : **366 kw** across **100 flats**
Microinverters : **YC600 , QS1**
Date**: 2020**
Modules : **1064** DMEGC
(320/330 Wp)

" I install a lot of microinverters from APsystems, not only for their excellent quality, but they are literally my modular building blocks and offer my clients the best possible product. These products are extremely powerful, smart and cost-effective microinverters." **Jacky Hüffner Director of Quesolar B.V, Barneveld**

100 kW, 37 BEPOS houses Bayonne, France

Location:, Bayonne, **France**
Size : 100 KW
Microinverters : 74 QS1 + 20 YC600
Date**: 10/2020**
Module**: 336**

"This is our first installation with APsystems and we have benefited from quality support both on the preliminary sizing and on the technical configuration on the roof. We were able to maintain a rate of 4 installations per day and completed the 37 installations in 2 less weeks. This is a successful first project!"

Bertrand Lassauzay, Technical Manager at Soltéa

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315 kW, Architectural building Luma Arles, France

Location: Parc des ateliers, La grande halle, **Arles, France**
Size : 315 KW
Microinverters : 264 x **YC1000**
Date**: 05/2019**
Module**: Solarwatt 300 w**

"This micro-inverter system leads us to limit all the risks that we had and all the potential impacts inside the big hall. This was the solution that unlocked the whole principle."
Jerome Maubé, Technical Director, MYAMO

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428kW, Office building renovated into flats, NL

Location:Nieuwegein, NL
Size : 428 KW
Microinverters : **YC1000**
Date**: 01/2021**

“a former office building was converted into a residential complex with 255 homes. On the roof of the building, 6 solar panels were placed for each house, which were equipped with microinverters from APsystems.”
New Solar, Installer

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99kw, Business center, WA, USA

Location:CC West, Kennewick, Washington
Size : 99,7 KW
Microinverters : **QS1**
Date**: 2021**

" The result is a 99.7kW system that produces over 115,000 kWh of electricity annually. The CC West building's energy efficiency is equivalent to taking 218 cars off the road annually."

Hot Solar solutions, Installer

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474 flats, ,multi-building community solar,Canada

Project name : Carrington View Phase 2
Location: British Columbia, CA
Size : 200kw-600W
Microinverters : **YC1000**
Date**: 2020**

" After Okanagan solar completed the work in mid-2020, Carrington View was graced with the distinction of having the biggest collection of residential solar installations in the Province."

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75kW, Liberty Storage building, Louisiana, USA

Location: Mandeville, Louisiane, USA
Size : 75 KW
Microinverters : 64 x **YC1000**
Date**: 2020**

"Next Solar Energy's design arranged the solar panel array into an American flag. With 64 APsystems microinverters, they created one of the most energy-efficient locations in the Liberty chain.."

Next Solar Energy, Installer

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136 kW, Self-consumption in Logistic building, FR

Location:Nantes area, France
Size : 136 KW
Microinverters : **QS1**
Date**: 2022**

“This logistic building specialized in cosmetics for hairdresser outlets, opted for self-consumption PV project with safe and high performant solutions with microinverters from APsystems.”

Mr Levèque,
Energie Solaire 85, Installer

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Thank you !