



zcell

THE UNIQUE  
FLOW BATTERY  
SYSTEM DESIGNED  
FOR YOUR HOME  
OR OFFICE

FREQUENTLY ASKED QUESTIONS





ALL YOU NEED TO KNOW



## FOR CONSUMERS

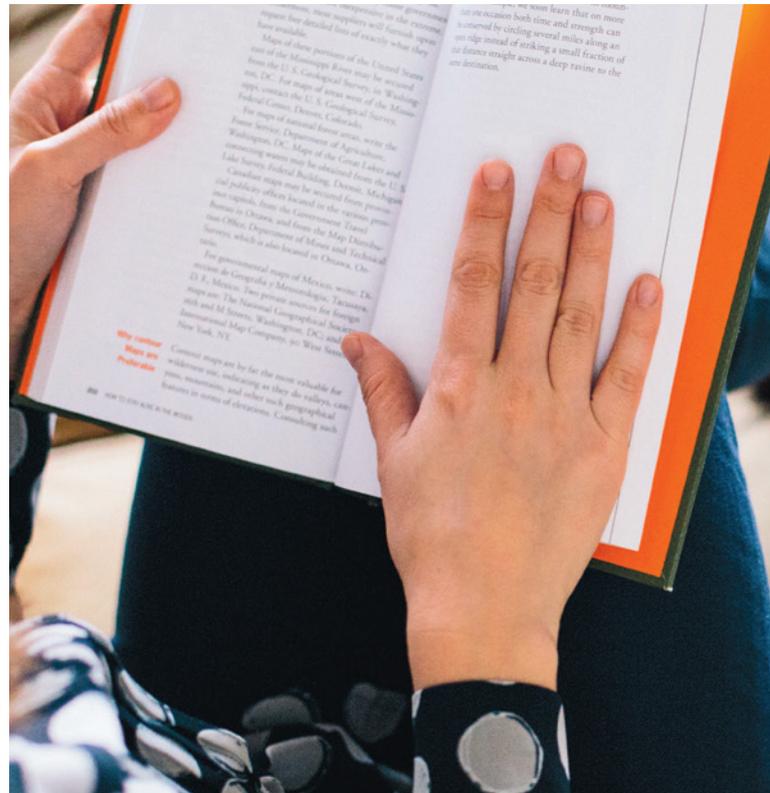
### How does a ZCell work?

ZCell is a flow battery, a new type of energy storage system without the overhead or degradation problems that can impact the performance of legacy battery types such as lithium-based or lead acid.

ZCell contains about 100 litres of a water-based zinc bromide salt solution circulating in two separate hydraulic circuits. In short, energy is stored by moving zinc around inside the battery. When charging, zinc is extracted from the zinc bromide solution and stored on a plastic membrane. During discharge, zinc is released back to the solution. With ZCell, there is no degradation to the battery when the zinc is removed from the plastic membrane at the end of each cycle, giving it a sustained, long-life energy storage capacity.

### What are the benefits of ZCell compared to other batteries?

- + ZCell delivers 100 per cent cycle depth of discharge without any risk of battery damage
- + ZCell retains its full 10 kilowatt hours of storage capacity for its expected life, unlike other battery types which lose significant storage capacity with age
- + ZCell requires no reserved capacity, unlike other battery types that reserve a portion of the battery capacity to avoid damage
- + ZCell presents no fire risk: Its bromide-based electrolyte is a natural fire retardant while mechanical damage does not risk explosion or 'thermal runaway'
- + ZCell operates at temperatures as hot as 50°C without active cooling
- + ZCell offers unlimited shelf life: You can switch off a ZCell at any state of charge, hibernate it for extended periods of time, and then restore it within 60 seconds
- + ZCell has a great recycling story, made with major components that are easy to recycle or reuse
- + ZCell is Australian-designed and developed
- + Battery manufactured by Flex, North America.



### Will I lose my Solar Feed-in Tariff if I add a battery?

Not necessarily! Most Solar Feed-in Tariff's require that you do not expand your existing solar panel setup or upgrade your solar inverter. They also require that you only feed energy into the grid directly from your solar panels. Most battery inverter/chargers can be configured to stop your battery sending energy to the grid. Instead, ZCell will deliver its stored energy only to your house for self-consumption of locally generated energy.

### Is ZCell any use to me if I do not have solar panels?

Absolutely! ZCell has many uses even if you don't have solar panels installed. Two common ways for ZCell to reduce your power costs are:

1. Use ZCell to buy energy 'low' and consume when 'high': Charge up your ZCell when energy costs are cheap - either as time-of-day 'off-peak power' or through a separate outlet on your power meter - and then use that stored energy during peak demand (and price) periods.
2. Use ZCell to avoid 'demand' charges: Many energy retailers now impose a 'demand' charge on the power bills of businesses if they consume too much energy at once. ZCell can 'shave' those peaks by meeting your energy needs before you incur those penalty costs from your supplier.



**If you have more questions  
about choosing ZCell for  
your home, please visit  
[WWW.ZCELL.COM](http://WWW.ZCELL.COM)**

## FOR CONSUMERS



### Can I use ZCell for an off-grid energy system?

You sure can. ZCell is a great battery choice for off-grid energy systems, whether they use AC inverters, are in a pure DC environment or are a bit of both. The many ways that ZCell is a technically superior battery are all very applicable to the off-grid environment.

### Who do I buy a ZCell system from?

ZCell is sold by accredited installers. Redflow does not sell directly to residential customers as ZCell is just one component of your overall home energy system. The complete system is designed and deployed for you by an installation company that services your area. Your installation company will work with you to specify the requirements of the full system you need, including ZCell, a suitable AC inverter/charger, energy monitoring devices and any solar or other required renewable generation systems.

Your installer will show you how to use your home energy system to build a more energy-independent future for you and your family. Once you accept the proposal from your installer, they will make it all happen. As Redflow accredits our system reseller/installers, we'll publish their contact details at [www.zcell.com](http://www.zcell.com). Your best first step is to register your interest with us at [www.zcell.com](http://www.zcell.com), so we can notify you when we accredit an installer in your area.

## FOR INSTALLERS

### Who is Redflow?

Redflow Limited is an Australian energy storage specialist that has developed the world's smallest flow batteries. Redflow's unique flow batteries are designed for stationary energy storage applications ranging from its ZCell home battery to its ZBM battery range for commercial, telecommunications and grid-scale deployment. Redflow is a publicly-listed company (ASX: RFX) that operates R&D facilities in Australia, as well as offices in the US and Europe. Produced in North America by Flex, one of the world's largest supply chain solution companies, Redflow's high energy density batteries are sold, installed and maintained by a global network of system integrators. Learn more at [www.redflow.com](http://www.redflow.com).

### How do I become a ZCell installer?

Redflow launched ZCell at the end of March 2016. We are now inviting interested installers to contact us at [www.zcell.com](http://www.zcell.com) to apply to install ZCell batteries as part of their energy systems. If an application is successful, we undertake a detailed training and accreditation process to enable installers to work with our battery. Once that process is complete, we will publish installer details on [www.zcell.com](http://www.zcell.com).

### Where is ZCell made?

Redflow designed ZCell's core ZBM2 flow battery, the ZCell enclosure and the ZCell Battery Management System (BMS) in Australia. The ZBM2 flow battery is manufactured in North America by Flex, one of the world's largest end-to-end supply chain solution companies. As demand grows, this enables Redflow to ramp up manufacturing rapidly to deliver readily available supplies for our installation partners.

### Who sets the price for a ZCell-based installation?

The installer sets the total system cost, depending on their customer's requirements and any additional required items, such as solar panels. Redflow does not set the total installed system price, as we supply only part of your energy storage system.

### Which battery inverters does ZCell work with?

Our intention is to work with as many inverters as possible. ZCell already works brilliantly with MultiPlus inverters from Victron [www.victron.com](http://www.victron.com). We are currently testing a range of other inverter brands in our battery lab to make sure that whichever brand of inverter you choose will work seamlessly with ZCell. We will progressively publish details of qualified inverters at [www.zcell.com](http://www.zcell.com).

FOR INSTALLERS



### Can ZCell systems be scaled up for larger requirements?

Certainly! You can design and deploy systems using as many ZCell units as you need to meet your customer's requirements. Examples of how these scaled-up deployments are built can be found under System Design Considerations in the FAQ section at [faq.zcell.com](http://faq.zcell.com)

### What is the ZCell Battery Management System (BMS)?

The ZCell BMS, included with every ZCell installation, is a small device that connects one or more ZCell batteries with your inverter/charger to provide an easy, web-based way to set up, monitor, and control your ZCell system. It also reports battery status and operational information to your AC inverter/charger in order to optimise its use of energy stored in your ZCell.

Installer-friendly features of the BMS include:

- + Easy commissioning of one or more ZCells via web browser (WiFi or Ethernet connection, smartphone or personal computer)
- + Fully managing and scheduling internal ZCell maintenance processes (configurable strategies)

- + Presents inverter/chargers with a 'Virtual Battery' Interface from one or more on-site ZCells
- + Multiple physical layer interfaces allow easy Inverter/Charger integration:
  - Dry-contact relay outputs (configurable for a variety of trigger conditions)
  - CANBus (Lithium BMS interface emulation)
  - RS485/RS232
  - TCP/IP access (http)
- + System performance status display
- + System performance graphs
- + Remote data logging and diagnostic functions (cloud-based, Internet access required), and
- + In-field software updates.



**If you have more questions about installing ZCell systems, please visit [WWW.ZCELL.COM](http://WWW.ZCELL.COM)**



The ZCell flow battery is designed by Australian Securities Exchange-listed company Redflow Limited (ASX:RFX). Redflow was founded in 2005 and has developed a unique hybrid flow battery technology.

Home energy storage:  
[WWW.ZCELL.COM](http://WWW.ZCELL.COM)