

# Hybrid Power System

Microwave Repeater Site in Western Mozambique



**This is the site of a microwave backbone, rural radio and external line plant in the northern province of Tete in Western Mozambique.**

Thirteen Hybrid Power Systems (HPS), installed on mountain tops in rural Mozambique, power a series of microwave telecommunications sites. The HPS operates with no generator or utility grid connection, and powers microwave repeaters that provide initial and upgraded service to more than 175,000 square kilometers. Supplied by Alpha Energy, the system was designed with simplified maintenance and troubleshooting in mind considering the remote locations.

The HPS48 Series PV arrays range in size from 660 to 4,950W. The battery charging controllers provide remote access via an RS-232 serial port, allowing engineers to monitor system operating parameters such as PV current and battery voltage. The controllers also provide programmable alarm contacts to alert maintenance crews if battery voltage drops below critical levels. The system runs on a charge by day/discharge by night cycle; fully charged batteries can run for approximately six days, ensuring loads are powered during cloudy periods.

System Specifications	
System Voltage:	48VDC
Maximum Customer Load:	645W continuous
PV Array:	SHARP NE-165U1 (660-4950W)
Battery Bank:	Sealed, 200-2200Ah, 48VDC
Temperature Range:	-4 to 104°F
System Maintenance:	Every 6 months
Controller:	Programmable, with alarm monitoring and remote access

