



Redundant off-grid solar power for a remote exmouth deployment

Containerised three-phase power and water treatment, designed for reliable remote operation.



PROJECT SNAPSHOT

Exmouth, Western Australia | Off-grid solar power and water treatment

24 kVA

Continuous three-phase Power

51.2 kWh

Usable Lithium Storage

20 kW

Solar Generation Capacity

2x BMS

Redundant Battery Management



Dual battery banks and power control

THE CHALLENGE

Remote infrastructure depends on reliable power for critical loads, often in places where technical support is not immediately available.

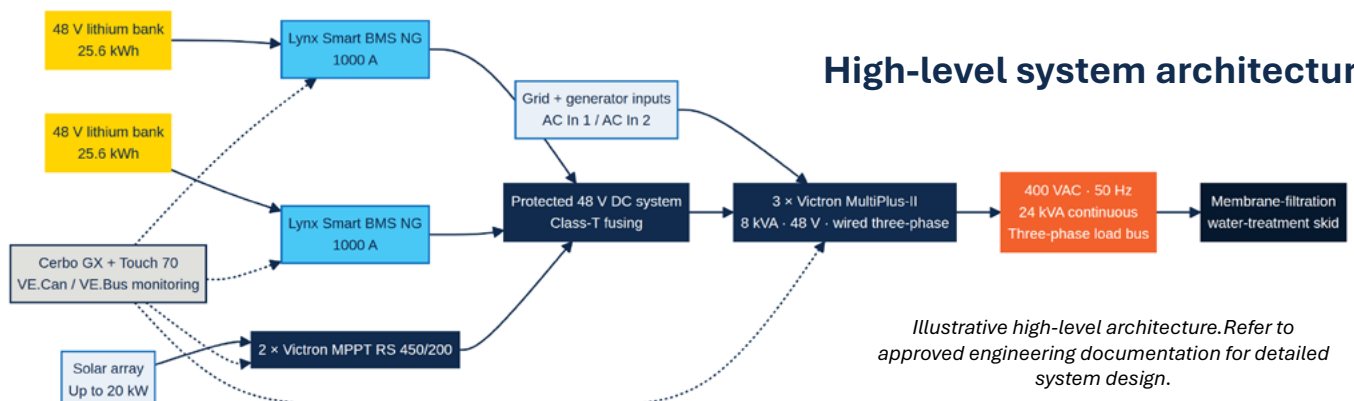
For this remote Exmouth application, the requirement was to deliver resilient off-grid power within a compact 20-foot container. The system needed to provide continuous three-phase power, support on-board water treatment and remain dependable where specialist support may take days to reach site.

THE SOLUTION

MI Battery Engineering developed a reference design combining solar generation, 51.2 kWh of lithium storage, grid and generator inputs, control and protection in one 20-foot container. Three Victron MultiPlus-II units operate as a 400 VAC three-phase set, supported by twin MPPT controllers and Cerbo GX supervision.

Built and commissioned with Mining Industrial Electrics.

High-level system architecture



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Subsystem	Equipment	Configuration
Inverter / charger	3 × Victron MultiPlus-II	8 kVA · 48 V · three-phase
Battery management	2 × Lynx Smart BMS NG 1000A	Redundant mode · one per bank
Energy storage	2 × 48 V lithium banks	25.6 kWh each · 51.2 kWh usable
Solar control	2 × Victron MPPT RS 450/200	Up to 20 kW solar generation
System control	Cerbo GX + Touch 70	<u>VE.Can</u> / <u>VE.Bus</u> monitoring
DC protection	Class-T power-in fusing	315 A / 500 A / 250 A bus ratings
AC inputs	Grid + generator	AC In 1 / AC In 2 auto-blend
Output	Three-phase load bus	400 VAC · 50 Hz · 24 kVA continuous

CONTINUITY BY DESIGN

The system uses two independent 48 V lithium banks, each with its own Lynx Smart BMS NG 1000A. If one BMS is unavailable, the second bank can continue delivering power.

For a remote application, this distinction can separate an individual component fault from a full outage.

WHY IT MATTERS

- **Continuity:** Two independent BMS equipped batterybanks reduce reliance on any one BMS.
- **Compact delivery:** power and membrane filtration water treatment are packaged in one 20-foot container.
- **Energy flexibility:** solar generation, lithium storage, grid and generator inputs operate as one coordinated system.



Distribution and control equipment



EV charging provision

THE INTEGRATION

The electrical wall is paired with a membrane filtration water-treatment skid in the same 20-foot enclosure. Internal split-system air conditioning supports the commissioning environment before the unit heads to site.

TALK TO MI BATTERY ENGINEERING

Engineering an off-grid solar power system for a remote or mission-critical application?



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