Solar/Wind/Grid/D.G/Battery Hybrid Integrated Power Solution

Xintong Intelligent Technology Co. Ltd

------ Concentration on better reliable hybrid power system

1.Profile

Profile

- Founded in 1997, has been focusing on the exploitation and development of solar and wind energy and with 18 years of experience in the developing, manufacturing, designing and installing solar and/or wind power equipment
- Proprietary solar MPPT (Max Power Point Tracking) patent in China
- The sponsor and drafter of the YDT2023-2011 “Technical Standards and Testing Methods of DC-DC Stabi-voltage Solar Power Systems for Communication Equipment in China
- Over 25,500 solar (or hybrid) power systems for telecom, seismic & weather monitoring, oil industry and military in tropical, frozen, desert, high humidity and high altitude areas
- Passed the Testing by Quality Center of Chinese Ministry of Industry and Information and National Electronics and Electrical Testing Center and has CE certification and ISO9000 certification Clients include China Mobile/TelCom/UniCom, and many other oversea MNO
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Concentration 18 yrs
on better reliable hybrid power system

Milestone

1997 Established, started to design solar system

1999 Grow up, be a supplier of China Post

2003 Solar sys receive State Tech Award

2005 Final Acceptance by China Mobile

2007 First MPPT system got National Patent

2008 National Key Project MPPT Solar system

2009 CT4

2010 40M USD invest New Office

2011 High Tech Enterprise

2012 State Brand

2013 State Product

2014 New office...5 product lines...

1997 Established

1999 Supplier of Telecom etc

2003 State/City Awards

2005 8,000 sys

2007 MPPT

2008 China National Project

2009 Oversea biz

2009 TC4

2010 new factory established

2011 Certificate of High Tech Company

2012 16,000 sys online

2013 Domestic market take off

2014 New Factory, 25,500 sys online



Concentration 18 yrs
on better reliable hybrid power system

Certificate



High Tech Enterprise



Quality/Credit/Service AAA



Science/Technology City Award



TeleCom Association CT4 Membership



Engineering Certificate



CE



ISO9001



ISO14001



IOHSAS18001



Solar MPPT system Golden Award



Solar/Wind/DG hybrid system Brown Award

Clients


中国移动通信
CHINA MOBILE


中国电信
CHINA TELECOM


China unicom中国联通


HUAWEI


中国石油


中国石化
SINOPEC


中国海油
cnooc


ZTE中兴


GMOBILE


vodafone


MTS


telenor


VimpelCom


Tcell


همراه اول


somtel
share your world


MobiCom


МегаФон
Будущее зависит от тебя


UNITEL


viom
NETWORKS


Skytel

2.Products

Product



XB200B Cabinet



YB140 Cabinet



XB200B Cabinet



XX44U Wall mounted

Xintong Integrated Control system



XX55U wall mounted



XX70U wall mounted

Module

Control Module and Power modules


Central Control


220V100A Solar module


100A hotplug solar module


100A solar module

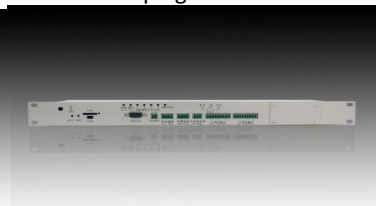

50A small hotplug solar module


100A hotplug wind module

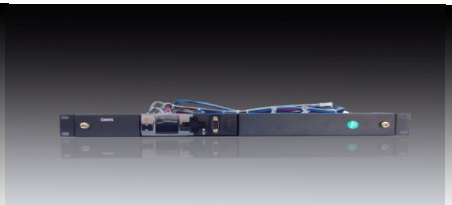

60A wind module


220V wind module


200A small solar/wind hybrid module rack


Monitoring module


Hotplug Rectifier


AC Generator Monitoring module


3000W Invertor


1000W sin Invertor


ATS

Module-X







Special Designed for Solar/D.G hybrid system in Hot place

Features

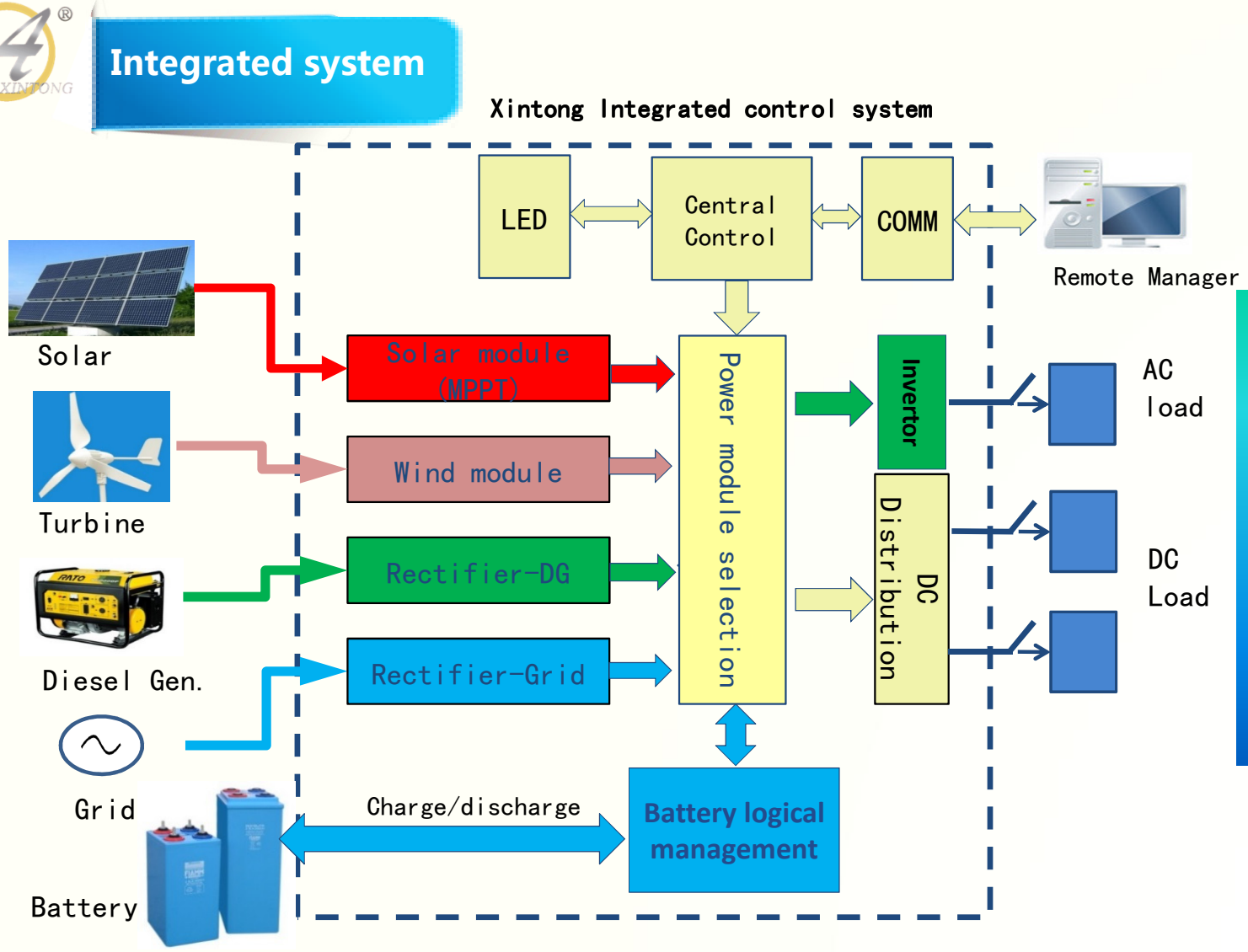
-Compacted designed-Modularized-Entire Insertion

-DC Distribution-MPPT

-450*450*600mmm(LWH)

3.Integrated System

Integrated system



Integrated Power system combines Solar/Wind/Grid/D.G/Battery/other energy sources together, and all these input sources are online standby. When prior energy is insufficient, the next energy will automatically replenish synchronously .

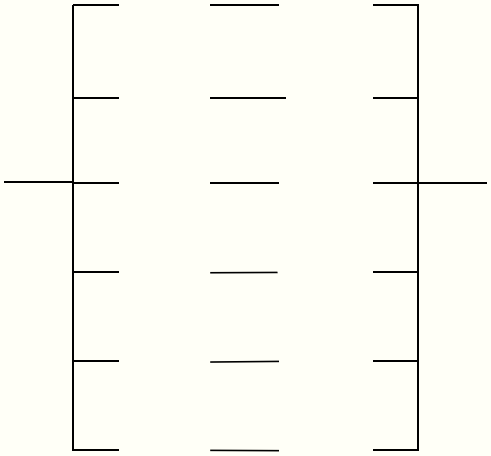
4.Exclusive Features

Exclusive Features

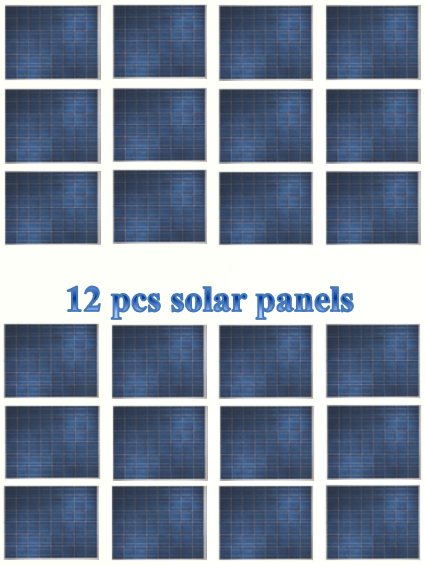
Working Voltage of PV Array : system has high reliability and easy-maintenance

low-voltage solar power system’ s solar array output voltage is similar with working voltage of load, which is always below 90V DC and it only needs 2 piece of panels connected to form a single basic power unit. High-Voltage solar power system’ s solar array output voltage is always higher than 140V DC, it needs 4-8 piece of panels connected together to form a basic power unit.

12 pcs panels, low-voltage, 6 sets of basic power units

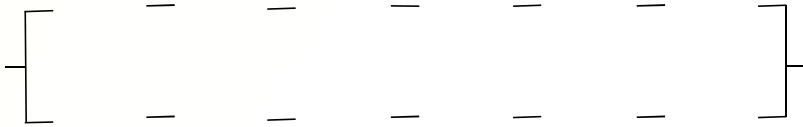


Consist of 6 sets of basic power unit



12 pcs solar panels

12 pcs panels, high-voltage, 2 sets of basic power units



Consist of 2 sets of basic power unit

Comparison

Difference High/Low voltage system

Low-Voltage system increase system reliability

With same solar capacity, low-voltage system can requires 100%-400% basic power unit more than high-voltage system. when any one basic power unit is broken, it only brings little influence to the whole system’ s reliability

Low-voltage system is easy for emergency maintenance

if malfunction occurred, only 2 panels are required to replace for low-voltage system, but, for high voltage system, 4-8 piece of panels are required to replace . Meantime, in emergent /expand job, it’ s hard than low-voltage system.

Low-voltage system ensures the outdoor maintenance more safe

high-voltage system can reach 176~360V DC, which is far dangerous for humans, east to causes 2nd damage, but, low-voltage system is less than 90V DC, no special protection measures required, convenient to install and maintain.

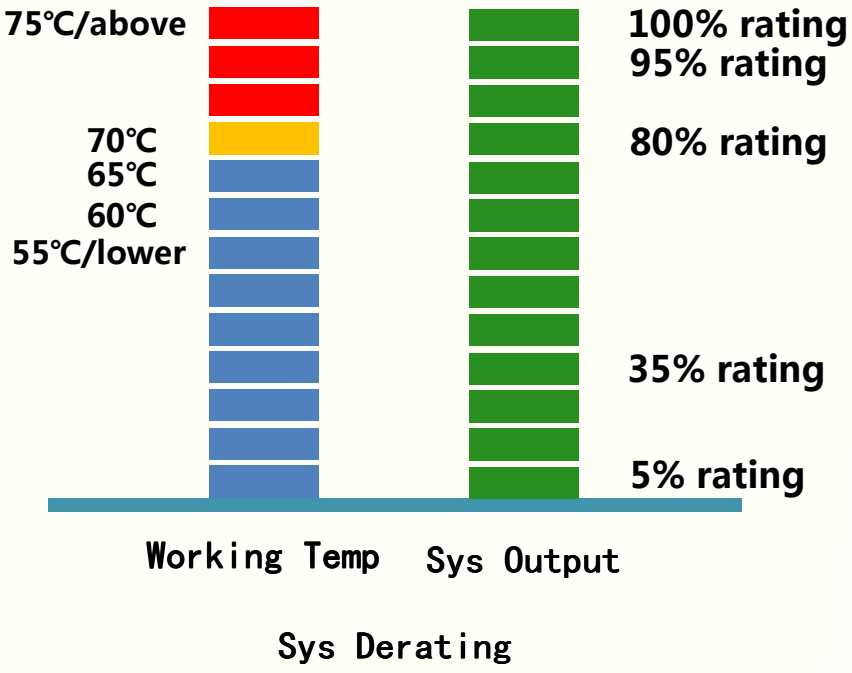
High voltage system cost is little lower

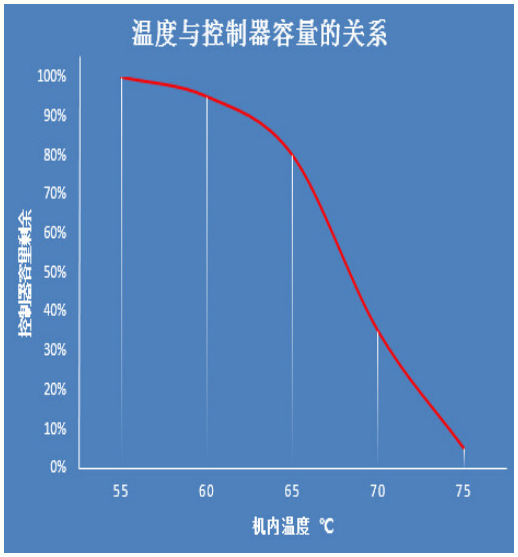
because of small input current and relevant electronics/wires, high-voltage system’ s efficiency can reach 96%. Meanwhile, low-voltage system can be 95%. That means high-voltage system has high efficiency and lower cost.

PS. Most BTS locate in remote place, any maintenance shall be much higher than +1% efficiency/cost saving. So, low-voltage has priority because of reliability.

Derating @high Temp

Derating at high temperature : increase system reliability at high temperature circumstance

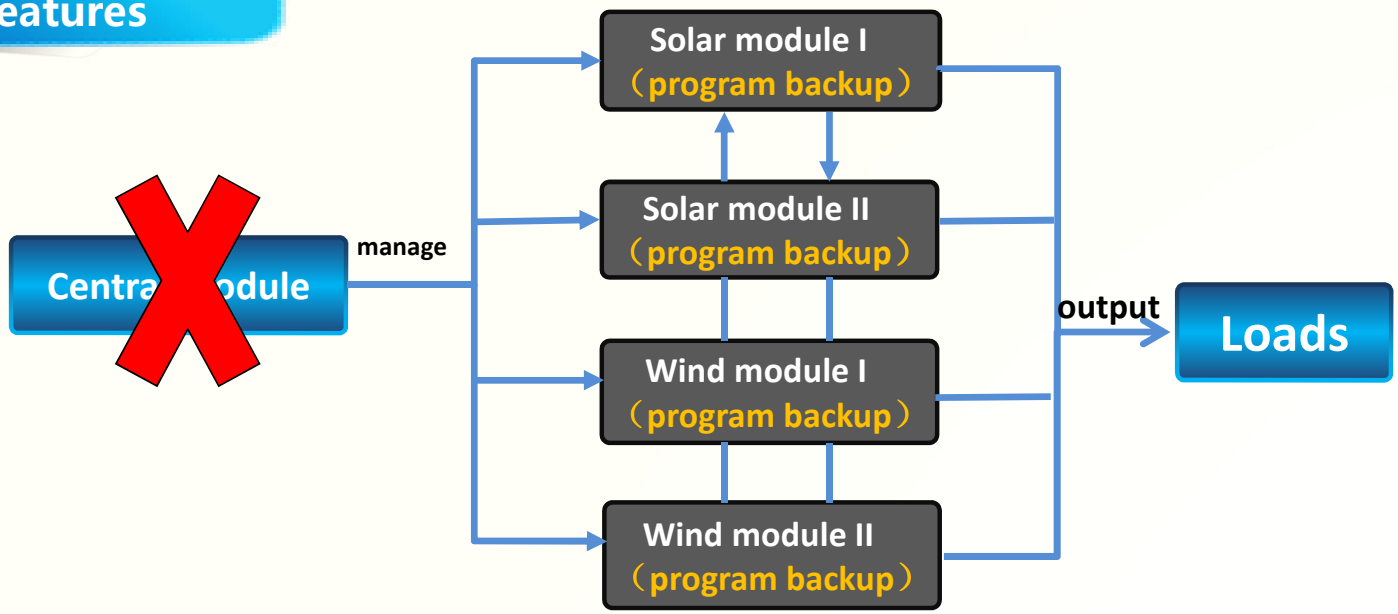




Derating at high temperature

In order to increase the system reliability at high temperature circumstance, Xintong power system designs Auto Derating function. When temperature reach set volume, system will decrease the output capacity automatically according to the real working temperature. Thus system reliability shall be kept. When temperature is above 75 Celsius degree, system will keep 5% output to the power the key loads such as CPU/Sensors for fault analysis in the future. So, It’ s very useful for hot place, like Tanzania.

Exclusive Features



Program Modular Dual Backup： Increase reliability, Reduce maintenance cost

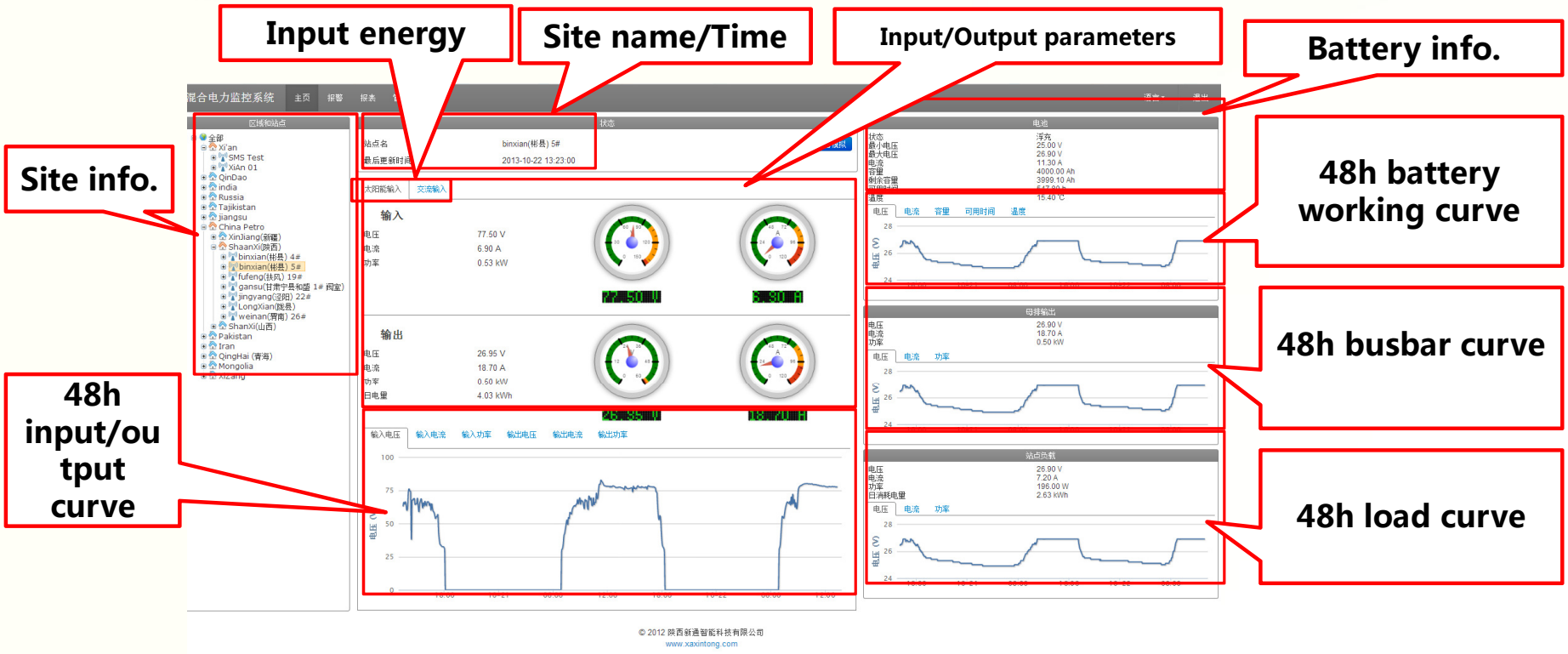
There has Program in each Solar/Wind/other modules of Xintong intelligent hybrid power system. That means, if any module, even the central control module fails, the system will automatically choose the prior module to manage the whole system as the original control module, and coordinate the power system to ensure the power supply not interrupted. This makes systems more reliable and stable and can not shut down, saving much maintenance as well.

Steward monitoring

Full Range Monitoring：Xintong Integrated monitoring system is professional, complete and compatible, can monitor all working parameters, prevent risks and increase system reliability, reducing the OPEX

Remote Communicate	Remote read system condition/alarming etc. Such as battery/breaker/power module/elements/thunder protector info. And 1st/2nd distribution/solar/wind output situation.
Remote select	Test/transfer parameters. Such as battery/load/solar array/input/output voltage/current/temperature etc.
Remote control	Remote control/set system working condition. Such as battery bulk/float shift, DG start, DG/Grid shift etc.
Remote Off/On	Remote swith on and off the modules/DG etc.

Remote system



Main window of Remote Monitoring system

Remote system



window of Remote Monitoring system

Remote system

Battery voltage

Battery current

Battery left capacity

Battery Temp.

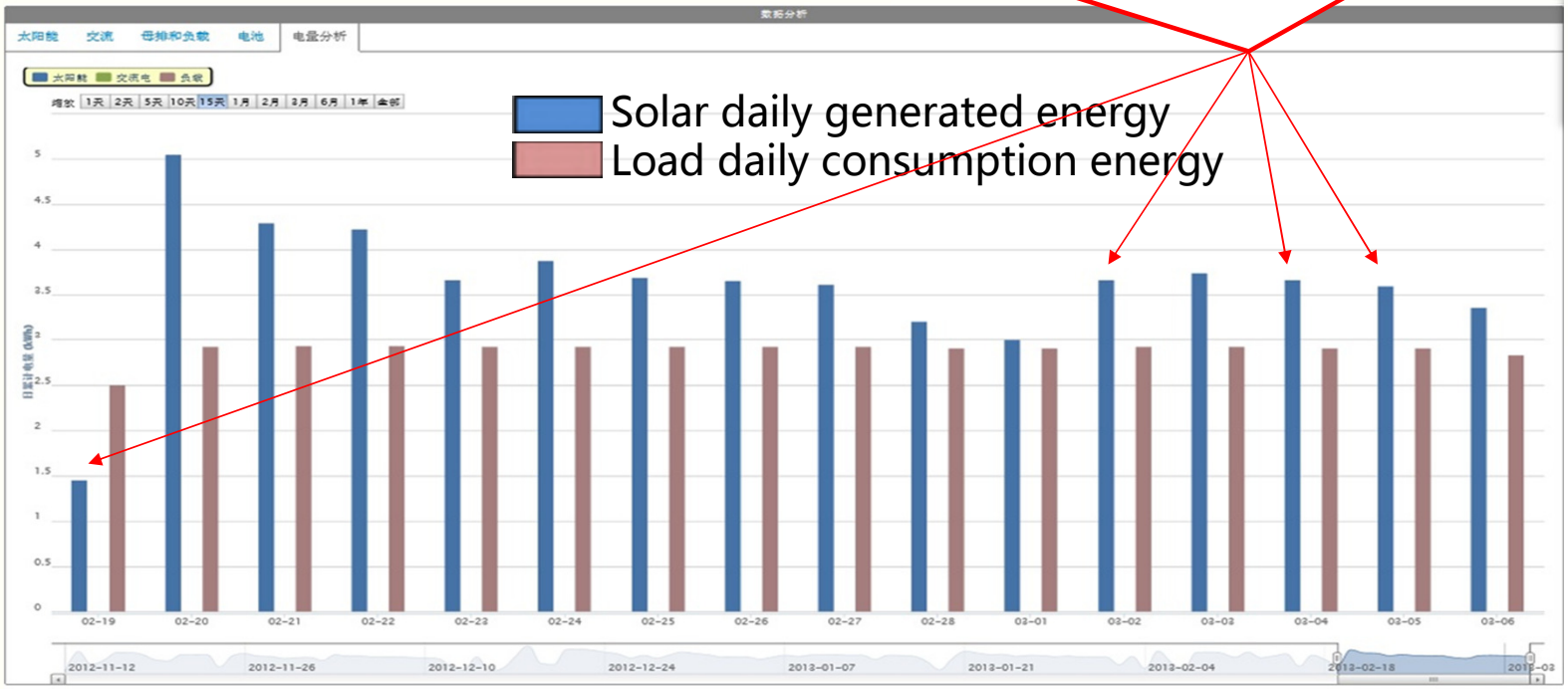


Battery real data

Battery synchronous/history data window

Remote system

When sunlight is sufficient, battery daily charging volume is almost 110% of battery daily discharge volume; when sunlight is insufficient, system will replenish the battery charging volume to 110% of its discharge in the coming next sunny days



Graph of all energy

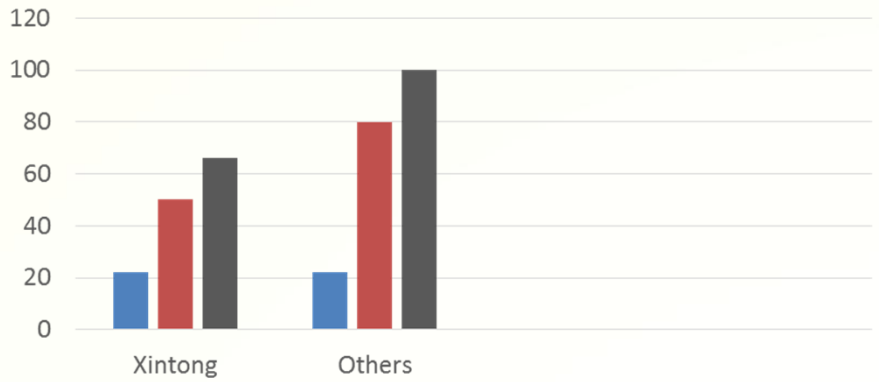
E.S.E.R Green Power High E.R



OPEX-analyze

Conclusion

Although all kinds of system’ s initial investment is almost same, The entire cost of Integrated system within its lifespan depends on Battery Change Cost and Maintenance Cost. Meanwhile, Battery change/Maintenance Cost depends on system reliability, system reliability depends on controller system. Thus, better controller decides better system and better returns on investment. So, choosing better controller is the key decision for decision-makers.



	Other sys	Xintong sys	Note
Initial invest.	22%	22%	Within power system’ s whole duty life-25 yrs
Battery change time	8	5	
Maintenance cost/year	15%	Reduce 40%	
OPEX	100%	Reduce 33%	
PS：OPEX for remote site is much more higher, even one time maintenance cost could be higher than system cost.			

6.Solution & Achievement

Solution I

Solar system

Consists of:
-PV Array
-MPPT solar module
-Battery

Features:
-High reliability
-low maintenance job
-Moderate System cost
-long duty life.



Solar system for Yushu Earthquake Disaster Relief

Solution II

Solar/wind system

Consists of
-Solar Array & Wind Turbine
-MPPT solar module, Wind module
-battery

Features
-Anti-Continuous No-Sun days
-increase system reliability
-Cost is little bit higher than solar system
-Turbine needs precious service





Solar/wind hybrid system for China Mobile Desert Road

Solution III

Solar/D.G system

Consist of
-PV Array
-Auto start D.G
-MPPT solar module
-D.G module
-Battery

Features
-Anti-Continuous No-Sun days
-increase system reliability
-365 days on line
-Best hybrid system for solar



Solar/D.G hybrid system for China UniCom's G-network

Solution IV

Solar/Wind/D.G system

Consist of
-Solar Array, Wind turbine, Auto start D.G
-MPPT solar module, Wind module, D.G module
-battery

Features
-Anti-Continuous No-Sun days
-increase system reliability
-365 days on line
-Higher Cost



Solar/Wind/D.G hybrid system for China Mobile Xinjiang Super BTS

Project Cases



THANK YOU

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