

CASE BADAMIERS: UPGRADE IMPROVES PLANT AVAILABILITY AND RELIABILITY



SAEM Électricité de Mayotte (EDM) runs three power plants on Mayotte, a small archipelago in the Indian Ocean. In the past, the islands often suffered from long electrical outages due to the difficulty to interconnect the plants. This meant that incident analysis was prolonged whenever there were engine stops.

– To avoid this, we needed to ensure the operational availability of the engines at our installations. The solution was an upgrade of the supervision, control and automation systems at both the Badamiers I & II power plants, says Marsile Roberrini, Power Plant Manager for EDM.

The Mayotte archipelago is located close to the African continent in the Mozambique Channel, about halfway between northern Madagascar and Mozambique. Mayotte is a small group of islands with an area of 374 km² and a population of just over 200,000. It is administered as an overseas territory of France.

The production of electricity on Mayotte is handled by Electricité De Mayotte, which is a semi-public limited company (Société Anonyme d'Economie Mixte), where 50.01% is owned by the General Council of Mayotte, 24.99% by EDF, 24.99% by SAUR International and 0.01% by the French Government.

BADAMIERS IS CRUCIAL FOR THE ELECTRICITY SUPPLY

Electricity arrived in Mayotte as late as 1977. Today, the base-load generation of electricity is ensured by three diesel power plants: Badamiers I and II, built in 1987, with a total output of 38.8 MW and the Longoni power plant, built in 2008, with an output of 39 MW (a Wärtsilä plant). The maximum plant and engine uptime is therefore very crucial on Mayotte.

– With a small group of islands like Mayotte, I would say that the Badamiers plants are indispensable in the energy mix. However, since the control systems did not allow the engines to start or be ready when

they should, the power grid often became unstable and incidents could quickly cause general black-outs. For our customers, this meant having to be several hours without electricity until we managed to get the grid up and running again, says **Marsile Roberrini**.

The supervision and control systems of the Badamiers plants were built from old components and different systems, each requiring a different form of systematic maintenance and the utilisation of different kinds of knowledge. To solve this problem, EDM and Wärtsilä decided to look for ways to renew the supervision, control and automation systems of the Badamiers I and II power plants. The solution was to install the same control and automation system, based on WOIS (Wärtsilä Operator Interface System), that had been installed in the newer Longoni plant.

– This would solve the difficulty involved with engine stops, where we could not identify the causes. The old system simply did not allow us to conduct any type of incident analysis quickly, states **Ibrahim M'kavavo**, the electrician responsible for monitoring the site with Wärtsilä.

A WÄRTSILÄ SOLUTION TO ELIMINATE BLACK-OUTS

Wärtsilä's upgrade work of the control system started with the removal of the existing systems and materials, followed by the installation of new materials and software, which needed to be completed in time for the commissioning phase.

– The experts from Wärtsilä did a good job together with EDM's key players, Ibrahim M'kavavo and **Moussa Aboubacar**, praises Marsile.

He continues to say that the quality of EDM's electricity supply to its customers has improved significantly and that he is very pleased with EDM's decision to upgrade to a modern and compatible control system.

– Now we have improved the operational availability and reliability and can conduct



Challenges	Solution	Benefits
<ul style="list-style-type: none"> – Improving plant availability and reliability – Ensuring maximum plant and engine uptime – Speeding up incident analysis – Establishing interconnectivity/ compatibility between the plants 	<ul style="list-style-type: none"> – Installation of the same modern control and automation system, based on WOIS (Wärtsilä Operator Interface System) that was already installed in the newer Longoni plant. 	<ul style="list-style-type: none"> – Stable supply of electricity to the customers with 18 months in a row without blackouts after the installation – Collection of more reliable data – Incident analysis and detection is simplified and can be done faster – Full compatibility of the control and automation systems of all three plants – Lower maintenance costs, easier troubleshooting and a higher skills level of the power plant staff

incident analysis with alarm listings, curves, and synchronized events, which enables us to maintain a continuous improvement of EDM's quality of provision. An added benefit is that we now have full compatibility of both the Badamiers and Longoni control and automation systems.

The control and automation system protection is now time synchronized by a single device via GPS, in order to simplify analysis and detect which event occurred first. The analysis itself has also improved because more reliable data is collected. This is a time saver, since data can be retrieved remotely from the control room and resetting can also be done remotely.

– Although the upgrade has certainly been a good thing for EDM, the biggest winners are our customers. After the installation of the control system we have had a period of 18 months in a row without blackouts, says a satisfied Moussa Aboubacar.

WÄRTSILÄ THE NATURAL CHOICE

Because of Wärtsilä's close cooperation with EDM through the years, Marsile says that the

choice of considering Wärtsilä as the supplier of the new system seemed a natural choice. Wärtsilä's availability and reliability of the proposed solution quickly confirmed why they were EDM's preferred supplier.

– We have a long history and a solid relationship, based on trust, which has been built over time. Wärtsilä's experts have always been available when we needed them. It is like a team work around common objectives."

The upgrade of the control system has also supported EDM in its public service mission of providing electricity in Mayotte in a reliable manner. Furthermore, the upgrade will result in lower maintenance costs, easier troubleshooting and a higher skills level of the power plant staff.

– We will continue our long cooperation with Wärtsilä. They have good quality products that work well also with other auxiliaries. This, along with Wärtsilä's reliable equipment, availability of service, and outstanding expertise, is why EDM will continue to work with Wärtsilä, concludes Marsile Roberrini.

