Redflow TOWER POWER

LATIN AMERICA

This case study discusses the successful installation of Redflow batteries into a telecommunications base transceiver site (BTS). The BTS is located in a remote location in Latin America, accessible via rocky road and difficult terrain. The key site issue was an intermittent grid, meaning constant site downtime equating to loss of average revenue per user (ARPU), as well as an unreliable service for the customers of the mobile network operator (MNO).

TOWER POWER CASE STUDY
REDFLOW

Redflow energy storage for telco towers, a cost effective, maintenance-free, carbon-reducing solution for on-grid or off-grid applications, which ensures MNO customer revenue and service reliability.

Project SUMMARY:

- ✓ Trial dates: August 6 – November 6, 2015
- ✓ Grid outage (site down-time without batteries): 44.60%*
- ✓ No. grid outages over trial: 180
- ✓ Grid connected (site up-time without batteries) prior to installation: 55.40%*
- ✓ Site up-time with Redflow energy storage 96.40%*, up to 100% in some weeks
- ✓ State of charge: 66.15%*
- ✓ Site temperature: 29.38°C* or 84.84°F*
- ✓ Maximum site temperature: 42.2°C or 108.32°F
- ✓ Tropical storm Erika, August 29: Site operation of 12 hours from a 21.5hour grid outage (enabled emergency communications)
- ✓ System monitoring: Redflow and MNO

*Value expressed as an average

About
THE PROJECT:

Redflow installed two zinc-bromide flow batteries or zinc-bromide modules (ZBMs) to replace a bank of twenty-four outdated lead-acid batteries already on site, which had been significantly degraded over a short period of time due to the site's constant grid outages and no active cooling.

With no other sources of power, the site experiences an average of 2-3 outages per day, often lasting about 6 hours but sometimes longer than 20 hours.

The installation process of the flow batteries was simple, due to Redflow's plug and play setup the batteries connected directly to the -48VDC telco bus.

Remote monitoring and communications via the BMS was activated and data was consistently logged and retrieved for the duration of the trial, which was viewed by Redflow and the MNO.

Using this system, the MNO was able to view valuable site analytics, while monitoring battery health and performance remotely, thereby eliminating the need for costly site visits. All of which was not possible with the previously-installed lead-acid batteries.

Monitoring showed excellent response of ZBMs in regular grid black-outs, even supporting the site through tropical storm Erika which resulted in a grid outage for 21.5 hours.

Generally, site uptime was greatly increased from 55.4% of the time when solely relying on grid power, to 96.4% of the time when operating with ZBMs.

The site regularly experienced high ambient temperatures, often exceeding 40°C (104°F) throughout the entirety of the trial.

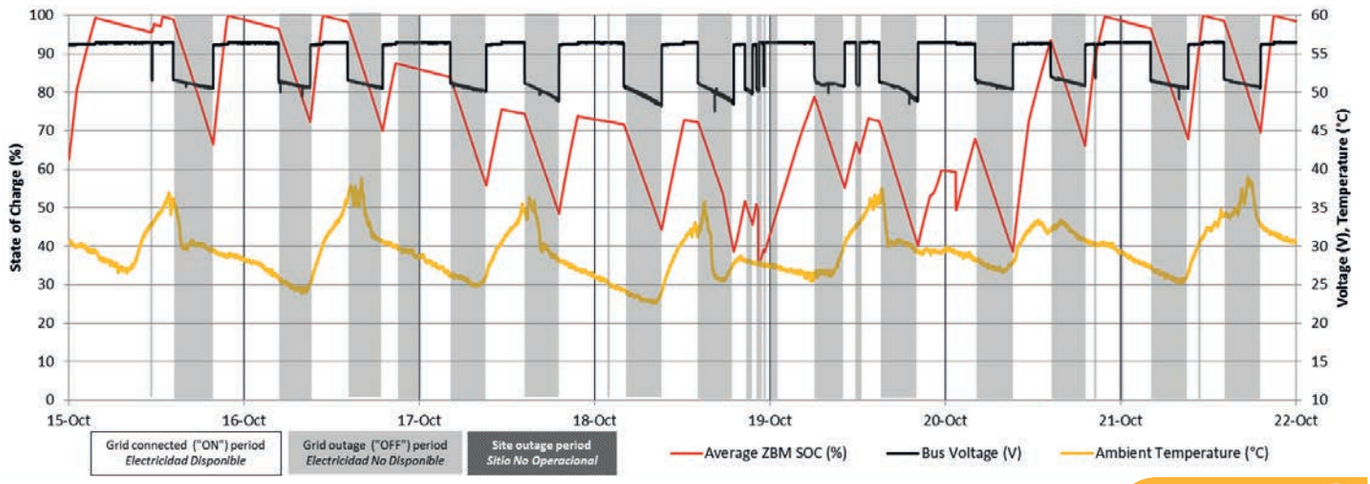
While most batteries would experience degradation or reduced performance at these temperatures, Redflow's ZBMs continued operation as usual, continuing to deliver strong back-up for the site.

The MNO was very interested in the theft-deterrent aspects of Redflow's ZBM design, in its shape and size. As well as this, the ZBM's difference in physical appearance compared to traditional lead-acid batteries. As ZBMs are operation at 48VDC this deters thieves as there are no domestic uses for this type of battery. No tampering or theft was recorded over the 3 month trial.

Not only did the ZBMs provide superior backup to this site compared to the traditional lead-acid battery solution, they also provide a more economical solution over the life of the batteries. Being maintenance free and having an increased life means ZBM's are an ideal choice for BTS sites that experience regularly intermittent grid power, especially in areas that encounter high ambient temperatures.

Furthermore, ZBMs can also save on significant costs and cut carbon emissions by reducing grid and/ or diesel consumption, when paired with or without renewable enegry sources or diesel generators.

ZBM performance, week 11



QUESTIONS?
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