



MEDIUM-VOLTAGE POWER SKID

APEX

X2500

2.5 MW · 10–35 kV
2 × 1.25 MW DC GROUPS

2 500 kW

RATED AC POWER
2 750 kW maximum

10–35 kV

MV OUTPUT
2 500 kVA step-up

2 × 1.25 MW

DC GROUPS
6 × 215 kW per group

99 %

PCS PEAK
215 kW module

IP54

OUTDOOR
–30 ... +60 °C

WHY IT HOLDS UP

FIVE DESIGN DECISIONS

01

Straight to medium voltage

Conversion, step-up and distribution in one skid. Site work is placement and terminations.

02

Two 1.25 MW groups

Each DC bus feeds six converters. A group isolates on its own; the other keeps running.

03

Faults stay local

A converter or a group trips, not the skid. Breakers per module and per group.

04

Grid-forming ready

Virtual-synchronous-generator control supports a weak or islanded grid.

05

Cluster management

String-level control lifts usable capacity and evens out battery ageing.



CONVERSION

12 × 215 kW string PCS


SA GRID CODE · PCS MODULE

NRS 097-2-1


CONTROL

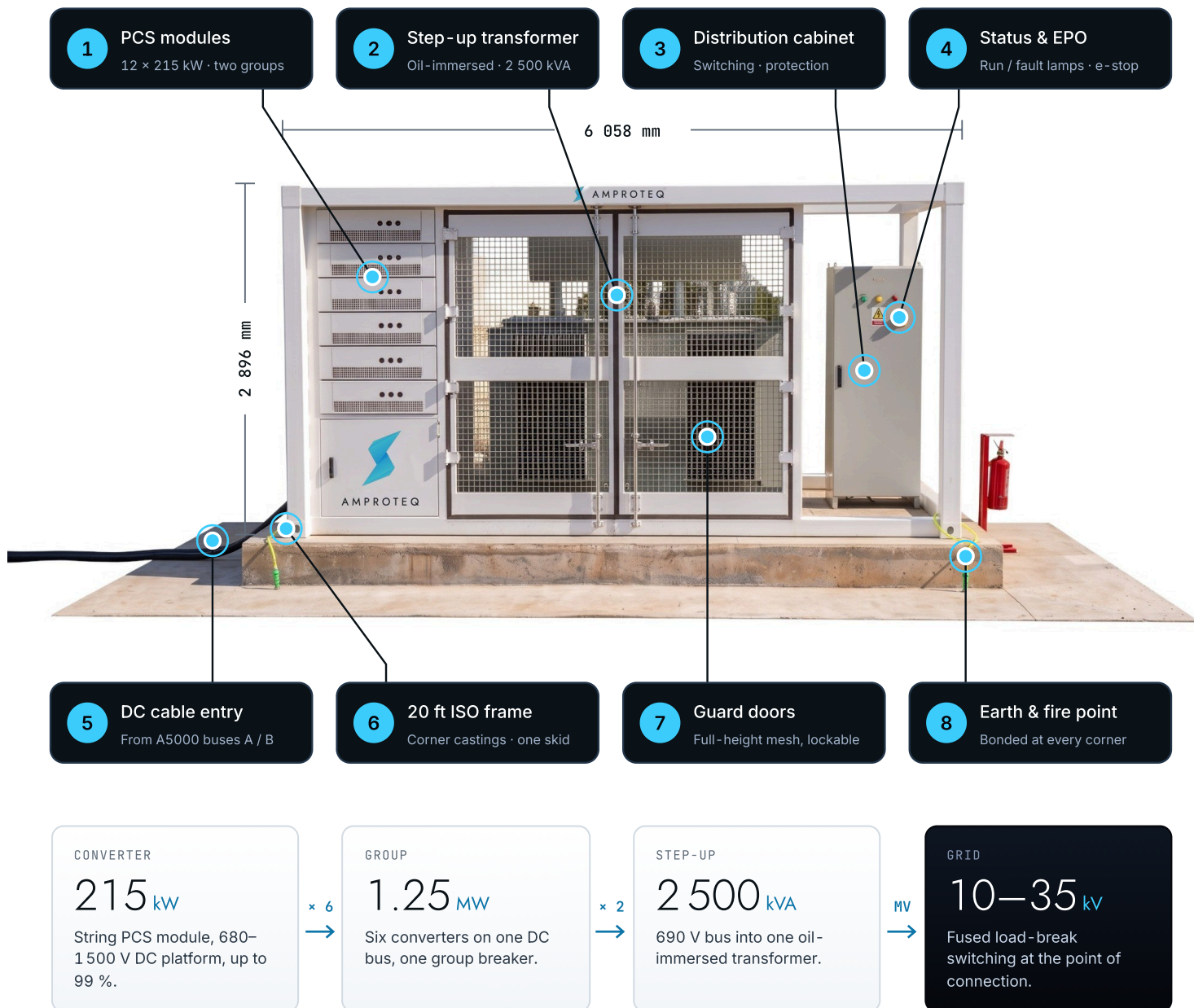
Solaris™ EMS

02 · ANATOMY

Everything between the battery and the grid.

02

One 20 ft skid carries the conversion, the step-up and the switching. It lands on a plinth, is earthed at each corner and is terminated on site.



FOOTPRINT	HEIGHT	WEIGHT	PROTECTION	AMBIENT
6 058 × 2 438 mm, 20 ft ISO	2 896 mm frame, excl. plinth	≈ 16 t complete skid	IP54 outdoor, forced air	–30 ... +60 °C derating above 45 °C

Photograph shows a typical configuration. Plinth, earthing and fire point are site scope and are drawn per project.

03 · SPECIFICATION

APEX X2500 · 2 500 kW

03

Typical configuration. Final values are fixed in the project technical agreement.

2 500 kW

RATED · 2 750 MAX

10–35 kV

MV OUTPUT

1 000–1 500 V

DC WINDOW

≈ 16 t

20 FT SKID · IP54

01 DC SIDE

Operating voltage	1 000 – 1 500 V
DC inputs	12 × 206 A · paralleled into 2 groups
Converters	12 × 215 kW string PCS, bidirectional
Groups	2 × 1.25 MW · 6 converters each
Charging method	BMS command · three-stage · MPPT
Operating modes	CC · CP · MPPT · AC or DC voltage source

02 AC LOW-VOLTAGE SIDE

Rated / maximum	2 500 / 2 750 kW
Rated grid voltage	690 V
Frequency	50 / 60 Hz ± 5 Hz
Current distortion	THDi < 3 % at rated power
Power factor	–1 leading to +1 lagging
Grid support	VSG control, grid-forming capable
PCS peak efficiency	Up to 99 % · 215 kW module

03 MEDIUM-VOLTAGE SIDE

Transformer	Oil-immersed step-up
Rated / maximum	2 500 / 2 750 kVA
Voltage ratio	0.69 / 10 – 35 kV
MV current, rated	131 A at 11 kV · 66 A at 22 kV · 44 A at 33 kV Calculated, unity power factor
MV switching	Fused load-break switch · surge arresters · voltage indication

04 ENCLOSURE & ENVIRONMENT

Enclosure	20 ft ISO frame skid, IP54
Dimensions (W × D × H)	6 058 × 2 438 × 2 896 mm
Weight	≈ 16 t
Operating temperature	–30 ... +60 °C · derating > 45 °C
Relative humidity	0 – 100 %, non-condensing
Altitude	3 000 m · derating > 3 000 m
Cooling	Forced air

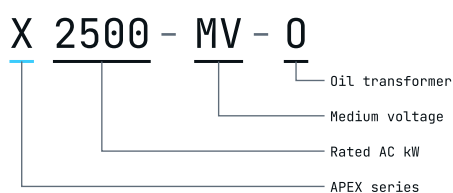
05 CONTROL & COMMUNICATION

Energy management	Solaris™ EMS
Communication	RS-485 / CAN / Ethernet
Battery interface	Cluster management, BMS command
Applications	Ground-mounted storage · C&I plants · utility nodes

06 PCS MODULE · TESTED TO

NRS 097-2-1	EN 62109	IEC 62477	EN IEC 61000
EN 62920	EN 50549-1 / -2	VDE-AR-N 4110	NC RfG
G99	G100	IEC 61727	IEC 62116
SunSpec	FD C11-519-12		

MODEL CODE



SCOPE OF SUPPLY

PCS modules, LV distribution, step-up transformer, MV switching and the EMS interface, factory-integrated and tested before dispatch. Battery, MV cabling and civil works are scoped per project. Certificates apply to the 215 kW PCS module; skid-level tests per project.

Size your plant.

Send the grid offer and the dispatch you need. We return the block count, skid layout and single-line diagram.

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04 · SINGLE-LINE

Two groups, one step-up.

The A5000's twelve clusters land on two DC buses. Each bus feeds six 215 kW converters: two 1.25 MW groups on one 690 V bus.

FIG 04-1 · SYSTEM SINGLE-LINE

A5000 → APEX X2500 → GRID · SIMPLIFIED

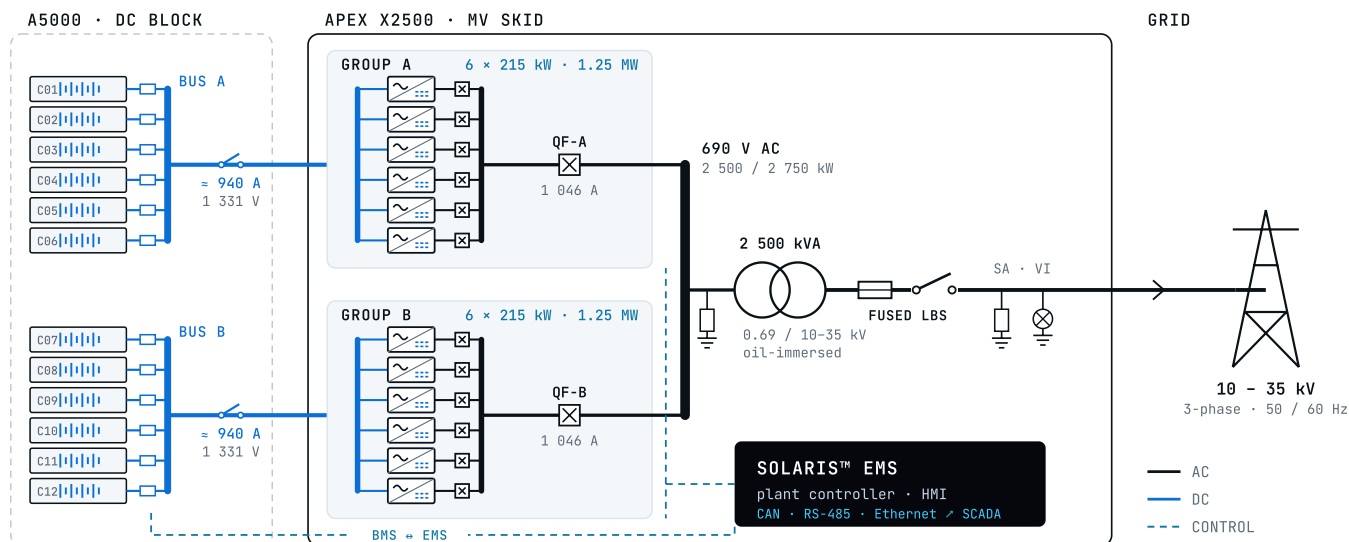
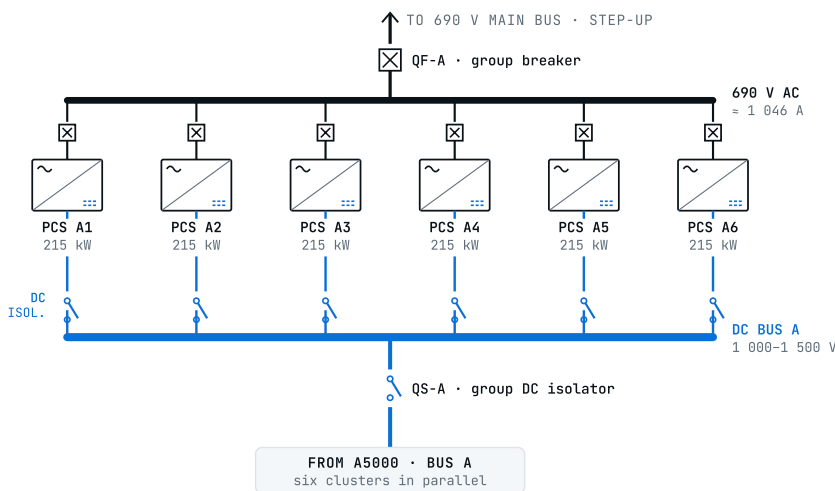


FIG 04-2 · ONE 1.25 MW GROUP

GROUP A SHOWN · GROUP B IDENTICAL

PER GROUP

× 2



Rated power	1 250 kW
Converters	6 × 215 kW
DC source	A5000 bus A / B
DC voltage	1 000 - 1 500 V
DC current	≈ 940 A at 1 331 V
Per converter, DC	≤ 206 A
AC current, 690 V	≈ 1 046 A
Per converter, AC	≈ 180 A
Isolation	QF group · QS DC

MV CURRENT AT 2 500 KVA

A

11 kV	131 A
22 kV	66 A
33 kV	44 A

ISOLATION

TWO LEVELS

Per converter: an AC breaker on the 690 V side and a DC isolator on the bus side, so one module comes out alone.

Per group: QF on the AC side and QS on the DC side take a whole 1.25 MW group out while the other runs.

READING THE FIGURES

Currents are calculated at rated power and unity power factor; cluster voltage is the A5000 nominal of 1 331 V.

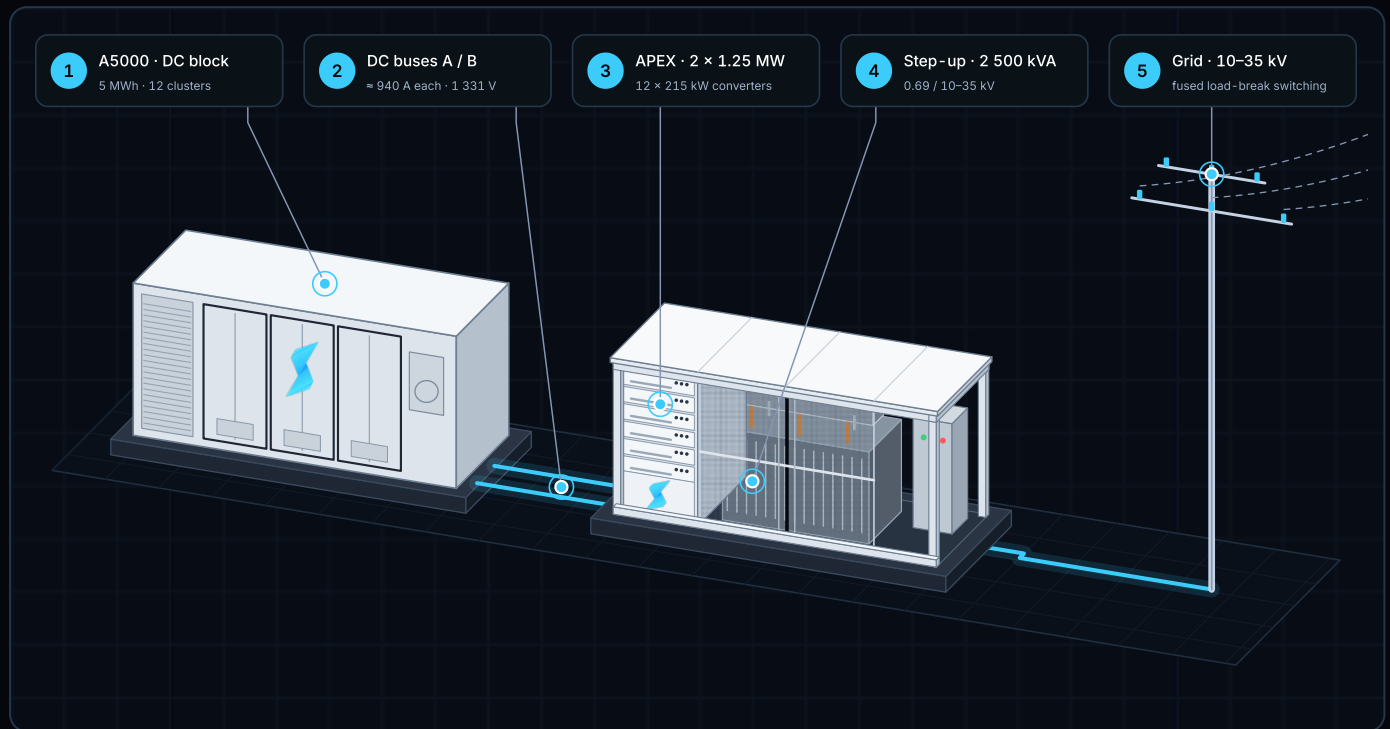
Protection devices are indicative. The project single-line diagram fixes ratings and settings.

05 · IN THE PLANT

One APEX, one A5000. Every plant is a count of them.

05

5 MWh behind 2.5 MW: the A5000's two DC buses feed the APEX's two groups. Larger plants add pairs on an MV collector, under one Solaris controller.



2500 kW
RATED, 2 750 MAX

5016 kWh
RATED, 12 × 418 KWH

1.94 h
AT 2.5 MW · USABLE, BOL

2 × 6
DC BUSES × CONVERTERS

FIG 05-2 · OPERATING ENVELOPE

FULL · DERATED · WINDOW



PLANT SCALING

MV CURRENT, A

BLOCKS	POWER	ENERGY	11 KV	22 KV	33 KV
1	2.5 MW	5.0 MWh	131	66	44
2	5.0 MW	10.0 MWh	262	131	87
4	10.0 MW	20.1 MWh	525	262	175
8	20.0 MW	40.1 MWh	1050	525	350
20	50.0 MW	100.3 MWh	2624	1312	875

Calculated at rated power, unity power factor. Grey: collector current that favours a higher voltage.

01

One controller

Solaris™ EMS dispatches every block against tariff, demand limit and the grid agreement.

02

Open protocols

Modbus TCP / RTU to SCADA, IEC 60870-5-104 and IEC 61850 to the utility.

03

Grid duties

Power factor, export limits and grid-forming support held as constraints at the point of connection.

06 • NEXT STEPS

From grid offer to energised.

06

Four steps from your site data to a block on the grid. We size the plant to the connection you have and the dispatch you need.

01

Site & grid data

Grid connection offer, twelve months of interval data, tariff and a site plan.

02

Technical solution

Block count, APEX layout, single-line diagram and the dispatch case.

03

Delivery

Factory-integrated APEX and A5000, tested before dispatch, set on prepared plinths.

04

Energise

Terminations, grid-code tests, then Solaris™ EMS takes over dispatch.

WHAT TO SEND

01

- ✓ Grid connection offer and NMD
- ✓ 12 months of 30-minute interval data
- ✓ Tariff and demand-charge schedule
- ✓ Site location and plinth area
- ✓ The dispatch you need: hours, peaks, backup

WHAT YOU RECEIVE

02

- ✓ Preliminary technical solution
- ✓ Single-line diagram and general arrangement
- ✓ Datasheets and PCS module certificates
- ✓ Dispatch model on your own load data
- ✓ Offer with warranty terms

THE RANGE

ONE FAMILY

A1000 – A6250

Containerised battery storage

A5000

5 MWh DC block · pairs with APEX

APEX X2500

2.5 MW medium-voltage skid

Solaris™ EMS

Plant controller and dispatch

TALK TO US

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