Customer Case Study:
Mobile Gas Turbines Keep the Lights on in Algeria

On July 9, 2020, Algeria's Adrar Region grid experienced a sudden loss of 27 megawatts. Within milliseconds, the Mitsubishi Power Aero FT8® MOBILEPAC® gas turbine units installed in the region responded to the frequency fluctuations and prevented a debilitating blackout.

Since 2013, the isolated grid of Algeria's Adrar region had been facing an average of five blackouts per year. On many occasions, the grid frequency was unstable, and the severity of these instabilities forced multiple generating sites off line. The region also experienced several grid voltage surges. This was in part due to the use of multiple and diverse renewable power sources such as wind and solar photovoltaic, particularly during the hours between 8 a.m. and 6 p.m.

Facing these issues, our client, Société Nationale de l'Electricité et du Gaz (SONELGAZ), the state-owned utility in charge of electricity and natural gas distribution in Algeria, requested Mitsubishi Power Aero to provide a solution to significantly improve grid stability and power quality. Before that, another OEM gas turbine was used for grid frequency regulation. However, it had shown poor performance causing many blackouts.

Mitsubishi Power Aero tested Isochronous Load Sharing (ISO-Precise Mode) at the Timimoun plant in the Adrar region and showed an excellent response; SONELGAZ was so satisfied that they requested we activate ISO-Precise mode in both the units at that plant.

The FT8 MOBILEPAC gas turbine units play a critical role in gas turbine backup and grid firming on the Adrar region grid due to their outstanding performance and reliability. Sonelgaz decided to designate all four of the FT8 gas turbines at another site, the Zaouiet Kounta plant, as grid pilot units (these units alone would regulate the voltage and the frequency of the grid). Mitsubishi Power Aero Isochronous Load Sharing was installed in October, 2019, and since that time no frequency fluctuations have occurred.

The other four units of a competitor OEM in the same plant are operated in parallel mode. In fact, the client decided to operate all of the other OEM units in parallel mode only throughout the Adrar region grid, and depend on the Mitsubishi Power Aero MOBILEPAC units for all load sharing. Subsequently, a total of twelve gas turbine units are operating in this mode in the Adrar region.

During maintenance, the operating system dispatcher may decide to stop only one gas turbine unit and keep the other three running in load sharing ISO-Precise Mode. This ensures that the FT8 units at the Zaouiet Kounta plant are continuously on the grid to take the lead in case of need.

The FT8 MOBILEPAC units took the lead many times in the month of July 2020 due to summer peak. The plant manager congratulated Mitsubishi Power Aero for the quick response by the FT8 units during the power losses, averting blackouts. In all categories, customer satisfaction remains extremely high.

Says Ayache Hadjam, General Manager of MHI Power Algeria, "The speed of the support, coupled with the efficiency and reliability of the Mitsubishi Power Aero FT8® units, has earned the gratitude of our customer, government agencies, and local authorities, and it has led to an ever-expanding relationship between SONELGAZ and Mitsubishi Power Aero."

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