

# CAT<sup>®</sup> ENERGY STORAGE HYBRID MICROGRID SYSTEM

**ENGINEERED BY CATERPILLAR.  
DELIVERED BY EPSA.**



**Energy Power  
Systems**



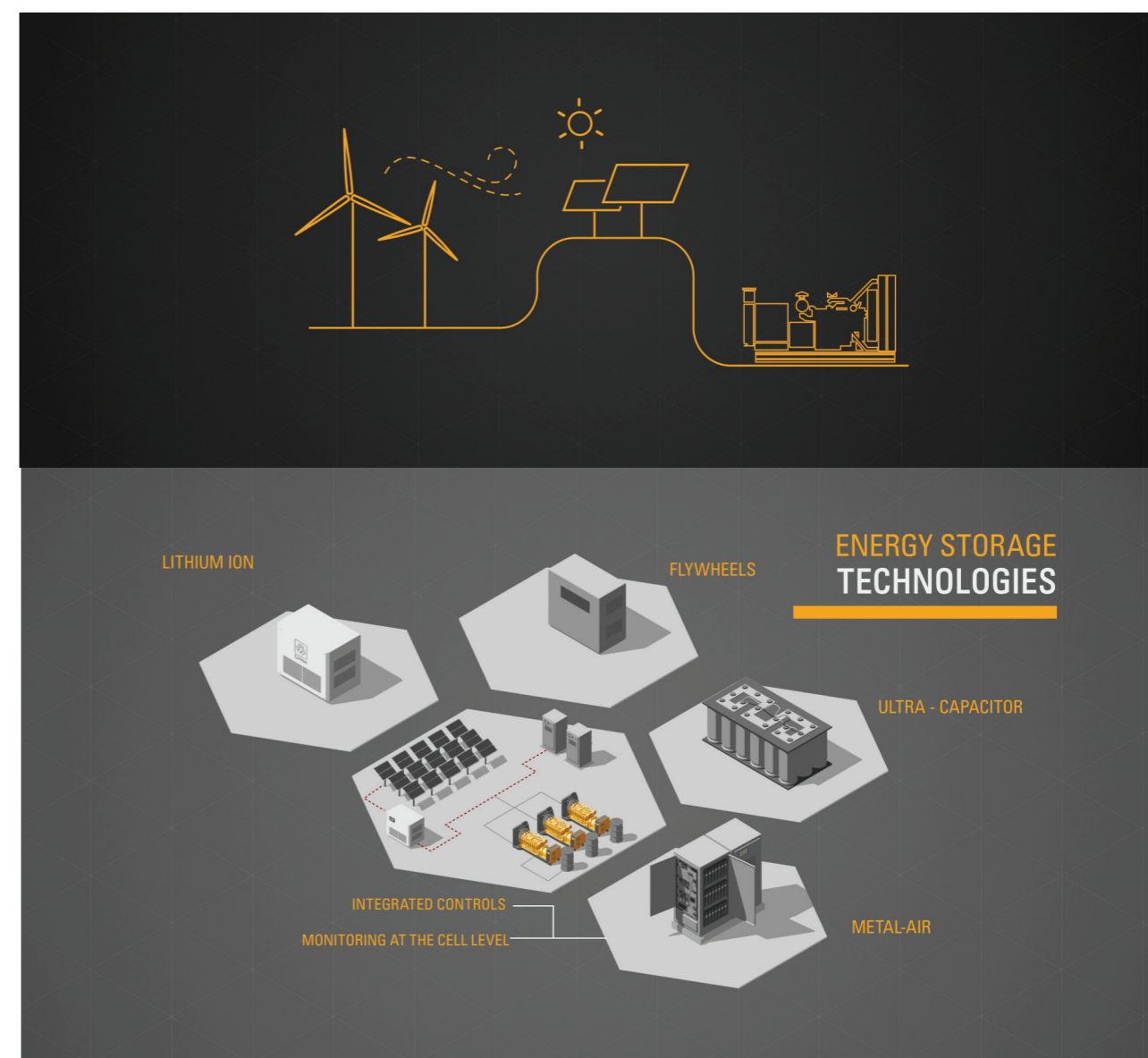
# DISCOVER THE POWER OF THE CAT® HYBRID MICROGRID SYSTEM

POWERING SUSTAINABLE PROGRESS. EVERYWHERE. ALL THE TIME.



Caterpillar is leading the integration of renewable power with smart energy storage and conventional diesel or gas-fuelled power generation. As global fuel prices fluctuate and renewable technologies become increasingly more sophisticated, the Cat® Hybrid Microgrid System delivers a fully customisable and scaleable hybrid power solution to meet your power needs today and for future expansions.

- » Significantly reduce your fuel expenses
- » Decrease harmful emissions
- » Lower your total cost of ownership
- » Achieve favourable payback periods
- » Experience clean, cost-effective electricity



## THE CAT® HYBRID MICROGRID SYSTEM

- » Increased energy efficiency with no reliance on the grid and optimal total cost of ownership
- » Efficient power that can be produced where and when it is needed without transmission lines and transformer losses
- » High performance, scaleable system designed and built using standardised building blocks that are easy and quick to install even in challenging environments

# INTRODUCING CAT® GRID STABILITY MODULES

The Cat® grid stability modules are robust and scaleable energy storage systems. Each module integrates with renewable sources to provide short duration power when that source is not available. They also provide temporary backup power in the event of an outage.

## Energy Time Shift Module (ETSM)

Charges during the day and discharges at night, minimising your reliance on carbon intense fuels and grid supply.

250 kW to 1000 kW

288 kWh to 2500 kWh

50 Hz 380-415 Volt  
60Hz 380-480 Volt

10ft – 40ft containerised

## Grid Stability Module (GSM)

Helps remote sites and firing of grid facilities to overcome large load steps, and enables high penetration levels of renewable energy.

250 kW to 1500 kW

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50 Hz 380-400 Volt  
60Hz 380-480 Volt

10ft – 40ft containerised

## Energy Storage

Advanced lithium-ion batteries provide good energy density, high discharge / recharge efficiency and high cycle life.

Advanced lithium-ion batteries provide good energy density, high discharge / recharge efficiency and high cycle life.

Optional ultra-capacitors provide short duration, high power output to minimise discharge of the lithium-ion batteries and support momentary load surges.

## FEATURES

### Two System Options

Energy Time Shift Module (ETSM)  
Grid Stability Module (GSM)

### Reliable and Scaleable

Each system comprises a pre-engineered container easily installed on-site. Multiple energy storage modules can be operated in parallel for increased power output and/or to increase the battery kWh capacity.

### Renewable Integration

Each module works with an array of renewable systems including solar and wind. Seamless integration with the Cat® Microgrid Master Controller allows for maximum renewable penetration and full asset control while the grid-forming Cat® Bi-Directional Power Inverters allow gensets to be completely switched off, further reducing fuel consumption and operating costs.

### Grid Stabilisation

Each system protects against many typical power problems, including power failure, voltage sags/surges, and under/over voltage conditions.



Actual product may vary from the photo shown.

### BDP Bi-Directional Power Inverters

Cat® Bi-Directional Power (BDP) inverters provide exceptional reliability and durability and feature intelligent controls for the charging and discharging of the energy storage equipment. They also include static VAR compensator, full four-quadrant output power factor control, automatic anti-islanding, and are parallel-ready (multiple modules may be used in parallel to increase total output).

### Australia-wide and Global Product Support

Cat® dealers provide extensive post-sale support including maintenance and repair agreements from over 1,800 dealer branch stores operating in over 180 countries, with over 100 Cat® dealer locations across Australia.

### Standard Equipment

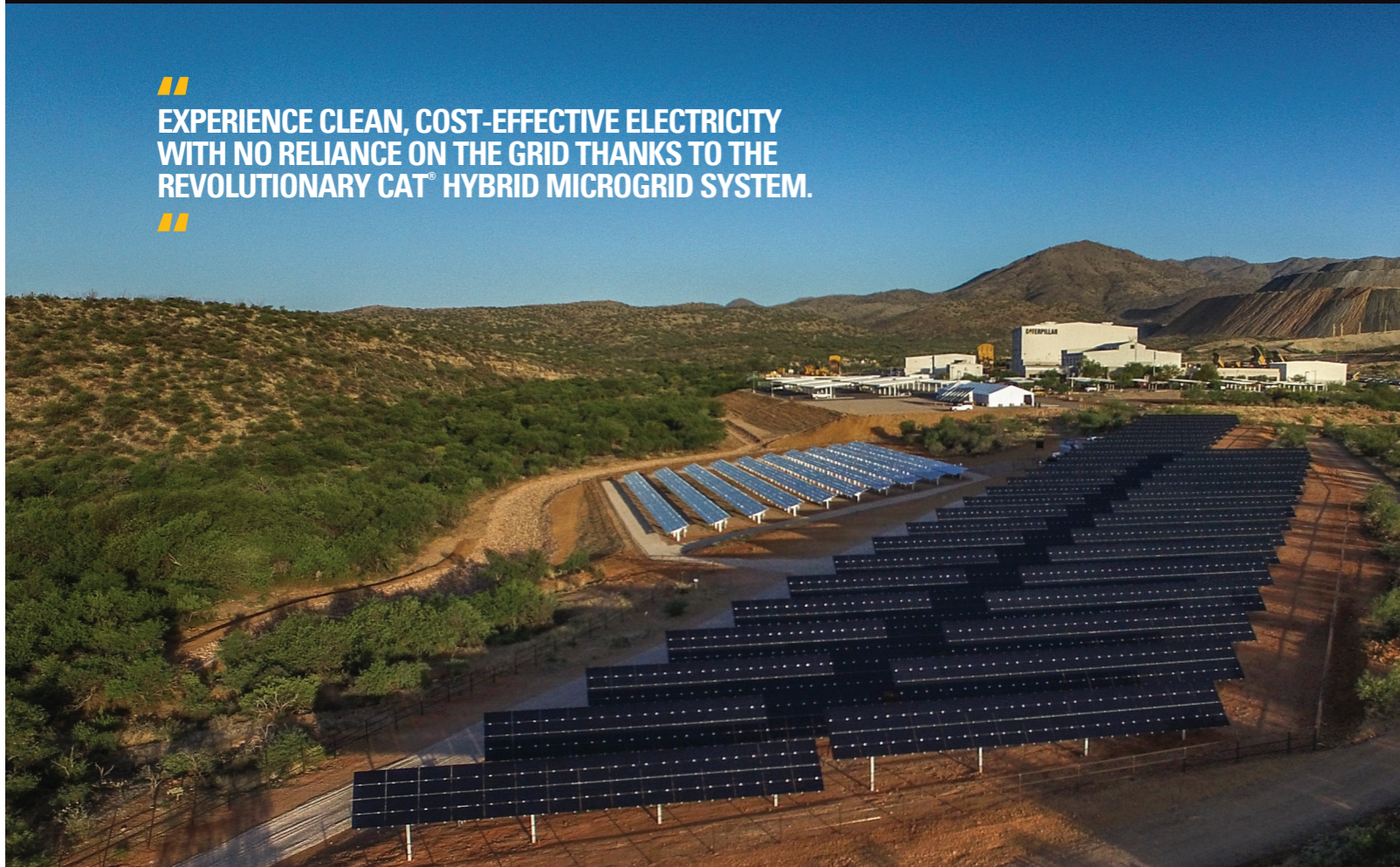
- » Cat® BDP250 Bi-Directional Power Inverters
- » Energy storage batteries
- » Colour HMI touchscreen
- » Remote communications via Modbus TCP
- » HVAC system to maintain 15°C to 27°C (60°F to 80°F) interior temperatures
- » Interior AC lighting and convenience receptacles
- » Fire suppression system



# EXPERIENCE THE CAT<sup>®</sup> HYBRID MICROGRID SYSTEM WITH EPSA

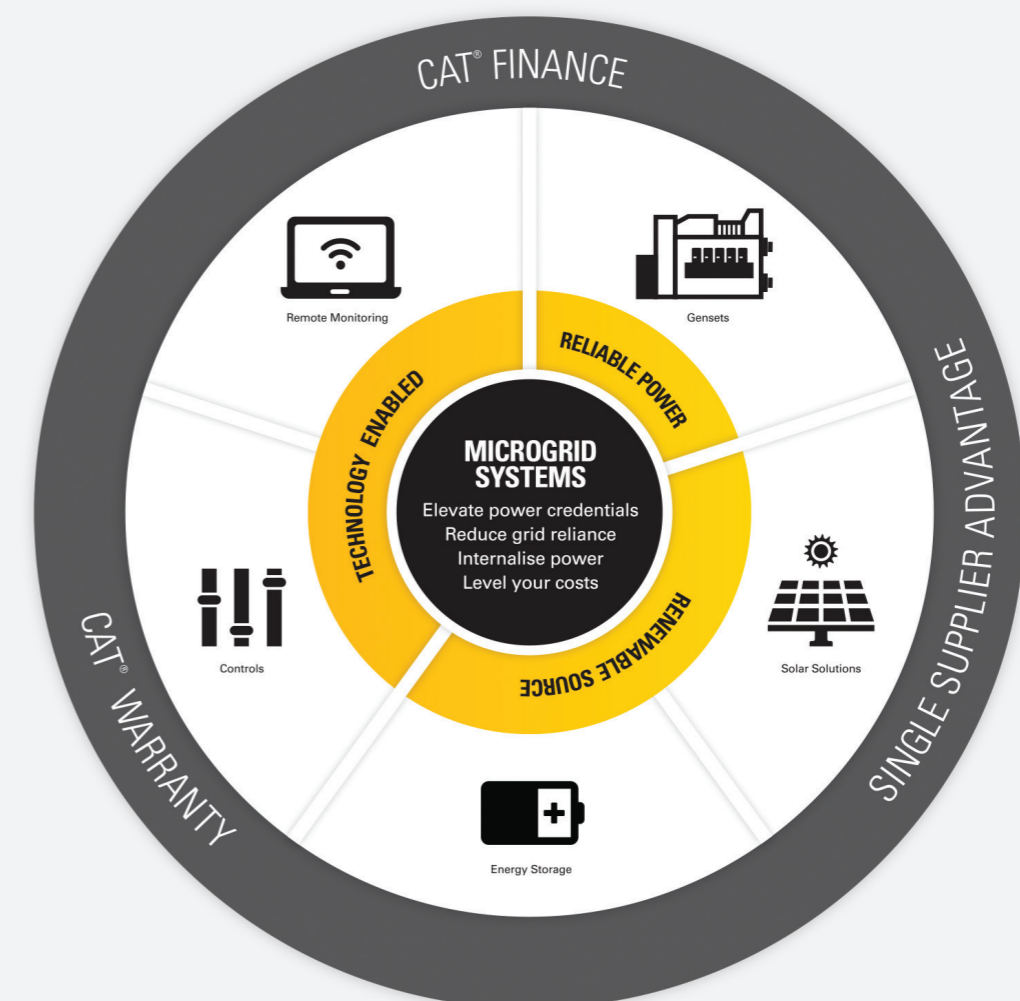
EPSA is proud to be the exclusive Australian distributor of the full range of the Cat<sup>®</sup> Hybrid Microgrid System from 10 kW–100 MW. And we're with you at every phase of your project, from the delivery of your complete turnkey or design-to-order solution to the service and maintenance from your local Cat<sup>®</sup> dealer, with available parts in Australia and product upgrade options.

“  
EXPERIENCE CLEAN, COST-EFFECTIVE ELECTRICITY  
WITH NO RELIANCE ON THE GRID THANKS TO THE  
REVOLUTIONARY CAT<sup>®</sup> HYBRID MICROGRID SYSTEM.  
”



## THE CAT<sup>®</sup> / EPSA DIFFERENCE

EPSA is the only fully integrated service provider of hybrid systems in Australia. We offer purpose-built products, a turnkey solution and project services, Cat<sup>®</sup> Finance purchase options, service agreements and a Cat<sup>®</sup> warranty - all backed by Caterpillar<sup>®</sup>.



### SMART SYSTEMS

We supply the full range of integrated Cat<sup>®</sup> Power Systems solutions that provide primary and auxiliary power for marine, industrial, electric power, and oil and gas applications.

### SMART SOLUTIONS

Customised turnkey solutions encompassing engineering, installation and commissioning, testing, in-house design and manufacture of control systems.

### SMART SUPPORT

Our end-to-end solutions are supported by engineering, technical and after-sales servicing expertise from experienced Cat<sup>®</sup> experts and dealer partners.

# EPSA ENERGY POWER SYSTEMS AUSTRALIA

EPSA is the exclusive Cat® Power Systems dealer for Australia, Papua New Guinea and the Solomon Islands. Being backed by the Cat® Dealer network means that you are never far away from a local servicing dealer.

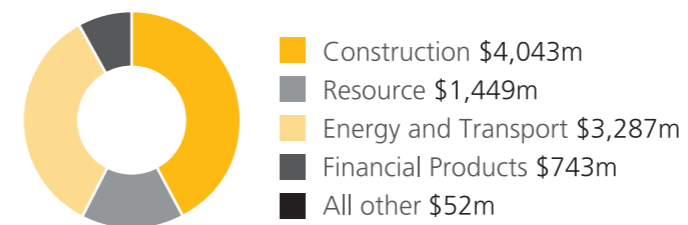
**100** LOCATIONS **2,000** SERVICE TECHNICIANS

-  RENEWABLE & HYBRID SYSTEMS
-  DIESEL, GAS & GENERATORS
-  TEMPERATURE CONTROL
-  STAND-ALONE ENGINES
-  COMPRESSED AIR
-  UNINTERRUPTIBLE & CRITICAL POWER

# CATERPILLAR®

**\$47.011** BILLION  
2015 global sales and revenues

## SALES REVENUE Q1 2016 BY SEGMENT



**\$9.461** BILLION  
Total consolidated sales and revenues



Full-time employment

**101,400** GLOBAL EMPLOYEES

COLLABORATION AND INNOVATION ARE KEY FOR CATERPILLAR®

**28,000+**  
suppliers worldwide

**3M+**  
units of Cat® product at work around the world

**\$2,165M**  
spent on R&D in 2015

**190**  
completed new product programs



**175** authorised Cat® dealers serving in over **180** countries worldwide

**GLOBAL COVERAGE, LOCAL SUPPORT.**

**CAT® DEALERS  
FOR PRODUCT SUPPORT**

**CAVPOWER**

T +61 8 8139 4420  
www.cavpower.com

**HASTINGS DEERING**

T 131 228  
www.hastingsdeering.com.au

**WESTRAC**

T 1300 881 064 (NSW)  
T +61 8 9377 3555 (WA)  
www.westrac.com.au

**WILLIAM ADAMS**

T 1300 923 267  
www.williamadams.com.au

**CONNECT**



**ONE NETWORK.  
ONE CALL 1800 800 441**  
energypower.com.au

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F (618) 9442 8555

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Gillman SA 5013  
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F (618) 8161 1598

**Port Moresby,  
Papua New Guinea**  
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Hohola NCD  
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F (675) 323 5324

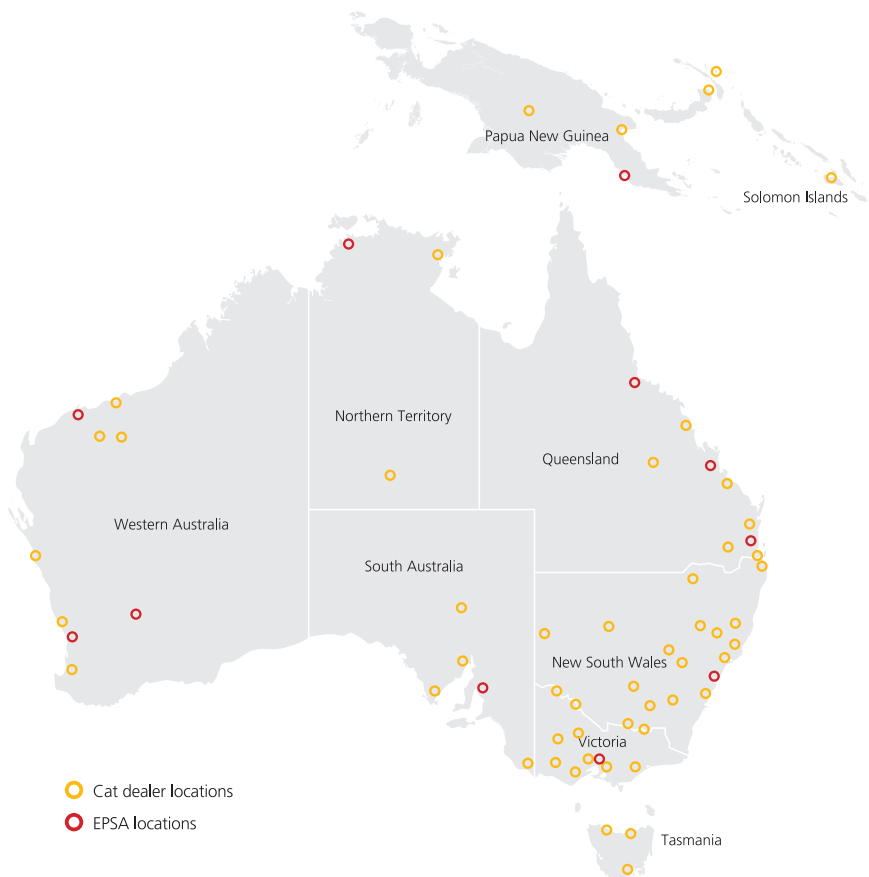
**Darwin**  
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F (618) 8932 8295

**Kalgoorlie**  
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F (618) 9022 4233

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Karratha WA 6714  
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F (618) 9183 9499

**Rockhampton**  
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Parkhurst QLD 4702  
T (617) 4927 8432  
F (617) 8427 8476

**Townsville**  
42-44 Toll Street  
Bohle QLD 4818  
T (617) 4753 3888  
F (617) 4753 3889



● Cat dealer locations  
● EPSA locations

**Energy Power  
Systems**



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