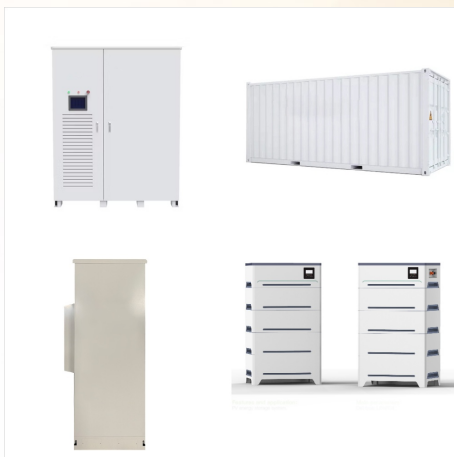




B?>>? bi???n t???n (inverter) n???ng IAE??>>?ng m???t tr?>>?i l? b?>>? chuy?>>?n ???>>?i d?ng ???>>?n (DC) tr?>>?c ti???p t???o ra b?>>?i t???m pin m???t tr?>>?i th?nh ???>>?n xoay chi?>>?u (AC) v? ho? v?o IAE??>>?i ???>>?n xoay chi?>>?u c?>>?a Qu?>>?c gia.Sau pin n???ng IAE??>>?ng m???t tr?>>?i, bi???n t???n l? thi???t b?>>? quan tr?>>?ng nh???t trong h?>>? th?>>?ng n???ng IAE??>>?ng m???t tr?>>?i.



Inverter Hybrid l? g?? Inverter Hybrid (bi???n t???n lai) l? s?>>? k???t h?>>?p c?>>?a hai lo???i bi???n t???n h?a IAE??>>?i v? bi???n t???n ???>>?c l??-p. ???y l? lo???i bi???n t???n v?>><a c? ch?>>(C)c n???ng chuy?>>?n ???>>?i ???>>?n DC th?nh AC, v?>><a c? ch?>>(C)c n???ng ???>>?u khi?>>?n s???c n???ng IAE??>>?ng v?o b?>>? IAE?u ???>>?n.



Bi???n t???n ???>>?n M???t Tr?>>?i l? bi???n t???n th?>>?c hi?>>?n chuy?>>?n ???>>?i n???ng IAE??>>?ng ???>>?n M???t Tr?>>?i ra ???>>?n xoay chi?>>?u AC ???>>? s?>>- d?>>ng trong c?ng nghi?>>?p ho???c ti?u d?ng gia ???nh. Trong ti???ng Anh hi?>>?n c? c?c thu??-t ng?>>? cho thi???t b?>>? n?y l? solar inverter, photovoltaic inverter ho???c PV inverter. Bi???n t???n ???>>?n M???t Tr?>>?i n?i chung c? nhi?>>?u c???p ???>>? ho???t ???>>ng kh?c nhau, t?y th????



B?>>? Inverter h?a IAE??>>?i b?m t???i l? m?>>?t d???ng c?>>?a inverter h?a IAE??>>?i v? c? th?m ch?>>(C)c n???ng Zero-Export ???>>? kh?ng ????(C)y IAE??>>?ng ??i?>>?n dAE? ra IAE??>>?i. N? ??AE??>>?c k???t n?>>?i b???ng d?y t?n hi?>>?u v?>>?i 1 c???m bi???n d?ng ??i?>>?n CT ho???c c?c b?>>? Meter 1 pha hay 3 pha, c?c thi???t b?>>? n?y s?? 1/2 ??AE??>>?c ?????t



Contents. 1 1. Nguy?n l? ho???t ???>>?ng c?>>?a String Inverter. 1.1 1.1 Qu? tr?nh chuy?>>?n ???>>?i ??i?>>?n n???ng; 1.2 1.2 T?>>?i AE?u h?a ??i?>>?m c?ng su???t c?>>?c ?????i (MPPT); 2 2. AE?u ??i?>>?m c?>>?a String Inverter. 2.1 2.1 Chi ph? v? hi?>>?u qu??? kinh t???; 2.2 2.2 ??AE?n gi???n ???



Inverter l? m?>>?t th?nh ph???n quan tr?>>?ng trong h?>>? th?>>?ng ??i?>>?n m???t tr?>>?i.Tr?n th?>>? trAE??>>?ng, c? ba lo???i inverter ch?nh ??AE??>>?c s?>>- d?>>?ng, bao g?>>?m: Inverter On-grid, Inverter Off-grid v? Inverter Hybrid.M?>>?i lo???i inverter n?y c? AE?u ??i?>>?m v? h???n ch??? ri?ng, ph? h?>>?p v?>>?i t?>><ng lo???i kh?ch h?ng kh?c nhau.



B???n thAE???>?ng nghe n?i v?>? Inverter xu???t hi?>?n trong c?c thi???t b?>? ?i?>?n gia d?>?ng hi?>?n ?????i nhAE? ?i?>?u h?a, t?>? I???nh, nhAE?ng b???n ??? th?>?c s?>? hi?>?u Inverter l? g?? Kh?ng ch?>? ??AE?n thu???n l? m?>?t thi???t b?>? ?i?>?n t?>?, Inverter ???ng vai tr? then ch?>?t trong vi?>?c t?>?i AE?u h?a hi?>?u su???t, ti???t ki?>?m n???ng IAE???>ng v? n?ng cao tr???i



?????u ti?n ta ph???i x?c ???>?nh inverter hybrid l? g?? Solar Hybrid inverter (M?y bi???n t???n h?a IAE???>?i c? IAE?u tr?>?) g?>?i t???t l? m?y Hybrid. Hybrid inverter l? m?>?t thi???t b?>? t?>?ng h?>?p gi?>?a 2 lo???i inverter l? inverter h?a IAE???>?i (ON ??? Grid) v? inverter ???>?c l??-p (OFF ??? Grid)



???>?i v?>?i h?>? th?>?ng ?i?>?n m???t tr?>?i, inverter l? m?>?t trong nh?>?ng b?>? ph??-n v? c?ng quan tr?>?ng m? b???n c???n ph???i l?>?a ch?>?n v? t?m hi?>?u th??-t k?>? trAE???>?c khi s?>? d?>?ng. T?y thu?>?c v?o t?>?<ng lo???i h?>? th?>?ng ?i?>?n m???t tr?>?i, ch?ng ta s?? 1/2 c? c?c lo???i inverter tAE?AE?ng ?>?(C)ng nhAE? inverter On-Grid, inverter Off-Grid v? inverter Hybrid.



Solar inverter l? g?? Solar inverter hay bi????n t????n n???ng IAE?????ng m????t tr????i l? m????t trong nh????ng thi????t b????? quan tr????ng nh????t c????a h????? th????ng thi????t b????? ???i????n m????t tr????i. ???y l? b????? ph??-n th????c hi????n chuy????n ???>?i d?ng ???i????n m????t chi????u t????< c?c t????m pin n???ng IAE?????ng m????t tr????i (DC) th?nh d?ng



Bi????n t????n inverter ???i????n m????t tr????i. Nhi????m v????? ch?nh c????a m????t chi????c bi????n t????n inverter ch?nh l? theo d?i c?ng su????t t?????i ??a c????a m????ng PV, chuy????n ???>?i ngu????n ???i????n 1 chi????u th?nh ngu????n ???i????n xoay chi????u v? ???



Inverter Fronius (?o) Ph????? Ki????n Solar. MCB Schneider; T????? ???i????n; D?y ???i????n AC-DC; DC oversize l? g?? DC oversize, hay c?n ???AE?????c g????i l? qu? k?ch c????? d?ng ???i????n m????t chi????u, l? t?nh tr????ng khi d?ng ???i????n m????t chi????u vAE?????t qu? gi????i h????n ho????c c?ng su????t ???AE?????c thi????t k???? v? quy ???>?nh cho h?????



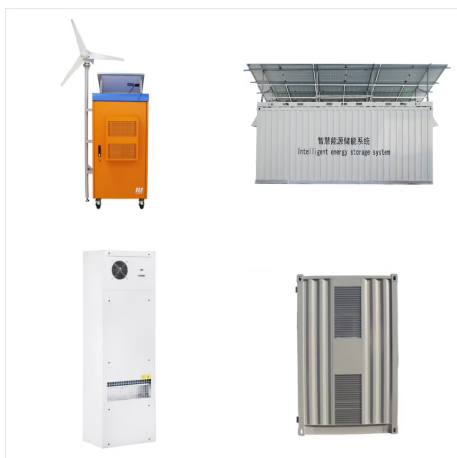
Bi??n t??n l? g?? B??>? bi??n t??n (inverter) hay b??>? k?ch ??i??>n hay m?y k?ch ??i??>n ???>?u l? nh??>ng t?n g??>i kh?c nhau c??>a m??>t thi??t b??>? c? kh??? n??ng chuy??>n ???>?i ??i??>n ?p m??>t chi??>u (DC ??? Direct Current) th?nh d?ng ??i??>n ?p xoay chi??>u (AC ??? Alternating Current). Trong h??u h??t c?c trAE??>ng h??>p, ??i??>n ?p DC ?????u v?o thAE??>ng th??p



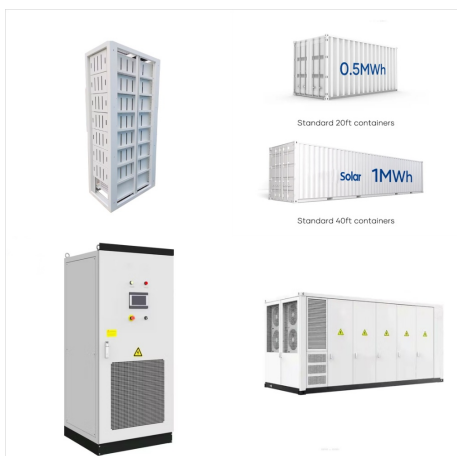
Inverter n??ng IAE??>ng m??t tr??>i c? nhi??>m v??> chuy??>n ???>?i d?ng ??i??>n m??>t chi??>u (DC) ??AE??>?c t??o ra t??< t??m pin n??ng IAE??>ng m??t tr??>i sang d?ng ??i??>n xoay chi??>u (AC), ???>? c? th??> s??- ???



Solar inverter l? g?? Solar inverter hay bi??n t??n n??ng IAE??>ng m??t tr??>i l? m??>t trong nh??>ng thi??t b??>? quan tr??>ng nh??t c??>a h??> th??>ng thi??t b??>? ??i??>n m??t tr??>i. ???y l? b??>? ph??-n th??>c hi??>n ???



Gi???i ph?p Zero Export l? gi???i ph?p gi?p
 ?????m b???o kh?ng cho IAE??>>ng ??i??>>n
 dAE? th??>><a kh?ng ch???y ra IAE??>>i
 ??i??>>n m? ch??>>? s??>>- d??>>ng ph??>>?c
 v??>>? ph??>>? t???i, thi???t b??>>? n?y
 ??AE??>>?c l???p ?????t trong h??>>? th??>>ng
 ho? IAE??>>?i b?m t???i ho???c ??AE??>>?c t?ch
 h??>>?p s??un trong Inverter Solar.H?y c?ng Ho?ng
 Gia Solar tham kh???o b?i vi???t dAE??>>?i ???y
 ???>>? bi???t



V??-y Inverter l? g?, nguy?n l? ho???t ???>>ng v?
 ?>>(C)ng d??>>ng c??>>a Inverter nhAE? th???
 n?o? B???n h?y c?ng Qu??>>nh An Solar Nha
 Trang Kh?nh H?a t?m hi??>>u ngay dAE??>>?i
 ???y nh?. Ng?y nay ??i??>>n m???t tr??>>?i ng?y
 c?ng tr??>>? n?n ph??>>? bi???n v? ??ang
 ??AE??>>?c k??>>? ???



Micro Inverter l? g?? Micro Inverter c?n
 ??AE??>>?c bi???t ?????n v??>>?i nhi??>>u t?n
 g??>>?i kh?c l? bi???n t???n vi m? hay inverter
 ph?n t?n. ???y l? thi???t b??>>? ??AE??>>?c d?ng
 ???>>? k???t n??>>?i m??>>?t ho???c m??>>?t v?i
 t???m pin m???t tr??>>?i ???>>? t???o th?nh
 m??>>?t h??>>? th??>>ng kh?p k?n. ??I??>>N
 N??NG LAE??>>?NG M???T TR??>>?I V??NG



Inverter l? g?? Bi??n t??n inverter l? thi??t
b??>? ??AE??>?c thi??t k??? cho ph?p t??o ra
??i??>n ?p v? d?ng ??i??>n xoay chi??>u
t??>< d?ng ??i??>n m??>t chi??>u ho??c
d?ng ??i??>n xoay chi??>u ?>? c??u h?nh
t??n s??>? ???



2. Ph?n lo??i: Hi??>n t??i, inverter n??ng
IAE??>ng m??t tr??>i ??AE??>?c ph?n l?m
3 lo??i l? Inverter chu??>i (String inverter),
Inverter vi m? (Micro inverter) v? Inverter chu??>i
k??t h??>p t??>i AE?u ho? (Power Optimizer).
a. Bi??n t??n chu??>i (String inverter) String
inverter l? g?? String inverter l? m??>t bi??n
t??n trung t?m ???ng vai tr? l? ?????u v?o
c??>a



V??-y solar inverter l? g?? Ngo?i ra bi??n t??n
c?n ??AE??>?c ph?t tri??>n th?nh b??> h?a
IAE??>?i n??ng IAE??>ng m??t tr??>i. Solar
inverter l? b??> bi??n t??n gi?p ngAE??>?i
ch??> s??>- d??>ng ngu??>n n??ng
IAE??>ng thu ??AE??>?c t??< nhi??>t
m??t tr??>i. Ngu??>n ??i??>n t??< m??ng
IAE??>?i ??i??>n m? to?n th??? gi??>?i ??ang
s??>-



Off-grid solar inverter ho???t ???>>ng nhAE? th??? n?o? H?>>? th?>>ng n??ng IAE??>>ng m???t tr?>>?i kh?ng n?>>?i IAE??>>?i l? h?>>? th?>>ng d?ng ??i?>>n m?>>t chi?>>u kh?ng c? k???t n?>>?i m???ng. C?c h?>>? th?>>ng nh?>>? thAE??>>ng ??AE??>>c v??-n h?nh ?>>? 12 ho???c 24 volt. ??i?>>n ?p cao hAE?n nhAE? d?ng ??i?>>n xoay chi?>>u 230V ??AE??>>c



H?>>? th?>>ng gi?nh cho inverter On-Grid. Tr?n th?>>c t???, c?c h?>>? th?>>ng ??i?>>n m???t tr?>>?i s?? 1/2 c? ch?>>(C)c n??ng kh?c nhau n???u ??AE??>>c l???p ?????t inverter kh?c nhau. Do ???, ta c? th?>>? hi?>>u r???ng, v???n ???>>? ph?n bi?>>t inverter ON-Grid v? Hybrid ch?nh l? ph?n bi?>>t c?c lo???i h?>>? th?>>ng ??i?>>n m???t tr?>>?i.



Solar String Inverter l? g?? bi???n t???n chu?>>?i ho???t ???>>ng nhAE? th??? n?o? Khi n?o s?>>-d?>>ng b?>>? bi???n t???n n??ng IAE??>>ng m???t tr?>>?i cho m?>>?i chu?>>?i module l? c? l?>>?i?



V??-y Inverter l? g?, nguy?n l? ho????t ???>>ng
c?(C)ng nhAE? ?>>(C)ng d?>>ng c?>>a Inverter
trong ???>>i s?>>ng h?ng ng?y ra sao? B?i
vi????t dAE??>>i ???y Techpal Solar s?? 1/2 gi?p
b????n hi?>>u hAE?n v?>>? c?ng ngh?>>? n?y,
m?>>?i c?c b????n ???



String inverter l? g? ? String inverter, hay c?n
g?>>?i l? bi????n t????n chu?>>?i, Gi????y
Ch?>>(C)ng Nh??-n ISO 9001:2015 C?ng Ty TNHH
Vi?>>t Nam Solar Xem Th?m M?>>?t S?>>?
S????n Ph??(C)m ??i?>>n N????ng LAE??>>ng
M????t Tr?>>?i. M?y BAE?m N????ng LAE??>>ng
M????t Tr?>>?i.



1 C?ng ngh?>>? Inverter l? g??. C?ng ngh?>>?
Inverter (c?n g?>>?i l? c?ng ngh?>>? bi????n t????n)
??AE??>>?c ?>>(C)ng d?>>ng ???>>? ki?>>?m
so?t c?ng su????t c?>>a thi????t b?>>? nh????m
tr?nh hao ph? n????ng IAE??>>ng kh?ng ???ng c?..
Inverter ch?>>? y???u d?>>a v?o c?c board
m????ch ti?n ti????n ??AE??>>?c s????n xu????t v?
ph?t tri?>>n b?>>?i Nh??-t B????n.. Nguy?n t????c
c??n b????n c?>>a c?ng



Hybrid inverter l? g?? Hybrid inverter l? m??>>t thi??t b??>? ??i??>>n t??>- c? kh??? n??ng k??t n??>?i v??>?i nhi??>?u ngu??>?n n??ng IAE??>>ng kh?c nhau nhAE? ??i??>>n IAE??>>?i, pin n??ng IAE??>>ng m??t tr??>?i, m?y ph?t ??i??>>n ho??c b??>? IAE?u tr??>? n??ng IAE??>>ng. Thi??t b??>? n?y c? th??>? chuy??>?n ???>?i d?ng ??i??>>n xoay chi??>?u (AC) sang



MPPT l? g?? MPPT l? b??>? chuy??>?n ???>?i ??i??>>n t??>- v??>?i m??>?c ???ch ch?nh l? t??>?i AE?u h?a s??>? ph? h??>?p gi??>?a c?c t??m pin m??t tr??>?i c?ng ???c quy n??ng IAE??>>ng m??t tr??>?i. ???>? hi??>?u chi ti??t v??>? thu??-t ng??>? n?y, m??>?i b??n ???>?c theo d?i b?i vi??t dAE??>>?i ???y c??>?a V?? SAE N SOLAR. MPPT l? g?



Solar String Inverter l? g?? bi??n t??n chu??>?i ho??t ???>>ng nhAE? th?? n?o? Khi n?o s??>- d??>ng b??>? bi??n t??n n??ng IAE??>>ng m??t tr??>?i cho m??>?i chu??>?i module l? c? l??>?i Theo nhi??>?t ???>?, b??>(C)c x?? m??t tr??>?i v? c?c t??m pin b??>? che b?ng s?? 1/2 cung c??p m??>?t hi??>?u su??t n??ng IAE??>>ng kh?c nhau, ??i??>?u ??? d??<n ?????n t??>?n th??t c?ng su??t trong c?ng



Nguy?n l? ho????t ???>?ng Solar inverter hybrid, inverter h?a IAE??>?i c? d??>? tr??>?, c? kh??? n??ng ch???y ???>?c l??-p v??>?i ngu??>?n ??i??>?n IAE??>?i (ch???y backup/ UPS). ?????u ti?n ta ph???i x?c ???>?nh inverter hybrid l? g?? Solar Hybrid inverter (B??>? ngh??>?ch IAE?u ??i??>?n m???t tr??>?i h?a IAE??>?i c? IAE?u tr??>?), ??>? b?i vi??t



1. Micro Inverter l? g? Micro Inverter hay c?n g??>?i l? bi??n t??n vi m?, l? lo??i thi??t b??>? d?ng ???>? k???t n??>?i v??>?i m??>?t ho???c m??>?t v?i t???m pin m???t tr??>?i t???o n?n m??>?t h??>? th??>?ng ??i??>?n m???t tr??>?i kh?p k?n. Ch?ng bi??n ???>?i d?ng ??i??>?n m??>?t chi??>?u (DC) t??>< c?c t???m pin th?nh d?ng ??i??>?n xoay chi??>?u (AC) ???>? c? th??>? cung c???p cho