

POWER PROFILE

Customer: Henri Fraise Fils & Cie

Location:

Mahajanga and Toliara, Madagascar

Customer Business Issue:

Electric power generation source needed to supply prime power to two plants in Madagascar supporting the local utility

Solution:

- 3 Cat® C175-16 generator sets at Mahajanga electric power plant
- 1 Cat C175-16 generator set at Toliara electric power plant

Cat® Dealer:

Henri Fraise Fils & Cie



Innovative solutions provide power to port cities in Madagascar.

POWER NEED

Keeping port city operations running is vital for all countries across the globe, but even more so for island nations. Approximately 360 kilometers (225 miles) southeast of Africa in the Indian Ocean lay Madagascar, the fourth largest island in the world and home to more than 20 million residents. The seaport cities of Mahajanga and Toliara play key roles in maintaining the economy of the country as major import/export hubs. Providing power to these business communities is crucial and allows them to function smoothly every day.

Located on the northwest coast of Madagascar, Mahajanga is the capital of the Boeny region in the Mahajanga province. In addition to serving as the island's second largest marine terminal, the city is a popular tourist destination for both Malagasy natives and international travelers. About 960 kilometers (599 miles) to the south, Toliara is the capital of the Atsimo-Andrefana region in the Toliara province. An important port town exporting the majority of the island's agricultural products, Toliara is also a thriving tourist city because of its famous coral reef.

Like most major cities on Madagascar, Mahajanga and Toliara are not 100 percent electrified. They fall into the 30 percent range with power needs of 4 to 6 MW. Only 2 to 3 MW of power is supplied by JIRAMA, the local utility. Unfortunately, the towns suffer frequent blackouts, some lasting as long as 20 hours per day, as the local utility switches which zones receive power on an hour-to-hour basis.

In 2007, Henri Fraise Fils & Cie (HFFC) of Antananarivo, Madagascar, was determined to find a way to provide a base load electrical supply for both Mahajanga and Toliara and help curb the energy concerns of the cities. The lack of electricity had a severe impact on business as well as the population.

SOLUTION

An evaluation by HFFC, also the local Cat® dealer, determined that a build-own-operate plan would best serve the cities' power needs while by providing JIRAMA with an additional power source. The plants operating in 2007 were suffering from a number of challenges, including outdated and highly diversified brands of generator sets, a lack of spare parts, tools and little to no on-site staff who were trained to conduct maintenance requirements.

In May 2008, the first of four Cat C175-16 diesel generator sets arrived in Mahajanga. It was put into operation in July. Two months later, an additional two C175-16 generator sets were brought on line at the same location while a fourth was installed at a facility in Toliara in October. Ferta Rakotomalalaitiana, the project engineer of HFFC notes, "The C175-16s operate at 50 Hz with ratings up to 2.2 MW and were specifically chosen for this project based on their high unit rating and superior power density. In addition, lower overall emissions make the C175-16s an ideal fit for our needs."

Both sites have shown excellent fuel consumption well within government specifications despite a lack of high quality fuel.

The plant in Mahajanga operates roughly five hours per day while the Toliara installation provides electricity for over 20 hours per day. Both produce an average of 1,870 kVA and allow critical trade operations at the seaports to proceed without power interruptions. The cities no longer face being without electricity for extended periods of time.

RESULTS

The local Cat dealer's innovative solution provided exactly what HFFC needed to fulfill the power requirements of the grid. "The C175-16 generator sets were installed and commissioned quickly," says Rakotomalalaitiana.

POWER PROFILE

Customer: Henri Fraise Fils & Cie

Through the end of 2008, the four C175-16s had accumulated a total of 6,340 operating hours. They run prime power as a daily power supply to the national grid if needed. This ranges from 70 to 90 percent load in Mahajaga and 70 to 80 percent load in Toliara.

The dealer in Antananarivo is a 12-hour drive from Mahajanga and over 15 hours from Toliara and this generator set project is no different than any other when it comes to utilizing a strong maintenance plan. To keep costs low, HFFC designed and implemented a thorough training program to educate on-site staff. The technicians are trained to handle all scheduled oil sampling, equipment updates and repairs.

The plants have also experienced improvements in the service time of the C175 series. The biggest advantage is injection

timing adjustment is no longer necessary and HFFC has lowered its overall maintenance budget simply by cutting their upkeep time. Commissioning time is also reduced through the use of electrically controlled thermostats. The improvements on servicing the C175-16s are expected to lower labor hours as well as lower operating and maintenance costs.

The innovative approach by Henri Fraise Fils & Cie, Madagascar of owning power stations and selling the electricity also benefits JIRAMA. By providing additional power, JIRAMA is able to invest more time and resources in other electricity grid improvements throughout the country.

For more information, please visit cat.com/powergeneration

