

Case Study

Fuel Cell Hybrid System Powers Mobile Broadband Trailer at COP17 Event

Background

During the 2011 United Nations Climate Change Conference (COP17) in South Africa, Vodacom provided mobile broadband service for more than 15,000 visitors. In keeping with the theme of the event, Vodacom designed an environmentally friendly, quiet and energy-efficient solution to power the mobile BTS used to augment its network infrastructure and handle the increased traffic. Instead of grid power, the BTS utilized a combination of solar energy and wind power, supported by a fuel cell and deep cycle batteries.

Challenge

The goal was to provide seamless connectivity to all of the visitors using a sustainable source of energy.

Solution

Mobile BTS powered by solar and wind energy and supported by a fuel cell and deep cycle batteries.

Result

As a result the ElectraGen™ ME fuel cell system was the main power source (78%) for the mobile BTS.

This fuel cell system with fuel reformer provided 70 hours run time on one tank of fuel, 2.5 kW power output: 900 W to BTS load, 100 W to SiteStar and wind /solar controller, and 1.5 kW available for charging the batteries. This system has low carbon emissions, about half that of a diesel generator, and can be powered by renewable fuel. The ElectraGen™ ME fuel cell provided clean power operating continuously for 15 days.

Fuel Cell Overview

The ElectraGen ME fuel cell system is available in 2.5 or 5 kW, and 24 or 48 Vdc. Fuel cell systems are usually fueled direct by hydrogen, but this particular system includes a fuel reformer that converts methanol and water liquid fuel into hydrogen gas to power the unit. By using energy dense liquid fuel, the ElectraGen™ ME fuel cell system can provide backup power for days, compared to just a few hours of backup time for systems fueled by compressed hydrogen.

The ElectraGen ME fuel cell system has many features that support sustainability including reduction of carbon footprint and significant exhaust emissions savings which would normally be emitted into the atmosphere. When compared to a diesel generator, there is a 50% reduction in CO₂ and more than 95% reduction in CO, NO_x, and SO_x emissions, as well as no particulate matter (PM) emissions. In contrast to diesel generators, fuel cell systems are reliable, efficient, and a clean technology which directly supports global sustainability.



Overview

Site: Durban, South Africa

Application: Backup power for a grid independent mobile base transmission station powered by wind and solar energy

Product: ElectraGen™ ME System

Fuel: Methanol-water liquid fuel

Customer Motivations: Power a grid independent mobile BTS using clean energy sources to provide coverage for visitors to the 2011 United Nations Climate Change Conference in South Africa