

# POWER PROFILE

**Customer:** Mantrac Ghana Component Rebuild Center

**Location:**

Takoradi, Ghana

**Customer Business Issue:**

Reduce cost and improve reliability of power while improving sustainability footprint

**Solution:**

1,290 Cat® PVC395 MP photovoltaic modules  
Nine solar inverters  
Cat Master Microgrid Controller (MMC)  
Weather station  
Two Cat 3512 diesel generator sets  
One Cat C13 diesel generator set

**Cat® Dealer:**

Mantrac Ghana



*The hybrid energy solution at Mantrac's component rebuild center in Takoradi, Ghana, includes 1,290 rooftop-mounted Cat® photovoltaic modules.*



*The Mantrac component rebuild center in Takoradi, Ghana, is outfitted with the latest technology to restore like-new performance of Cat® machinery.*

**POWER NEED**

Mantrac Ghana is the authorized Cat® dealer in Ghana, distributing and supporting a full range of products from Caterpillar. Mantrac Ghana's primary business is supplying a complete range of Cat construction equipment to support major development and infrastructure projects. Additionally, customers take advantage of Caterpillar's expansive product range and Mantrac Ghana's wide-ranging capabilities for mining, forestry, material handling and power generation solutions.

As part of a U.S. \$60 million investment to enhance the dealer's support for customers in Ghana and throughout West Africa, Mantrac executives planned the construction of a world-class component rebuild center in Takoradi, Ghana. Component rebuild centers are outfitted with the latest technology for technicians to disassemble machinery, inspect components, replace worn parts, reassemble and test to deliver like-new performance.

To help reduce operational costs in a remote location where electricity is costly, facility designers recommended a system that would serve as a fully independent supply of power while using solar power to improve the company's sustainability footprint.

**SOLUTION**

Engineers for Mantrac Ghana designed a turnkey 500 kW hybrid energy solution that integrates 1,290 rooftop-mounted Cat PVC395 MP photovoltaic (PV) modules with two sources of utility power and three Cat diesel generator sets to supply the power needed for the component rebuild center.

Providing efficiency, performance and dependability, Cat PVC395 MP solar panels achieve efficiencies of over 19 percent through an innovative shingled-cell design with multiple redundant paths for electricity flow. This eliminates many of the reliability challenges of traditional front-contact solar panels. Additionally, the panels use a unique parallel circuit architecture that significantly limits power loss from shade and soiling.

The entire system is managed by the Cat Master Microgrid Controller (MMC), which keeps loads continuously energized with high-quality power at the lowest cost by managing the flow of power from every source in the system. The Cat MMC employs Cat Connect technology for the real-time collection and communication of onsite performance data that can be monitored and analyzed remotely.

Mantrac Ghana consultants led the design of the system, supervised the sourcing and installation of components, and managed commissioning. The project was completed in two months from the launch of system design to start-up.

**RESULTS**

The component rebuild center in Takoradi opened in September of 2018 with a staff of approximately 140 technicians. It operates 12 hours a day to overhaul components such as engines, powertrains and hydraulic systems used in the mining, construction and energy industries.

The generator sets start up when power from the grid is interrupted or when a potential power interruption would negatively impact ongoing work in the machine shop. The solar PV system currently provides more than 30 percent of the energy needed, with an opportunity to install an additional 500kW when facility operations expand and the power requirement increases.

For more information, please visit [cat.com/microgrid](http://cat.com/microgrid).

