

WEBINAR

# Freedom, Flexibility and Visibility

## Tigo's Solar Cornerstones

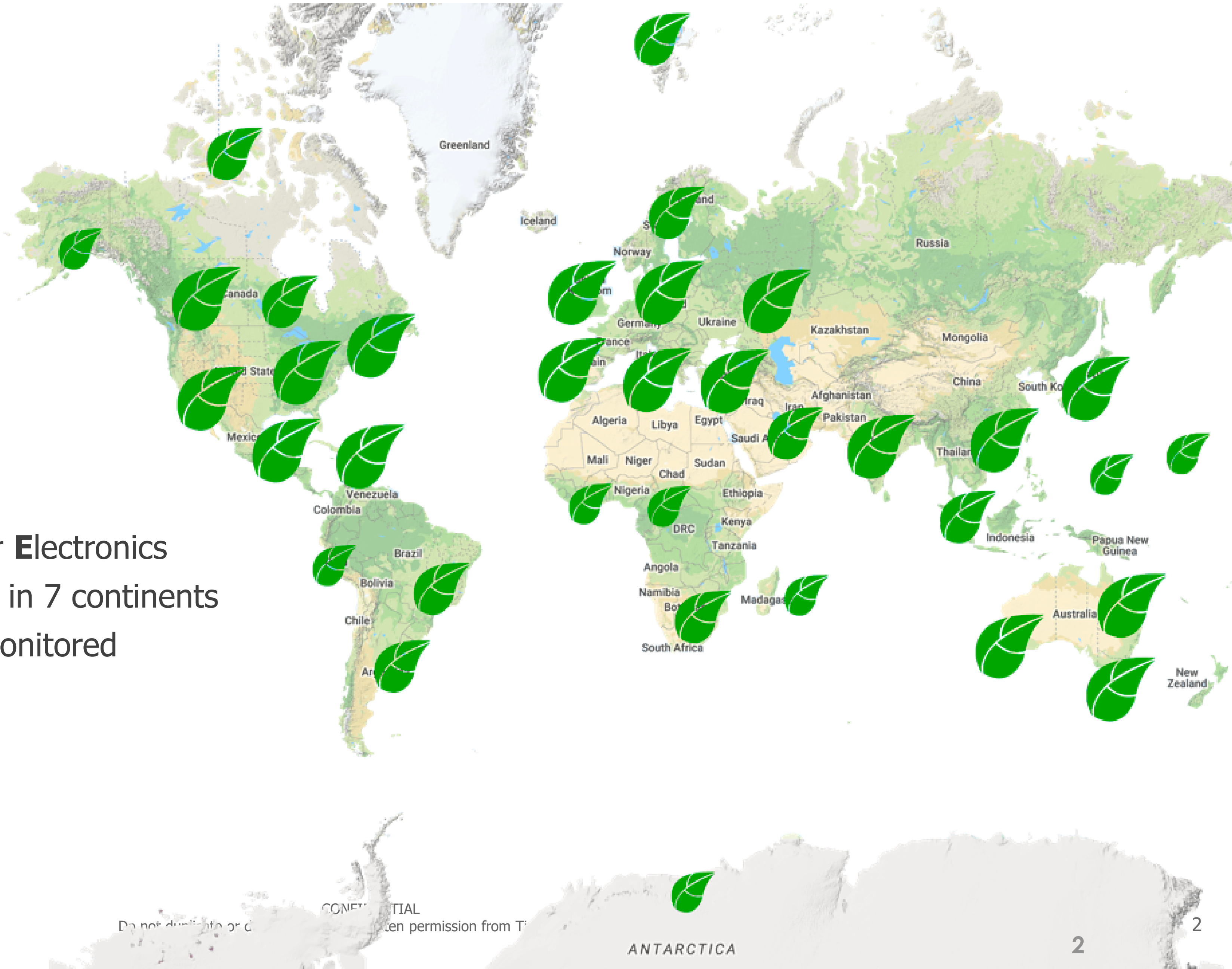
**Tigo**<sup>®</sup>

**SOL+ SOL-**



# Tigo<sup>®</sup>

- Founded in 2007
- HQ in Silicon Valley, CA
- Leader in **Module Level Power Electronics**
- >50,000 monitored PV installs in 7 continents
- >1GWh daily PV production monitored
- 84 patent issued



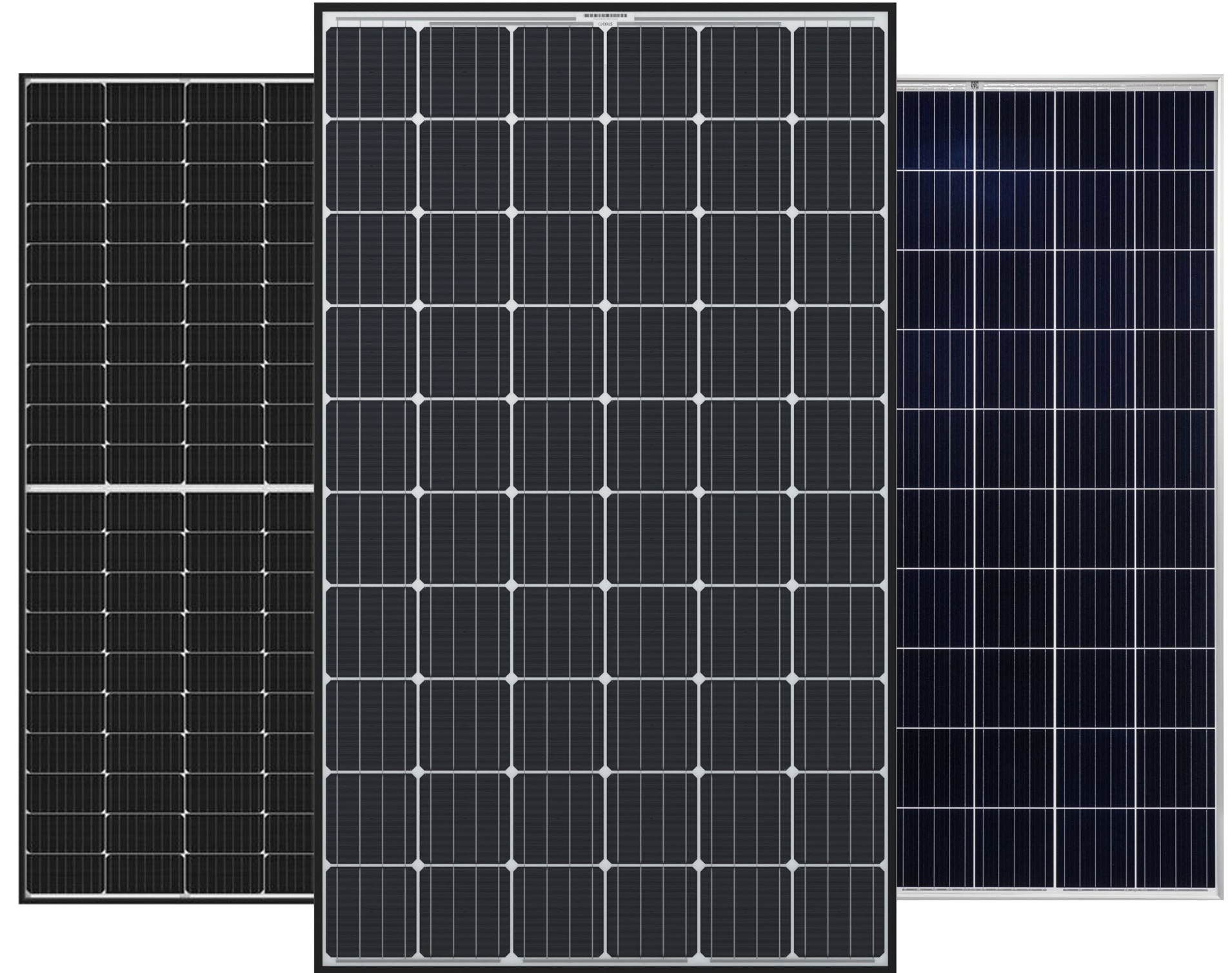


Freedom

# TS4 units are deployable with any PV module...



- up to 700Wp / 15 A
- Fast installation, Smart commissioning
- Perfect for new PV systems, ideal to retrofit applications



# ...and operate with the largest inverter network



TS4 units work daily with the widest range of inverters in tens of thousands installations all around the world.

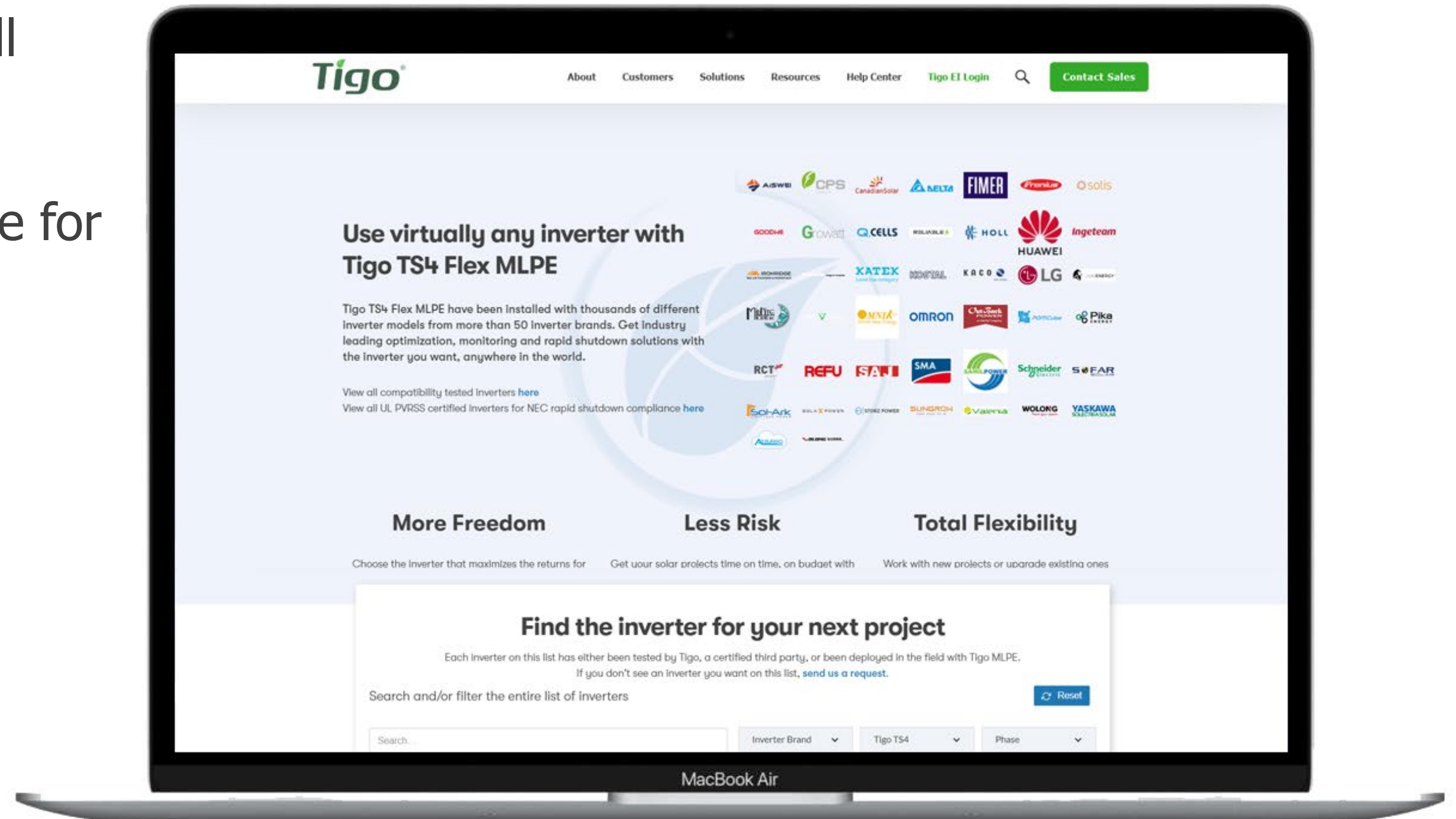
A vast and growing database is now available for all PV Professionals at:

[tigoenergy.com/inverter-compatibility](https://tigoenergy.com/inverter-compatibility)

A few numbers:

- **771** Compatible inverters
- **2182** Inverters installed on 2+ monitored sites

Read more about it on our blog  
(link in related contents)



# Freedom with Tigo means:



- Plug-and-play, one-size-fits-all
- Simple architecture: forget hundreds of SKUs!
- The most scalable, versatile and reliable MLPE solution available



Flexibility

# With Tigo, only pay for what you need to maximize the benefits of your PV installations



## Optimization

- Increase energy production with shade or mismatch
- Enables PV projects with design constraints, maximizing roofspace
- Tigo data shows >25% of sites get >10% Reclaimed Energy



## Monitoring

- Lower O&M costs
- Three different levels of visibility (Fleetwide, system and module-level)
- Real time alerts. Early detection means better performances



## Safety

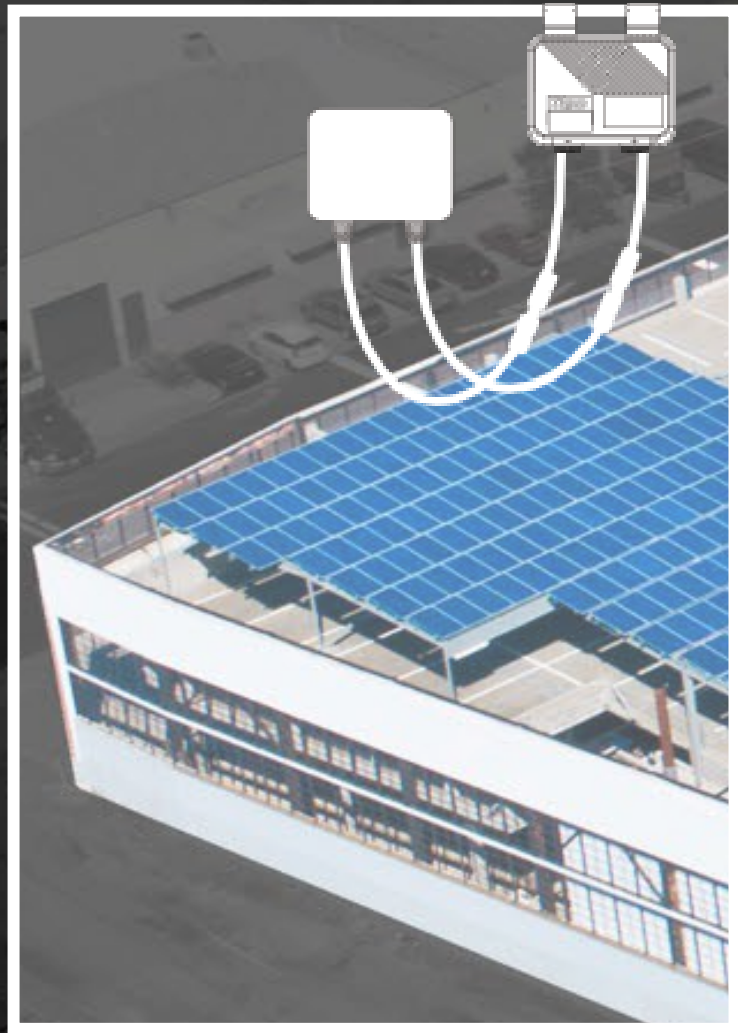
- Automatic & Manual Rapid Shutdown
- IEC and UL certified for global compliance
- 1:1 or 2:1 solutions for enhanced safety on any PV installation



# Hardware + software that increases the ROI of your solar installations

## HARDWARE

Tigo TS4  
On each module



## SOFTWARE

Energy Intelligence  
Monitoring Platform

# The Tigo TS4 Flex MLPE platform

- Choose the features you want
- Choose the inverter you want
- Scales to any size install
- High reliability

**Features**

Optimization

Monitoring

Rapid Shutdown



# Tigo Enables Intelligence in Traditional PV Systems



### OPTIMIZATION

Increase energy output



### MONITORING

Lower operating expenses



### RAPID SHUTDOWN

Enhance safety & compliance

# What if there's no shade?

- Full deployment of TS4-A-O (optimizers) | 320 kW in Europe
- Optimizers still increase energy production
- Reclaimed energy increases over time with soiling, mismatch, and wear on modules



# What if I don't want optimizers?

- Full TS4-A-S (safety) deployment | 10 MW Israel
- Module-level monitoring to maximize performance; remotely diagnose issues
- Rapid shutdown for safety of maintenance crews



Also available: **TS4-A-2F**

# What if I only want optimizers selectively?

- With Tigo, you can mix and match TS4-A-O with TS4-A-S
- Well suited for commercial rooftops with limited obstructions

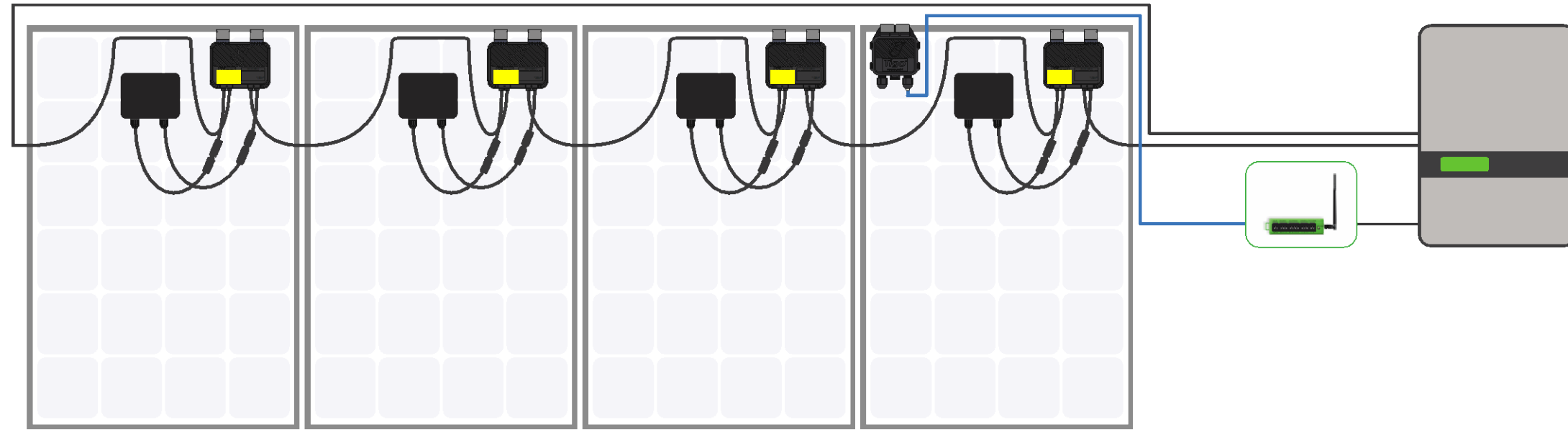


# Tigo is the only MLPE provider that provides selective deployment

- Get safety + module-level monitoring everywhere
- Use optimizers where you want
- Increase your installed capacity and design flexibility

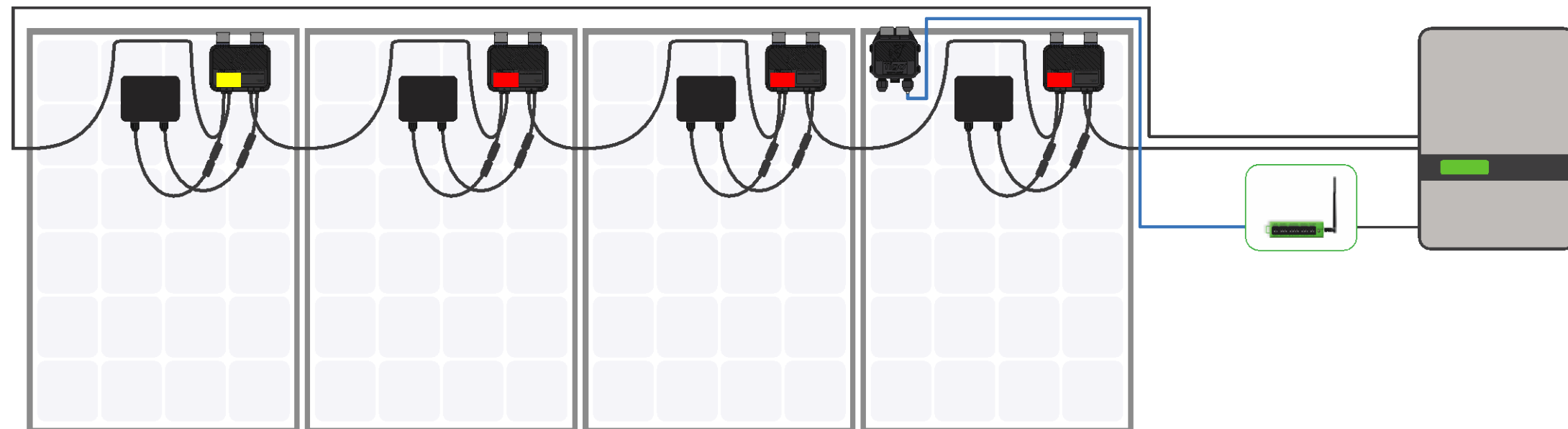
Better ROI for your customers  
More profitable for your business (installer / EPC)

# Terminology



## Full deployment

TS4-A-O (optimizers) on every module with monitoring via the CCA & TAP



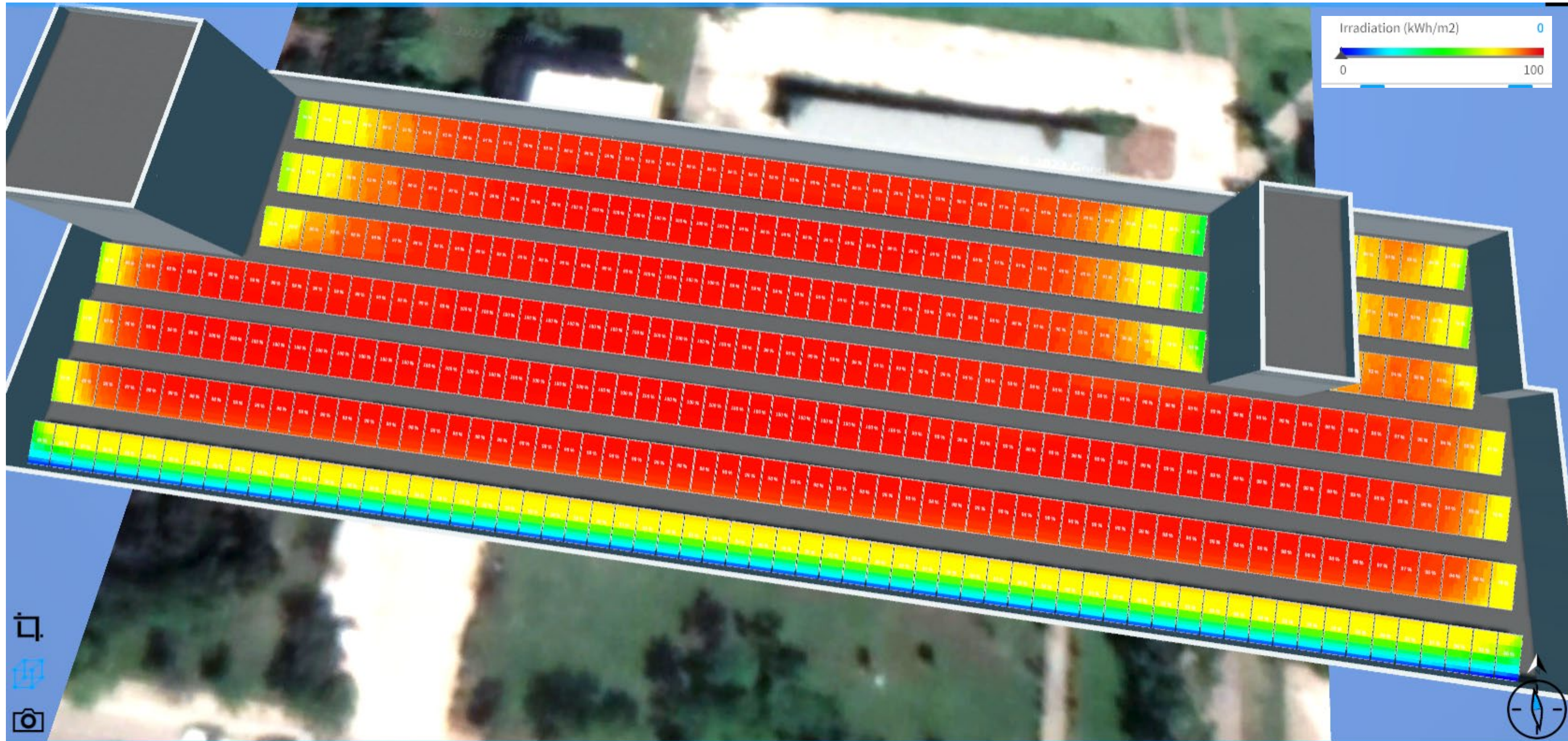
## Selective deployment

A combination of O, or S on every module, with monitoring enabled via the CCA & TAP



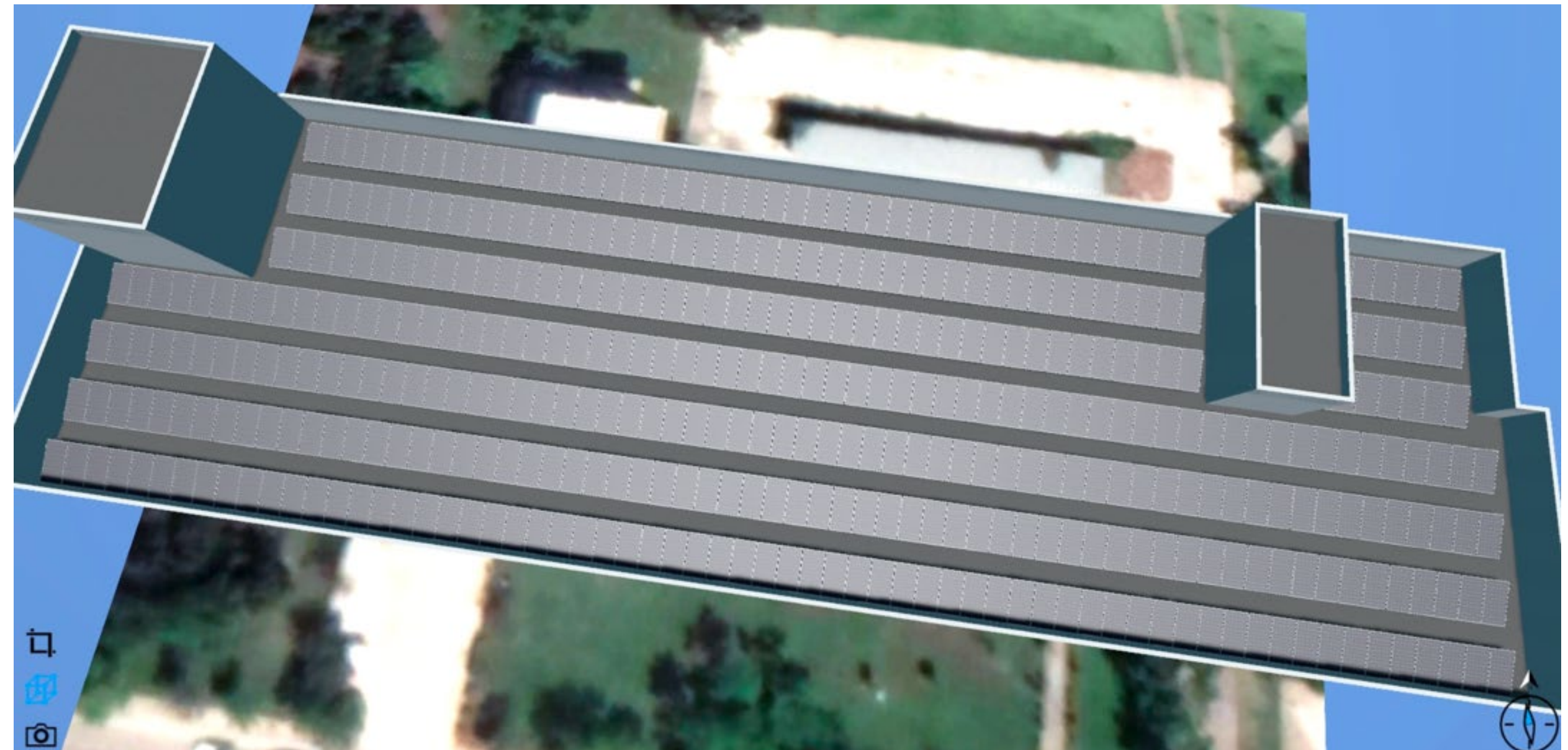
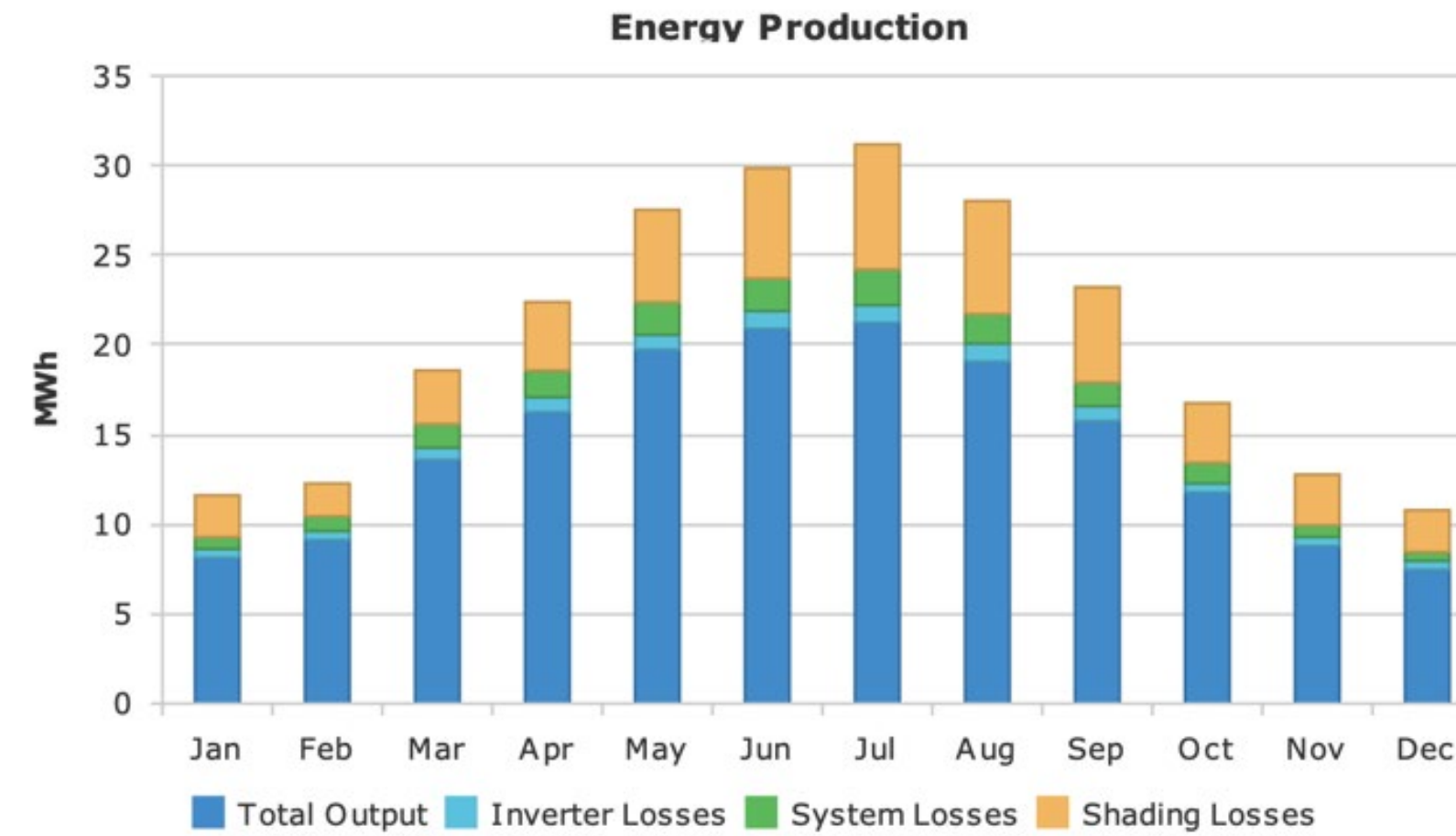
# Example commercial rooftop

- 143kW with heavy shading around the perimeter
- Analyzed using InSun



# Example – no optimizers

- Installed power: 143 kW
- Annual Energy Production: 171,972 kWh



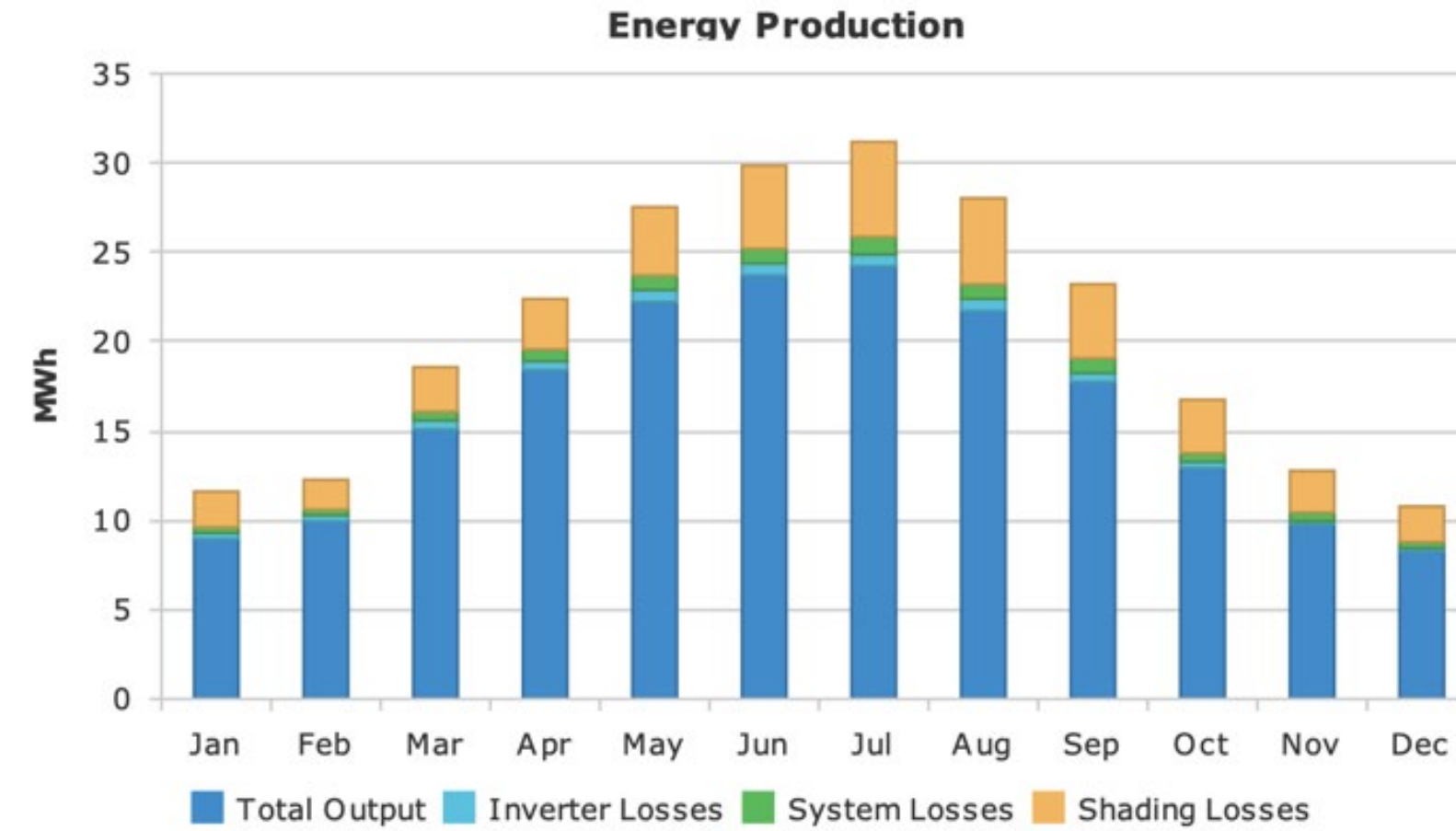
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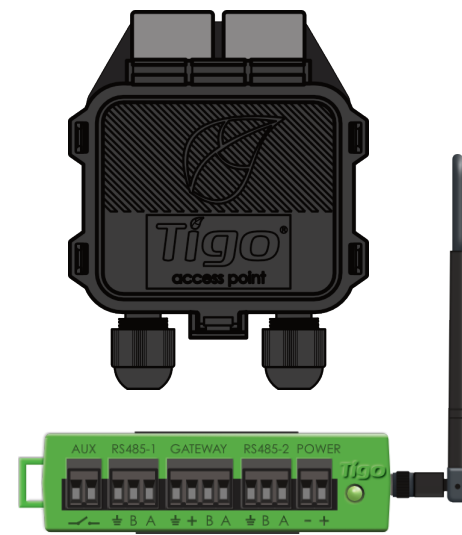
# Example - full deployment

- Installed power: 143 kW
- Annual Energy Production: 193,245 kWh

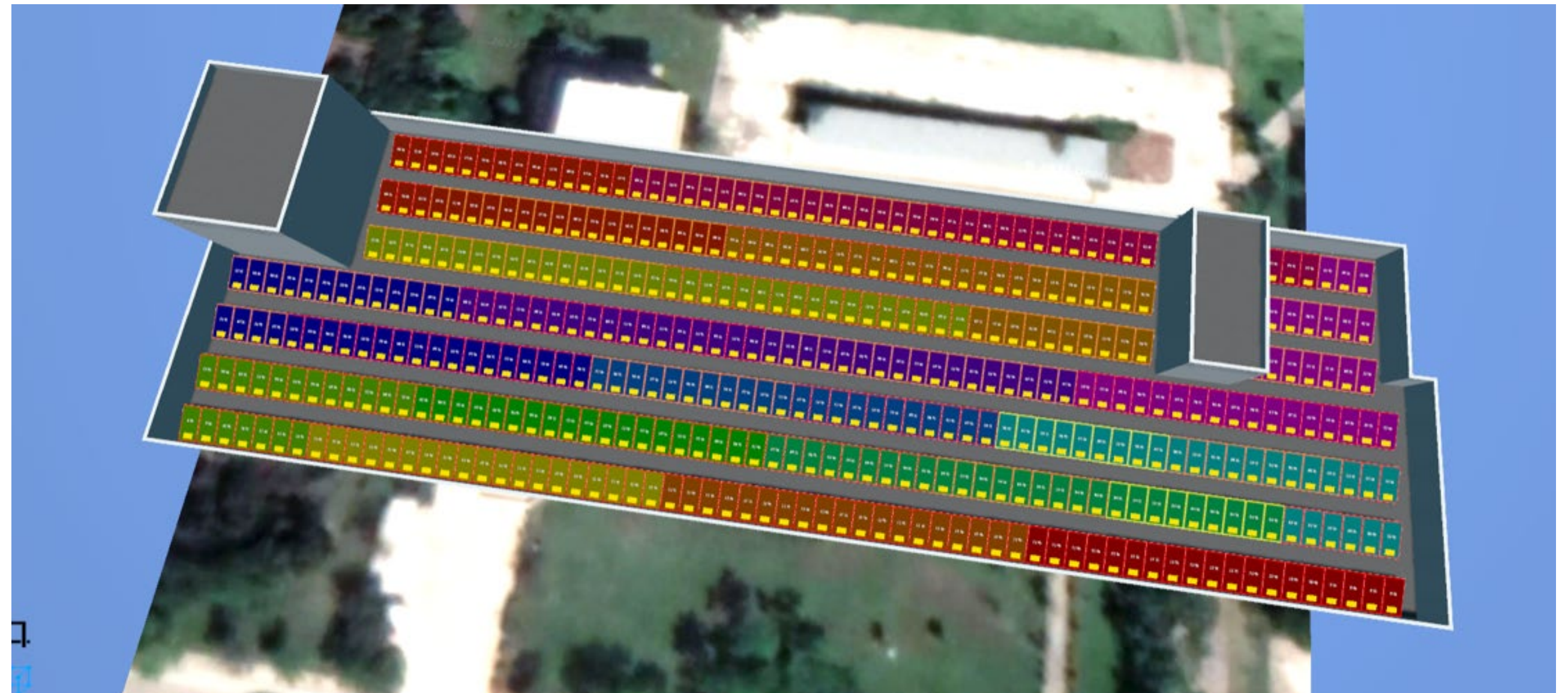
**Increase vs. no optimizers: 12%**



TS4-A-O



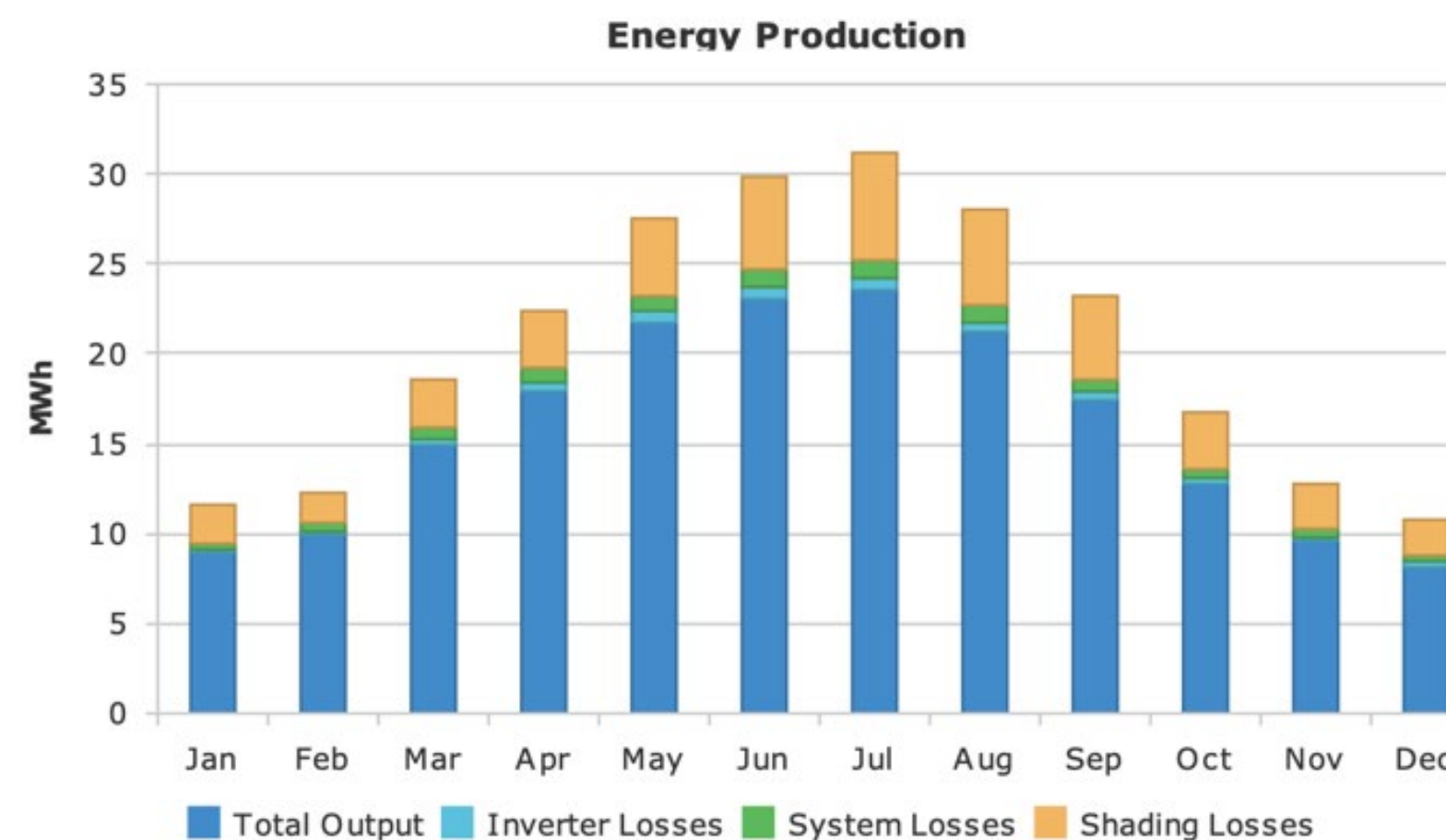
CCA Kit



# Example - selective deployment

- Installed power: 143 kW
- Annual Energy Production: 189,249 kWh

**Increase vs. no optimizers: 10%**

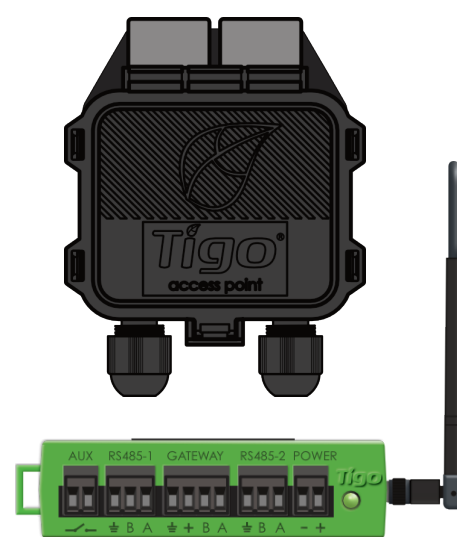


TS4-A-O

+



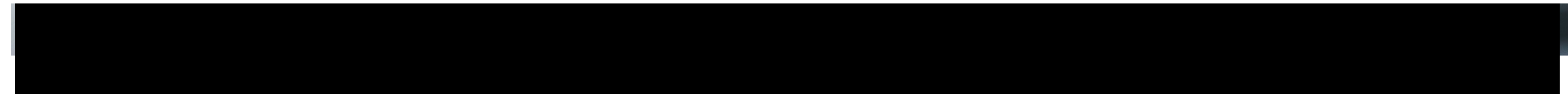
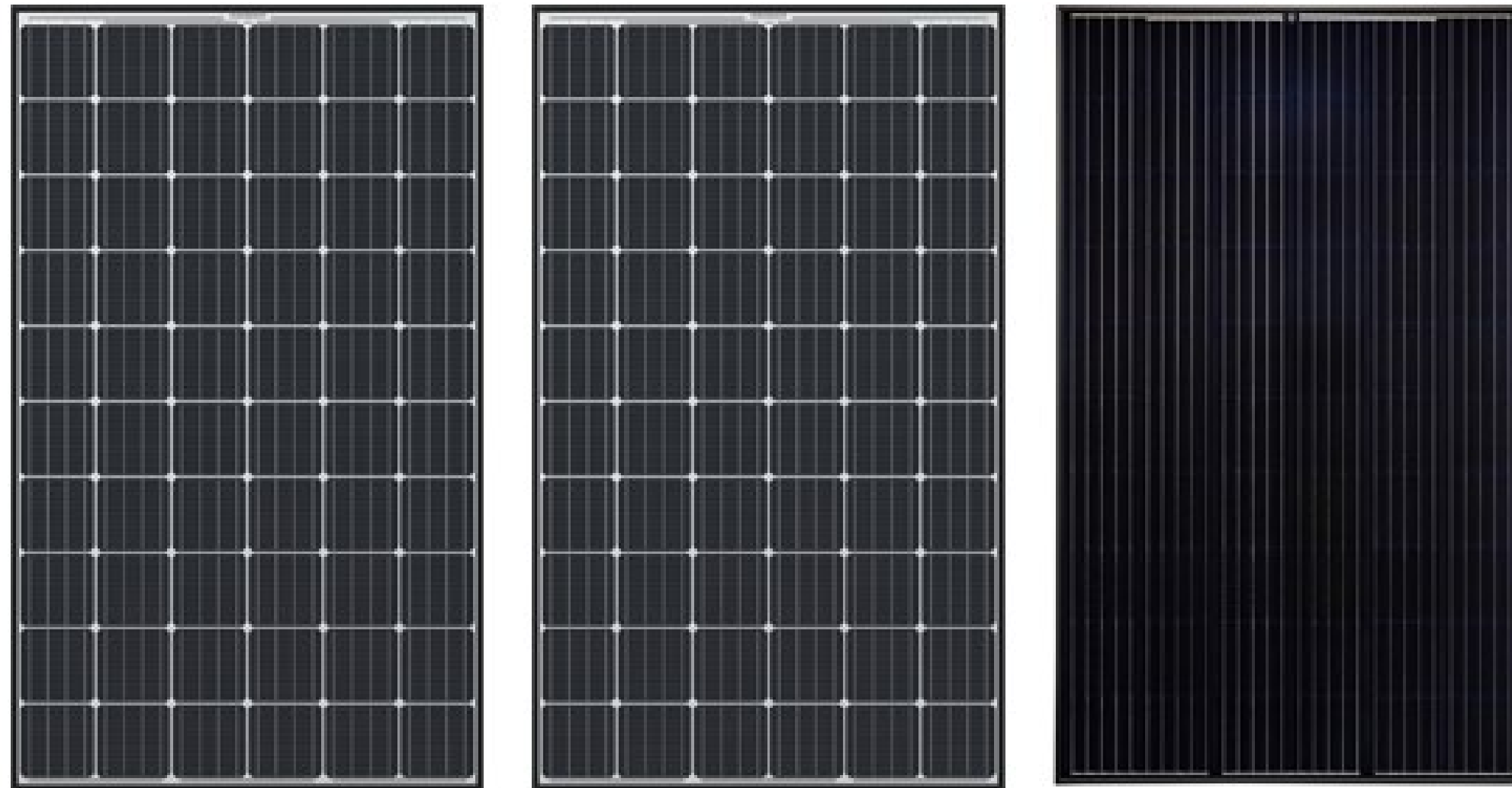
TS4-A-S



CCA Kit



# Additional scenarios and considerations



**Retrofit to improve existing sites** - Tigo MLPE work with hundreds of inverters

**Swap out TS4-A-S for TS4-A-O** if conditions change (trees grow, mismatch appears, etc.)

**If replacement modules are different specs...** prime candidate for an optimizer

**Turn 'dumb' modules into 'intelligent' modules** – get module level visibility and add sites to fleet management



Visibility

# The Tigo Energy Intelligence software “stack”



## Fleet management

- View and filter all sites in one spot

## System monitoring

- Installation-level operations

## Module visibility

- Module-level performance data

**Maximize site performance | Minimize truck rolls**

<https://support.tigoenergy.com/hc/en-us/articles/202342726-Monitoring-Features-Pricing>

# Fleetwide

- All sites in 1 location
- Fleet-level metrics
- View list or map
- Filter by specific characteristics

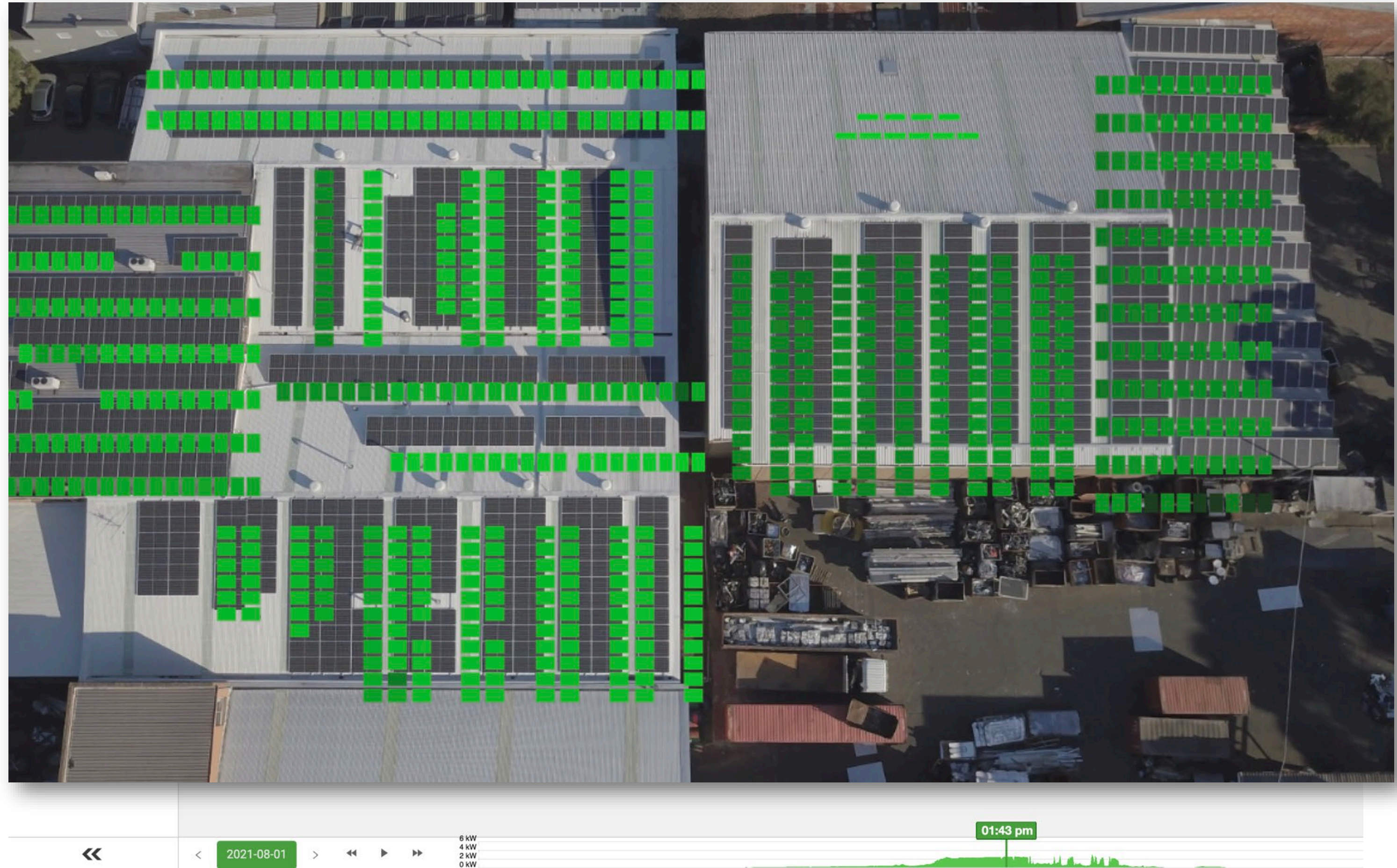
The screenshot displays the Tigo Fleetwide dashboard. At the top, there are four summary cards: Lifetime Energy (2GWh), Reclaimed Energy (10MWh), Peak Power (25MW), and Total Systems (1,876). Below these is a filter for 'Country: United States'. The main content is a table of solar installations with columns for 'Internet', 'System Name', 'Address', and 'Rating'. To the right of the table is a map of the United States with green leaf icons indicating the locations of the systems.

Internet	System Name	Address	Rating
	Frank's solar array	1 Main Street, Seminole, FL 33706	11kW
	Thomas Landon	89521 South 306 Road, Grove OK 74344	5kW
	Mitchell Hethcoat - southeast residence	19853 Mill Valley Parkway, Mill Valley, CA 95020	4kW
	Wendy Gladstone	15892 Pine Hill, Valley Center, CA 92082	6kW
	Johnson	90742 36th ave, Tallahassee, FL 33772	10kW
	Daniel Glover	2802 Pine Needle Trail, Lucas, TX 75030	30kW
	Franklin Smucker	0297 Queen Valley, San Antonio, TX 7254	8kW
	Gandalf's cabin	89 Mallard Beach Dr, Johnson Lake, Nebraska 68937	9kW
	Brian Wilhelm	2536 Lake Curley Rd, Republic, WA 99166	12kW
	Climate Business Inc.	2198 Robins Rd, Des Moines, IA 52233	224kW
	Joseph Santos	5123 Puebla St, Escondido, CA 92025	9kW
	Paul Stephens	569 Springbrook Rd. Shahola, PA 18458	0W
	Virginia Johnson	1635 Easterbrook Dr. Walnut Creek, CA 94595	7kW
	Lionel Butcher	358 Tiffany Lane, Lexington TN 38351	6kW
	Bob Smith and Co	1589 Langley Dr, Plano Texas 75025	27kW
	Harper Lee	3131 Hollins Ferry Rd, Baltimore MD 21320	0W
	Owen Wilson	823 Blackturf Dr. Hollywood, CA 90210	6kW

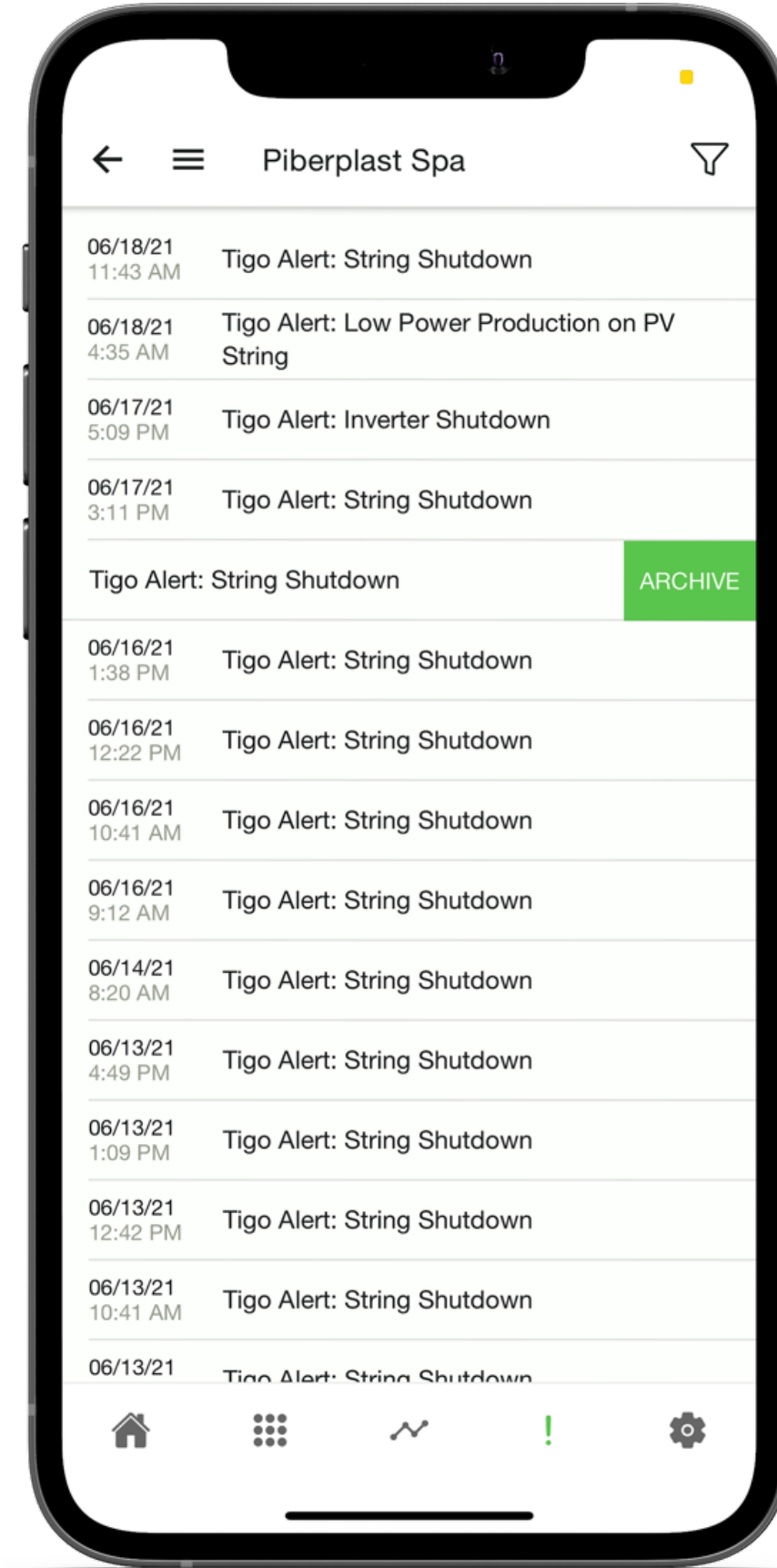
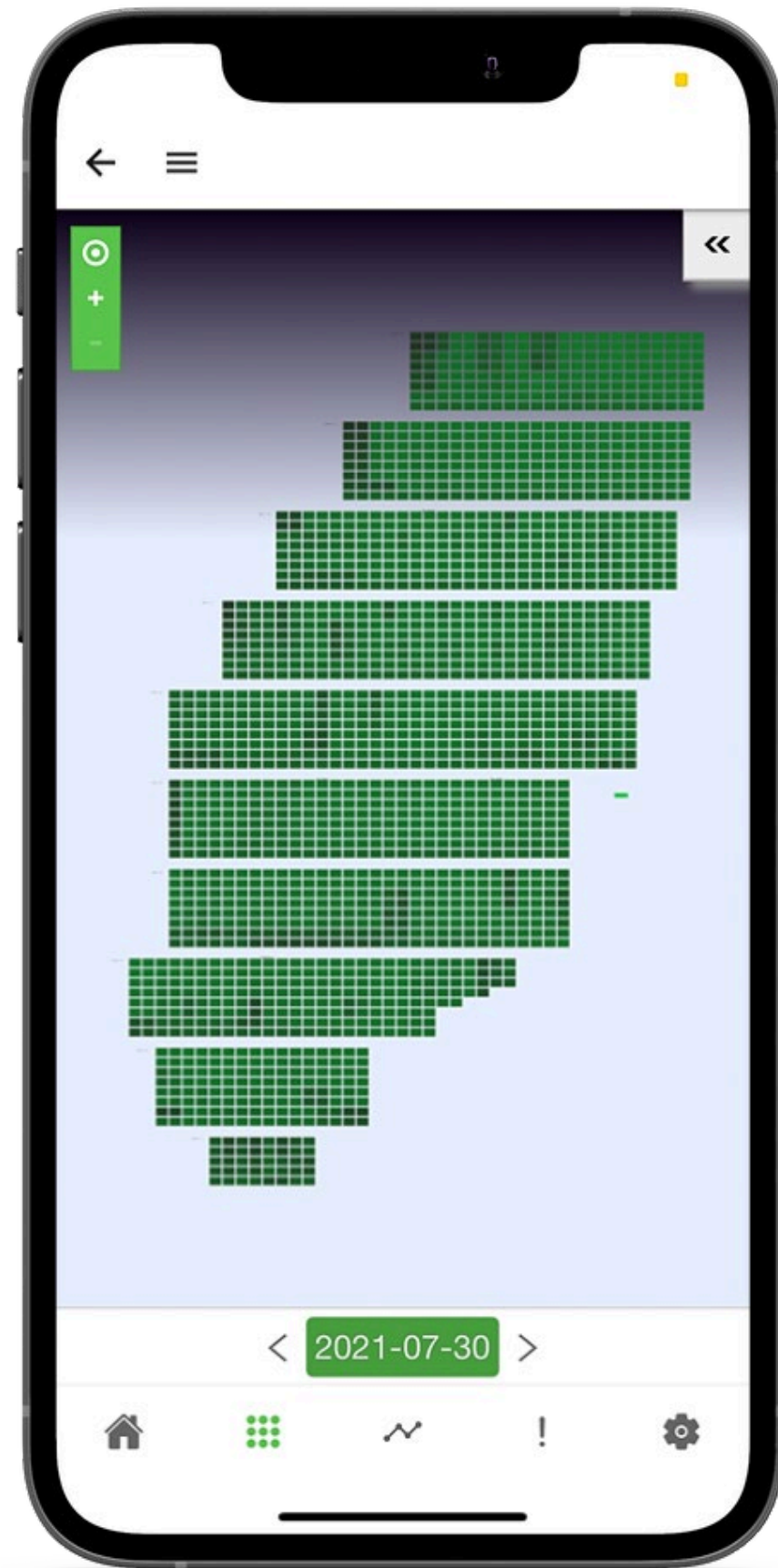
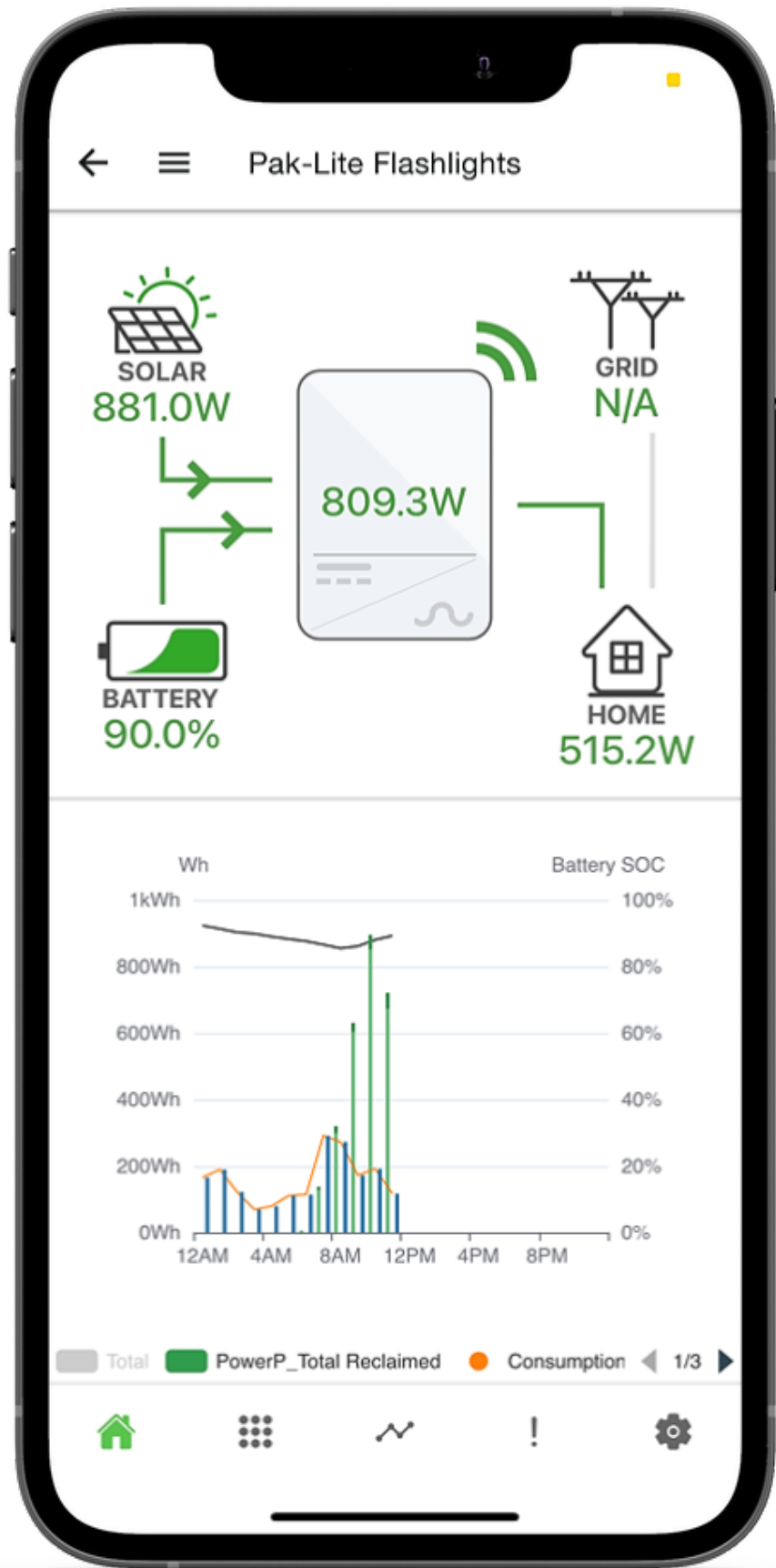


# Module – digitized layout

- Overlay your system so that it matches the aerial view of the site
- Know exactly where the issues are



# Get it all in the palm of your hand



DEMO



# Tigo monitoring lets you remotely detect and diagnose issues

## Maximize site uptime

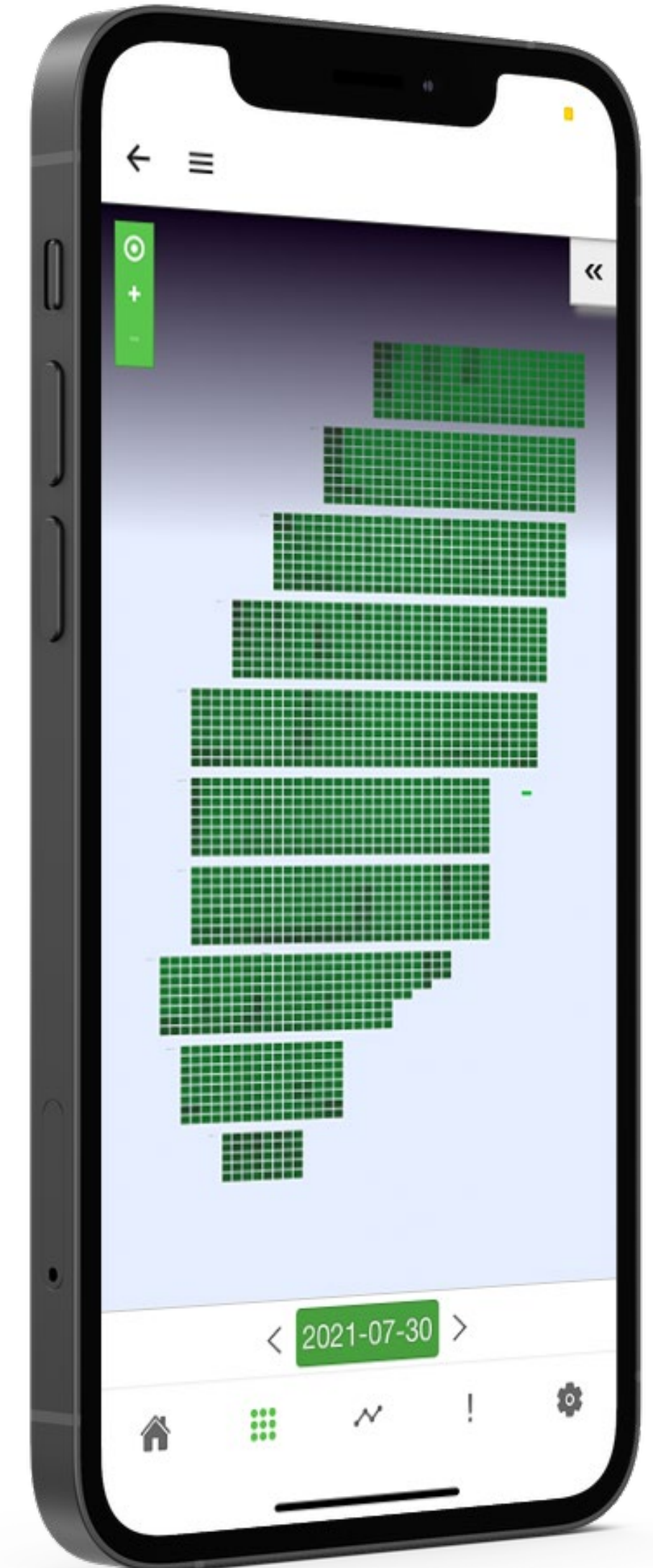
- Get real-time alerts when a performance or safety issue arises so the site can quickly be returned to normal. More uptime = more energy.

## Minimize O&M costs

- Detect system level, string level, and module level issues to pinpoint and diagnose issues remotely. Save money with fewer truck rolls.

## Enhance the customer experience

- Get visibility to all sites from one spot with fleet, system, and module level performance data. Get more referrals with happier customers.



# Thank You! DÍKY!

[Více informací: https://www.tigoenergy.com/downloads](https://www.tigoenergy.com/downloads)

**Tigo**<sup>®</sup>

**SOLSOL**

SOLSOL s.r.o.  
Králova 298/4, Brno, 616 00, Czech Republic  
[sales@solsol.cz](mailto:sales@solsol.cz) ; [www.solsol.cz](http://www.solsol.cz)