

SUSTAINABLE

Schneider Electric Solar Business

Telecom Towers Solution



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Power 2 Tower Solution



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Overview

Challenges: Reduce/eliminate diesel consumption and energy costs with battery-based and grid-tie solutions

- Over the last decade there has been a phenomenal growth in cellular subscriptions across the world. By the end of 2014, there were more mobile devices in use than people on Earth!
- To serve this growing demand for connectivity, the network of telecom towers has expanded to far regions of the world. Towers might be sited in remote regions where the grid is nonexistent, or in areas with unstable grid supplies of electricity.
- As a result, telecom towers infrastructure companies in the world have long relied on diesel generators as a source of power. But diesel generators run at a lower efficiency level, costly to operate and produce high CO2 emissions.
- A [battery-based solution](#) ,can reduce operating expenses by >35%.
- All mobile phone services provider has been retrofitting telecommunications towers across the emirate with solar panels, and hauling away polluting diesel generators.
- So, Solar companies are designed to provide uninterrupted daytime service, even in the event of rain or three days' continuous cloud cover.



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Factors affecting the energy needs of a Telecom site:

Technology	Nature and size of load to support	Only DC loads <ul style="list-style-type: none"> No AC loads like air conditioning to support All communication loads are DC A single BTS load is ~0.8-1kW, as number of BTS increase, the load increases proportionately 	DC and AC loads <ul style="list-style-type: none"> AC loads like air conditioning for cooling Each AC load is ~3-4kW
	Location	Rural <ul style="list-style-type: none"> Due to operational difficulties, tend to be large "shared" sites Unreliable or no grid connectivity-mostly use DGs Low call density, air conditioning may not be required 	Urban <ul style="list-style-type: none"> Due to limited space, tend to be "single carrier" small sites Reliable grid connectivity -DGs not preferred due to noise and pollution issue High call density, air conditioning may be required
Applications	Grid connectivity	Off-grid <p>Almost all of these sites run on a DG. Two types of sites are:</p> <ul style="list-style-type: none"> Support telecom loads only Second use: Also support community loads 	Grid connected <p>A hybrid solution with the DG is the preliminary choice. Two types of sites that need support are</p> <ul style="list-style-type: none"> Stable but expensive grid supply Unreliable grid supply
	Lifecycle of tower	Existing towers <ul style="list-style-type: none"> Work with old telecom equipment – high energy needs Generally already experiencing pinch of high diesel prices 	New towers <ul style="list-style-type: none"> New telecom equipment and shelters are more energy efficient

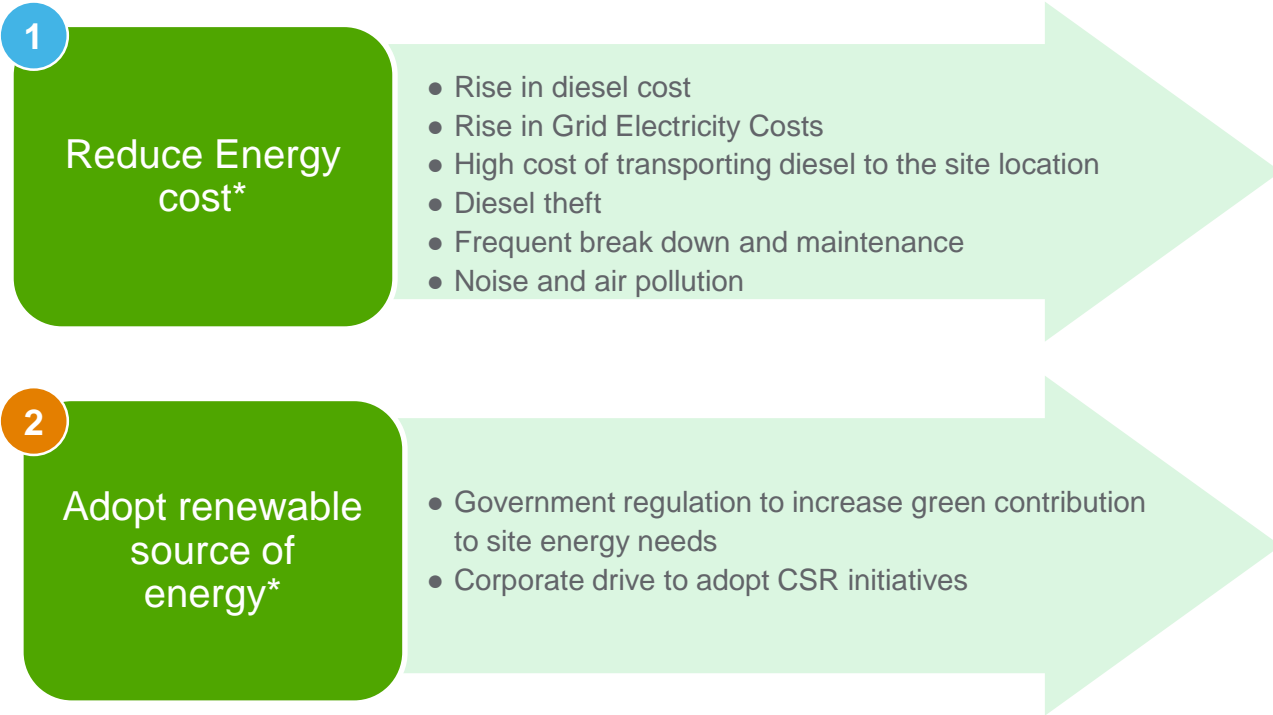


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Trends shaping the energy needs of cellular towers:



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Solar Tower Architectures-Our Solutions

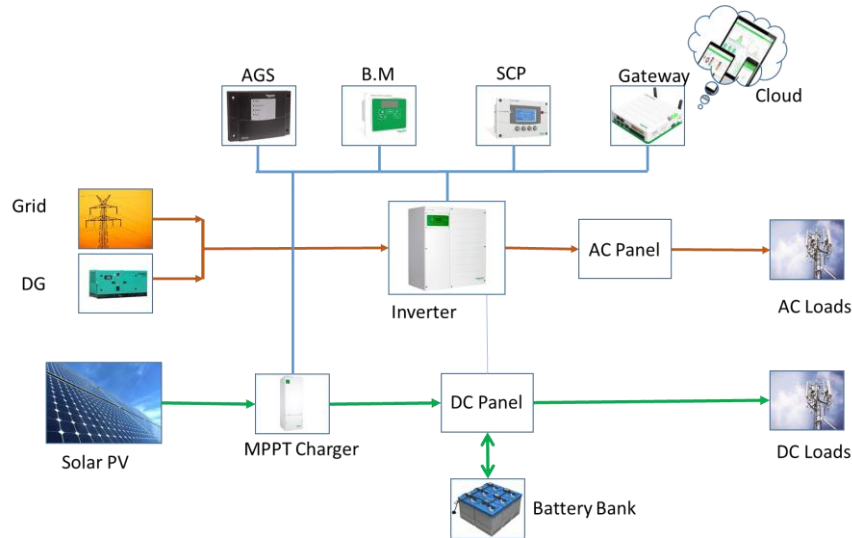


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Solution-A – Four Sources +(AC & DC Loads) Grid, Generator, Batteries and Solar



Benefits:

- Solar energy reduces diesel dependency
- Improves performance with unstable grids
- High availability
- Low operational cost



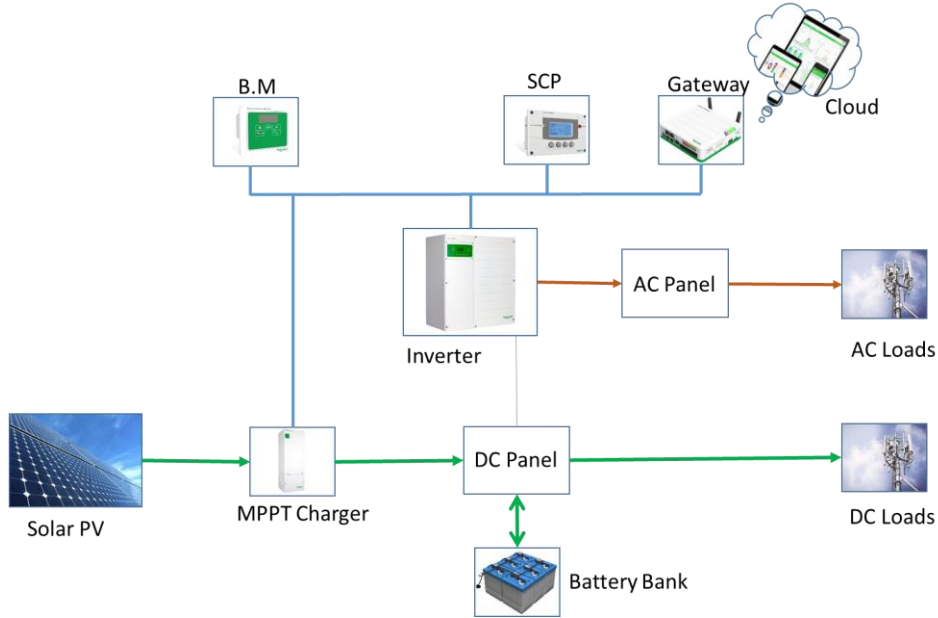
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Solution-B– Two Sources +(AC & DC Loads)

Pure Solar generation with batteries



Benefits:

- Solar energy reduces diesel dependency
- 100% Solar
- High availability
- Very low operational cost



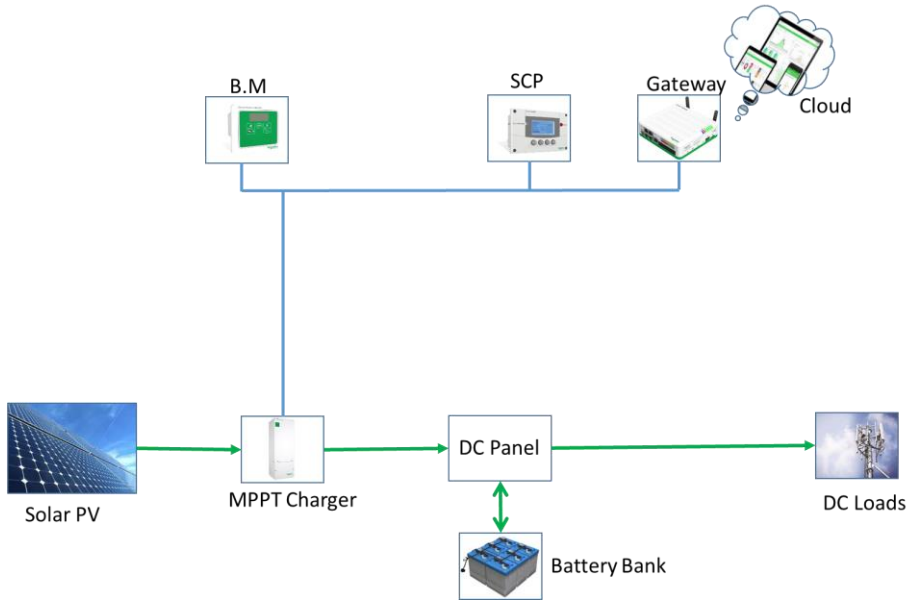
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Solution-C-Two Sources (DC Loads)

Pure Solar generation with batteries: DC System



Benefits:

- Solar energy reduces diesel dependency
- 100% Solar
- High availability
- Very low operational cost

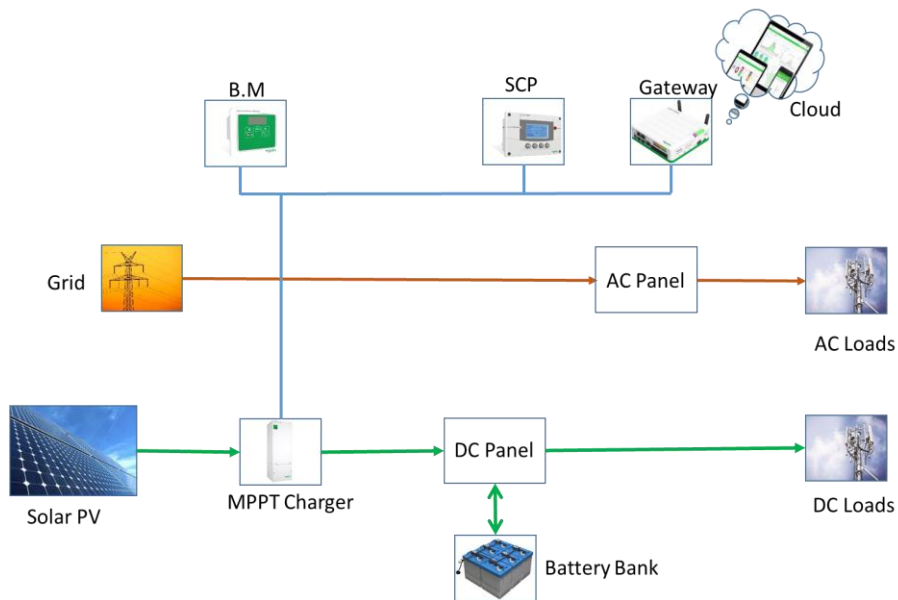


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Solution-D- Three Sources +(AC & DC Loads) Grid, Battery & DC System



Benefits:

- Solar energy reduces diesel dependency
- DC loads fed by 100% Solar
- High availability
- Very low operational cost



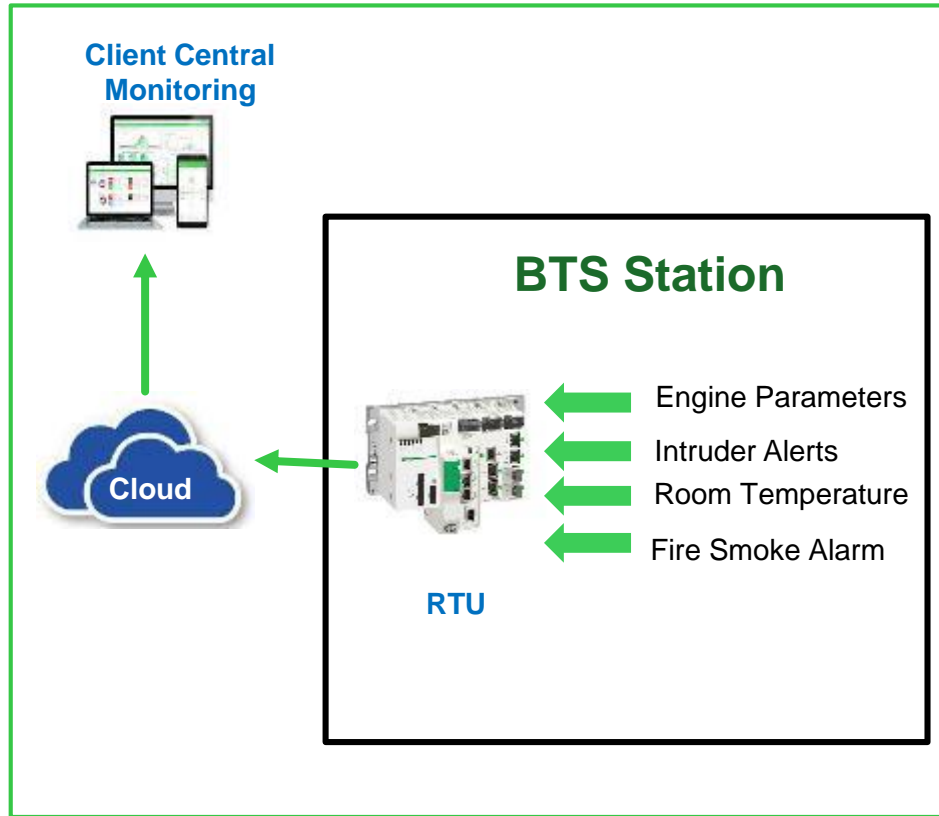
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Special Features with Our Solutions

- Collect data from different devices in the shelter and communicate necessary information to a central server.
- Transmission of collected data to the central server using GSM/GPRS/4G or LAN.
- User friendly web interface for Local maintenance
- All Alerts can be remotely enable/ disable as per requirements.



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Special Features with Our Solutions(Optional)

- Alerts to pre-configures mobile numbers or Email Ids
- Provision for escalated alerts
- Event logging with time stamp
- Battery bank- Lead Acid & Li-Ion Compatible



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Deliverables

Ultra-Premium

Ultra-Premium					
S.No.	Items	Solution A	Solution B	Solution C	Solution D
Source (G=Grid, D-Deisel Generator, B- Battery, PV- Solar)		G+D+B	PV+B	PV+B	G+B+PV
Type of Load		AC & DC Loads	AC & DC Loads	DC Loads	AC & DC Loads
1	Inveter Charger 48V	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	MPPT Battery Charger	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Battery Bank (Lead Acid or Li-Ion)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Auto Start Generator System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Remote Terminal Unit	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	String Combiner Box	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Battery Monitor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
8	Fully Wired Enclosure IP 54	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
9	Monitoring Software - On Cloud with Historical Data	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
10	Monitoring Software - Local Web Page	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
11	Programming and Configuration	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
12	Remote Commissioning Support	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
13	Site Support	*	*	*	*



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Deliverables

Premium

Premium					
S.No.	Items	Solution A	Solution B	Solution C	Solution D
Source (G=Grid, D-Deisel Generator, B- Battery, PV- Solar)		G+D+B	PV+B	PV+B	G+B+PV
Type of Load		AC & DC Loads	AC & DC Loads	DC Loads	AC & DC Loads
1	Inveter Charger 48V	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	MPPT Battery Charger	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Battery Bank (Lead Acid or Li-Ion)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Auto Start Generator System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Remote Terminal Unit	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	String Combiner Box	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7	Battery Monitor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
8	Fully Wired Enclosure IP 54	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
9	Monitoring Software - On Cloud with Historical Data	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
10	Monitoring Software - Local Web Page	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
11	Programming and Configuration	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
12	Remote Commissioning Support	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
13	Site Support	*	*	*	*



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Deliverables

Discrete

Discrete					
S.No.	Items	Solution A	Solution B	Solution C	Solution D
Source (G=Grid, D-Deisel Generator, B- Battery, PV- Solar)		G+D+B	PV+B	PV+B	G+B+PV
Type of Load		AC & DC Loads	AC & DC Loads	DC Loads	AC & DC Loads
1	Inveter Charger 48V	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	MPPT Battery Charger	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Battery Bank (Lead Acid or Li-Ion)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Auto Start Generator System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Remote Terminal Unit	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	String Combiner Box	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Battery Monitor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
8	Fully Wired Enclosure IP 54	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	Monitoring Software - On Cloud with Historical Data	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
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12	Remote Commissioning Support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	Site Support	*	*	*	*



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A romantic couple is shown from behind, looking out over a vast landscape at sunset. The man on the left has his hands raised, framing the bright sun. The woman on the right has her hand near the sun, also framing it. The scene is bathed in the warm, golden light of the setting sun, with silhouettes of mountains in the background. A solid green horizontal band is overlaid across the middle of the image, containing the text.

Customer Success Stories

100 Telecom Tower Middle East- UAE and Saudi Arabia

PV+ Battery+ Diesel Hybrid system (DC Coupled) 20kW PV Power, 5kW Load Power

Equipment : Conext XW+ Inverter, Conext MPPT 60 chargers , SCP, AGS and ComBox



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Telecom Tower Africa

PV+Battery+Diesel Hybrid system (DC & AC Coupled) 15kW PV Power, 6kW Load Power

Equipment : Conext XW+ Inverter, Conext MPPT 80 chargers, Conext RL PV inverter, Battery Monitor, AGS, ComBox



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Telecom Base Station Off-grid - Brazil

PV + Battery+ Diesel Hybrid system 30kW PV Power, 18kW Load Power

Equipment : Conext XW Inverter, Conext MPPT 80 chargers, SCP, AGS



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Telecom Tower in Weak Grid – Indonesia

PV + Battery + Grid+ Diesel hybrid system. 3.6kW PV Power, 4.5 kW Load Power

Equipment : Conext XW inverters, Conext MPP 60 Chargers, Conext Combox, SCP, Automatic Generator Start



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Telecom Tower DC Power System – India

PV + Battery + Grid+ Diesel hybrid system. 3.6kW PV Power, 4.5 kW Load Power

Equipment : Conext MPP 60 Chargers, Conext Combox, SCP, Automatic Generator Start



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Information Needed to Quote?

- Load Profile of Telecom Tower
- Backup Time
- No. of Sites
- Min. & Max. Nominal Temperature
- Min. & Max. Humidity
- Placement of System: Open/ Covered
- Existing Battery Bank Capacity
- Latitude and longitude of site
- Existing system description
- Genset datasheet
- Current diesel consumption and expenditure
- Expected diesel savings



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Thank You

For more information, please contact us –

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