

Hybrid Power Systems for Telecom



RELIABLE **ELECTRONICS.**
RELIABLE **MONITORING.**
RELIABLE **SUPPORT.**





What we do.

- IIAN TECH provides Power Generation Equipment, in both Solar-only and Hybrid configurations, for Telecom applications.

Apollo Power Electronics Systems are available to Telecom Provides, BTS Site Owners, Tower Operators, Energy Service Companies, Power Suppliers, Network Operators, and Solar Integrators worldwide.

IIAN TECH

The Best Solution.

- **ACHIEVE MAXIMUM RELIABILITY AND EFFICIENCY.**
- **LOWER OPEX**
- **MONITOR SITE STATUS quickly and easily.**
- **SUPPORT DELIVERED When you need it.**

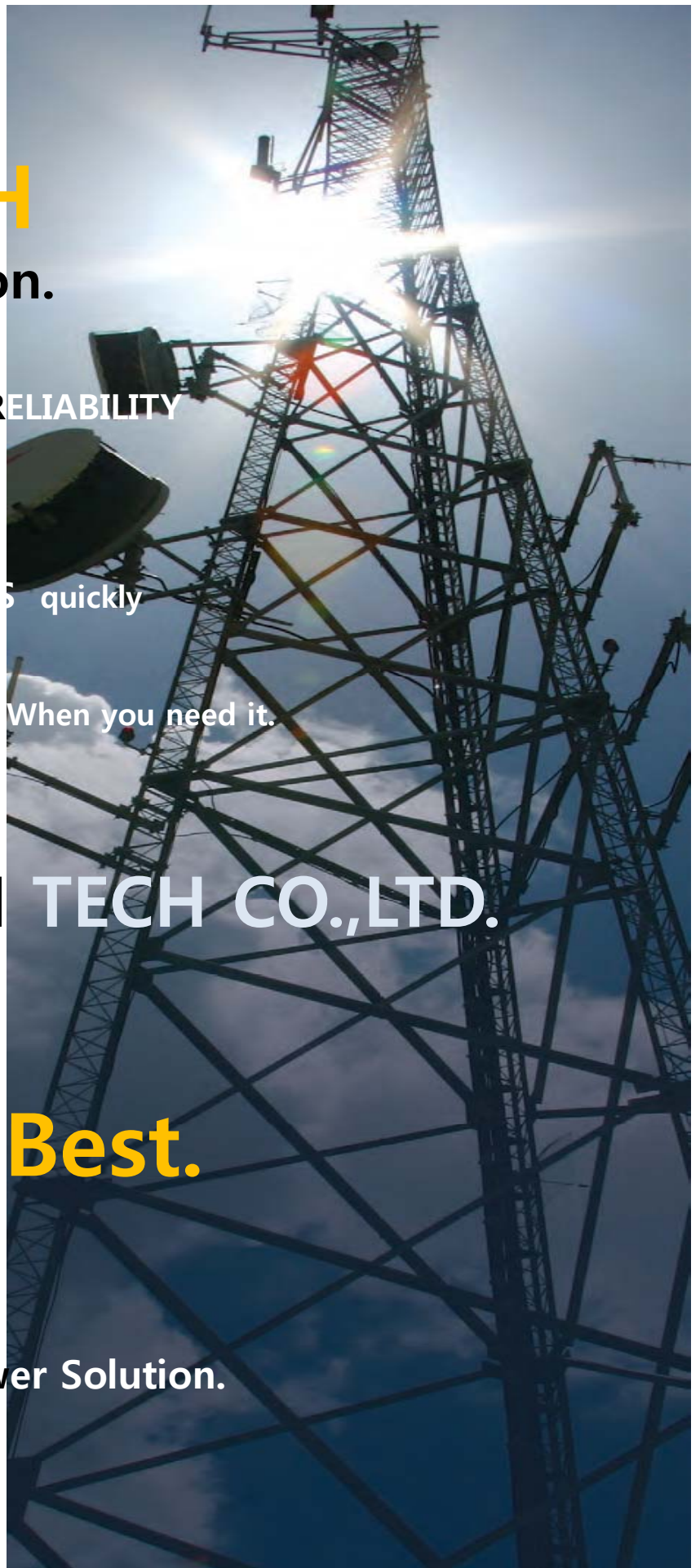


IIAN TECH CO.,LTD.

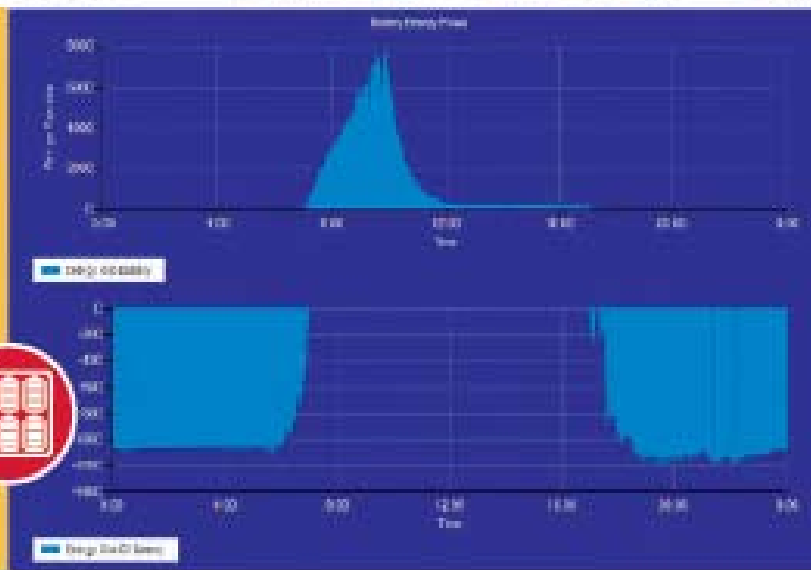
Work with

The Best.

- The **BEST Company.**
- The **BEST Products.**
- The **BEST Hybrid Power Solution.**

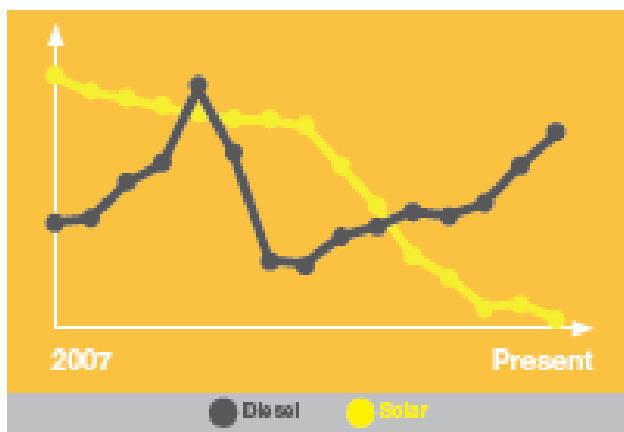


Real-time Monitoring.
*Critical parameters on every site
 – right at your fingertips.*



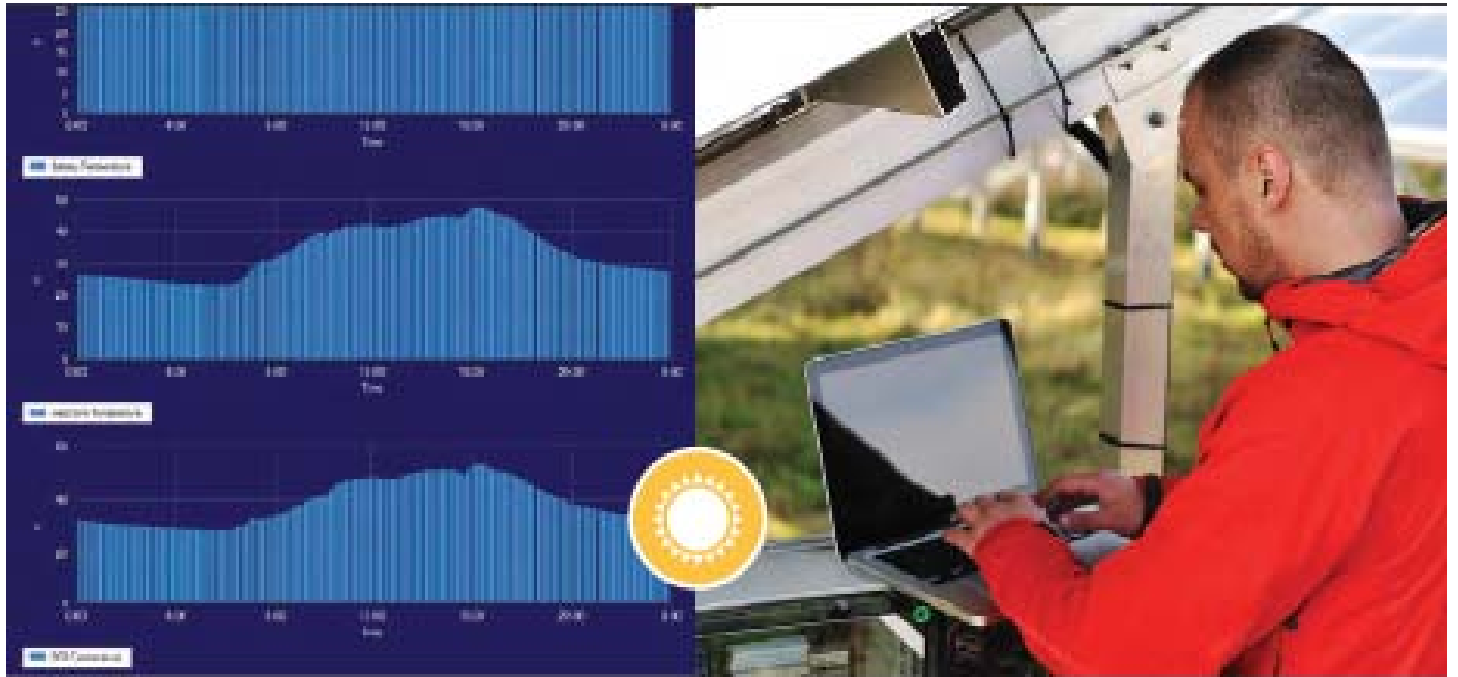
Increase Reliability and System Efficiency – while you Decrease OPEX.

■ Apollo Hybrid Systems supply continuous power to remote telecom base stations. By monitoring and managing diesel fuel consumption, we reduce diesel costs and operating expenses with solar power that delivers a rapid ROI.



Cost per kWh
 Diesel Fuel VS Solar Energy

Diesel fuel costs keep going up.
 Solar power prices have come down.



More Sizes. More Options.

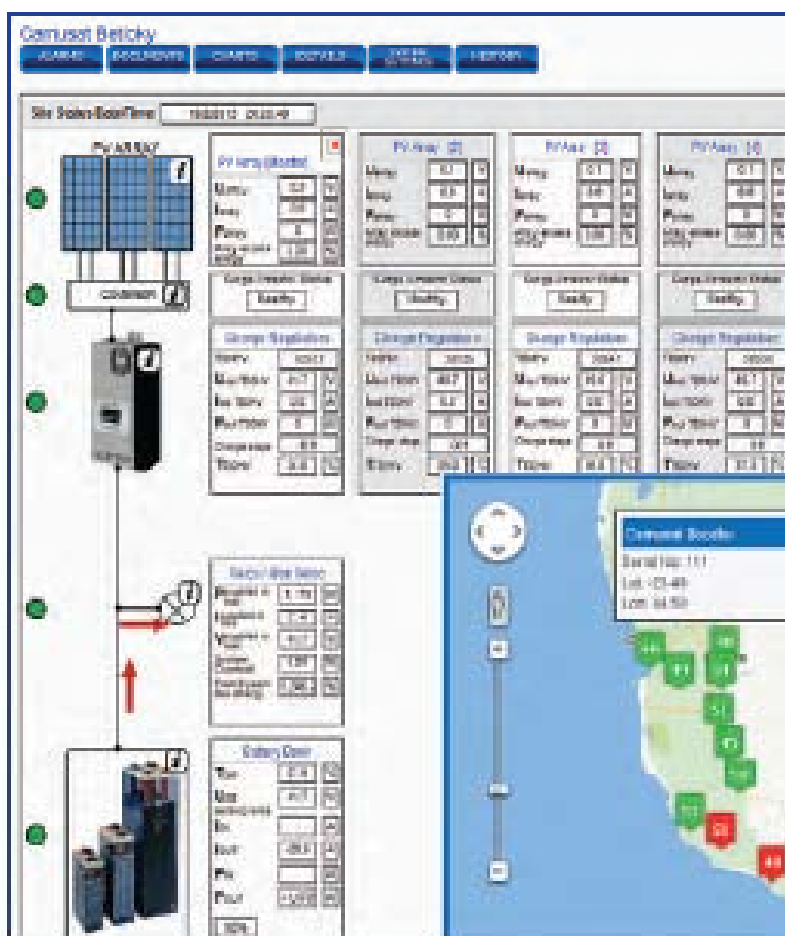
Apollo has a wider range of sizes than any other hybrid power manufacturer. We offer both small enclosures for lower-cost installations in remote areas, as well as, large pure-solar enclosures that provide enough power to eliminate the need for diesel generators. Plus, Apollo cabinets are IP66 certified against the environment and weather; which means no hut, shed – or expensive air-conditioning – is required.



Real-time remote monitoring for Minimal Downtime.

Critical parameters on every site – right at your fingertips.

- See the status of vital operating conditions – every 10 seconds.
- Monitor and handle alarm conditions at every site.
- Authorize users to retrieve charts and data from any site.
- Display data for any site using a variety of user-friendly maps, diagrams, bar charts and spreadsheet tables.



Log on 24/7 – 365.

Secure authorization allows for data to be viewed using a variety of customizable, user-friendly Maps, Diagrams, Bar Charts and Spreadsheet tables.

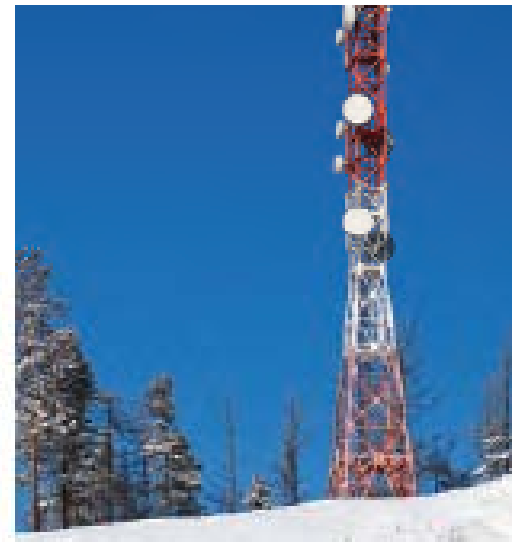




From jungle floor to mountaintop – **Apollo** is The Proven Power Leader.

Remote and Off-Grid telecom sites.

- 98% efficiency.
- Wide PV input voltage range to 180Voc – works with all PV modules.
- Stock and learn one product.
- Works in all environments – jungles, deserts, mountains and coastlines.
- Proven reliability reduces service calls.
- Remote monitoring eliminates site visits.
- Easy to install indoors or out.
- Factory assembled and tested in the USA.
- Industry leading five-year warranty.



SPECIFICATIONS OF STANDARD FEATURES AND FUNCTIONS

PV INPUTS

Maximum Open Circuit Voltage	180v operating, 200v absolute max
Maximum Input Current per T80HV	50 Amps
Maximum PV Array Power per T80HV	4200 Watts
Minimum PV Input voltage (Vmp)	75 volts (Max battery charge voltage +18%)
Connector Maximum Wire Size	Up to 25mm ² or AWG 2

CHARGE CONTROLLERS

Technology	Maximum Power Point Tracking (MPPT)
Efficiency	93% typical
Operating Temperature Range	-40C to +60C
Certifications	UL1741, CSA C22.2 No.107.1-01

BATTERY CHARGING OUTPUT

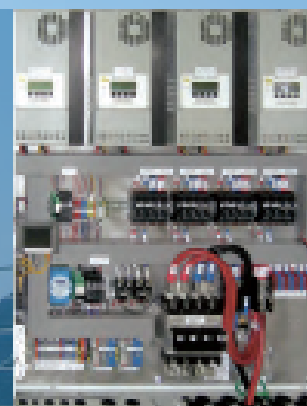
Maximum Charge Current per T80HV	80 Amps
Maximum Charge Current per system	320 Amps with 4 T80HV's, 1280 Amps Max
Battery Charging Method	4 Stages: Bulk, Absorb, Float, Equalize
Absorb Voltage	Settable from 54.2v to 60.8v in 0.1v steps
Absorb Time	Settable from 0 to 10 hours in 1 minute steps
Float Voltage	Settable from 51.2v to 58.8v in 0.1v steps
Manual Equalization	Settable timeout with batt temp monitoring
Automatic Equalization	Settable time and period with temp monitor
Battery types supported	Flooded, AGM, GEL, NiCad and Nickel-Iron
Connector Maximum Wire Size	150mm ² or AWG 4/0 or 350cm ²

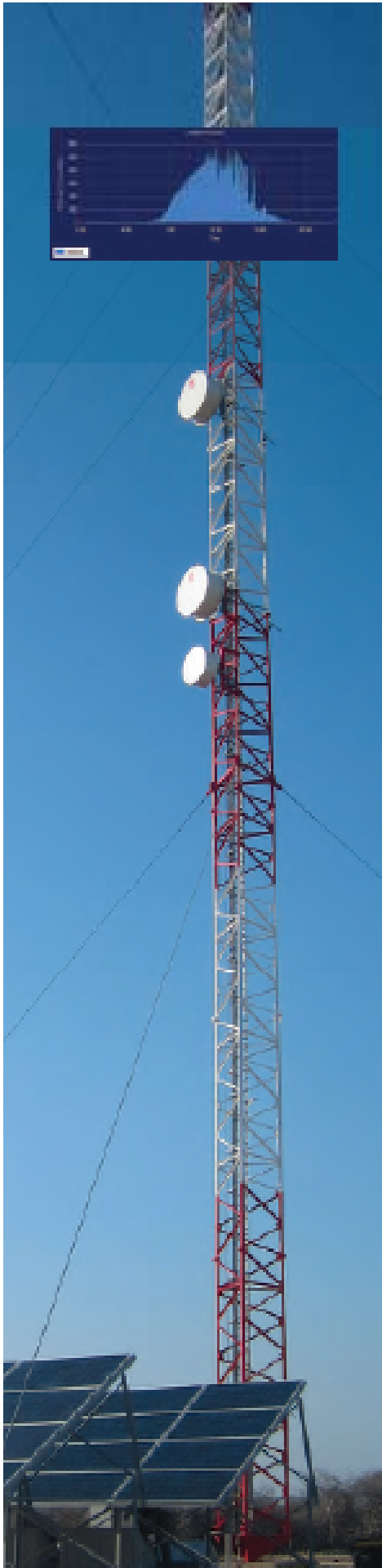
DC LOAD

Essential DC Load - Maximum Current	50 Amps at 48 volts DC
Maximum Voltage	60.0 volts DC (Adjustable)
Minimum Voltage	42.0 volts DC (Adjustable)
Surge Protection	48 volt MOV on Telecom Load Output
Connector Maximum Wire Size	16mm ² or AWG 6

CIRCUIT BREAKERS

Type	Magnetic Hydraulic
Certification	IEC / EN 60947-2 listed
Rating on PV Inputs	50 Amps at 250 volts DC Dual Pole
Rating on Charge Controller Outputs	100 Amps at 80 volts DC Dual Pole
Rating on Telecom DC Load	50 Amps at 60 volts DC Dual Pole
Rating on Non-Essential AC Loads	5 Amps at 277 volts AC Dual Pole
Rating on Battery Disconnect	100Amps for 1 T80, 250A for 2 or 3 T80s, 400Amps for 4 or 5 T80s, all Dual Pole





REMOTE MONITORING - INTERNET CONNECTION

Real-time response	3 updates per minute minimum.
GUI displays	Maps with pin locations showing status of all sites, Site Status with display of all numeric quantities, Bar Charts for 14 parameters, Spreadsheet tables, Alarm History, Diagnostic Messages.
Bar Chart quantities displayed	DC Energy Record, Irradiance Received, Battery Energy Flows, Battery Voltage, Max Power Received by Battery, Max Power Received from Battery, Estimated Solar Energy Potential, Power from PV Array to T80, Current from PV Array to T80, True Battery Voltage, Battery Current, PV Voltage Received from Battery, Estimated Solar Energy Potential, Power from PV.
Bar Chart display period	Data displayed for 1 Hour, 1 Day, 1 Month or 1 Year. Frequency of data may be by 10 minutes, 1 hour, 1 day, or 1 month.
Database storage	All system component specifications, maintenance history, all data retrieved.
Alarms reported remotely	Battery Low Voltage, Battery high voltage, Load or Battery Circuit Breakers tripped, Enclosure Door Open, PV Array Theft attempt, Surge Arrester MOV at end of life.
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LOCAL ALARMS (DRY CONTACTS)

Battery Breaker Trip, Load Breaker Trip, Low Battery Voltage, High Cabinet Temp, High Battery Voltage, High Battery Temp.

OPTIONS

1 Inverter for small AC output	360VA for small AC loads
2 Inverter/Charger for AC and Rectifier	4kVA of AC and 50A Charging from Genset
3 GSM Cellular Modem	Quad band with external antenna
4 IP68 (NEMA 4) Steel Enclosure	800 x 600 x 300mm 1200 x 1000 x 300mm

PHYSICAL SPECIFICATIONS

	4.2KW SYSTEM	8.2, 12.8 OR 16.8KW
Panel Dimensions	650 x 750 mm panel	1150 x 950 mm panel
Shipping crate Dimensions	650 x 850 x 400mm	1250 x 1050 x 400mm

Lets Talk.

Call us to learn how we can reduce your Opex and increase your ROI.

- Apollo offers a number of resources to help installers, operators, and distributors to build successful, economical solar hybrid power systems:

SYSTEM DESIGN AND ENGINEERING: Our experienced application engineers can help you determine the appropriate number and kind of solar panels, batteries and electronics.

CALCULATION OF FINANCIAL RETURN: We'll help you to calculate the financially most attractive system and its payback period and return on investment.

PRICE QUOTATIONS: We can provide price quotations for any products and systems you specify.

HELP IN DEVELOPING TENDER OFFERS: Let us help you to draft the specifications for tender offers.

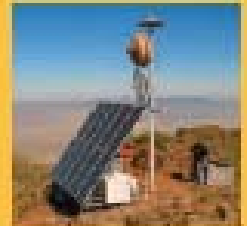
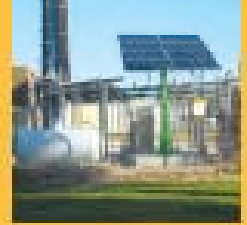
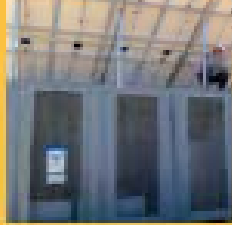
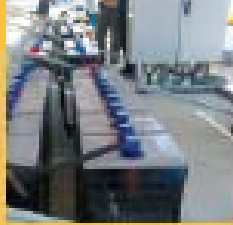
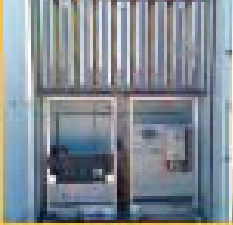
COOPERATION ON RESPONSES TO TENDER OFFERS: We'll help you draft responses to tender offers, including providing regulatory certifications and detailed technical specifications.

JOINT SALES CALLS: Let us participate in joint sales calls, in person or by Skype, to explain to your customers the features and benefits of our products, systems, and monitoring.

PRODUCT AND INSTALLATION TRAINING: We can provide in-person or video training on the best ways to configure and install and commission our products.

PLEASE CONTACT: Daniel TwoEagles, VP Business Development and Sales, at +1 (203) 790-6400 for immediate assistance in any of these areas.

- In addition, on our website at www.ApolloSolar.com, you will find a variety of useful information specifically for telecom installations at www.ApolloSolar.com/telecom.



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