

# 17 MW of emergency power for Malatya airport in Turkey

Malatya airport, a medium-sized airport located 34 kilometres from the city of Malatya in south-eastern Turkey, was opened in 1941.



HIMOINSA has been involved in a large-scale power generation project at Malatya Airport. This project allows HIMOINSA and Yanmar Turkey to provide **versatile and reliable power solutions**, taking advantage of this infrastructure. The project for the supply of generator sets takes into account aspects such as **redundancy, reliability and the capacity to meet the high standards and demanding requirements** typical of **mission-critical projects** such as those in the airport sector.

**Tailor-made power solutions | Project specifications**

**Location:** Malatya Erhaç Airport is a small civilian airport and airbase, located 34 km from Malatya, Turkey.

**Power needs:** Supply of 5 main 2500 kVA generator sets with 6.3 kV medium voltage alternators plus 23 low voltage (400V) generator sets to supply the distributed systems.

The 5 2500 kVA generator sets are the main source of emergency power for all the systems in the extension; the other 23 smaller capacity gensets power the systems separately as additional (redundant) emergency systems in different locations.

**Details:** Synchronised unit management: The 5 generator sets operate in synchronised mode to ensure stability and continuity of power supply. Quality supervision: Detailed and customised FAT (Factory Acceptance Test) test procedures.

**Turnkey scope:** Comprehensive coverage such as Balance of Plant (BoP) and other components in addition to the generator sets, as part of a complete management solution.

## HIMOINSA's integrated solution | Power supply and stability

HIMOINSA's integrated fuel system solution is designed to ensure both the supply of power and operational stability. This design meets the quality and reliability standards required for a critical infrastructure such as an airport, maximising efficiency and minimising operational risks. The solution provides the ability to run continuously for 20 days at 100% capacity, 28 days at 75% average load and 41 days at 50% average power. This is a very high capacity compared to similar general standby applications. Optional special measures are also included for the chemical protection of this high-capacity fuel during long storage periods.



### Fuel system

*Description:* The fuel system consists of a set of main and day tanks and a polishing system to ensure the quality of the fuel supplied to the generators.

### Main tanks

*Capacity:* 10 fuel tanks, each with a capacity of 125 m<sup>3</sup>, providing a total storage capacity of 1,250 m<sup>3</sup>. These tanks are designed to ensure long-term on-site fuel supply. They can also store large quantities of fuel, enabling supply even in situations of high demand.

### Day tanks

*Capacity:* 5 tanks, each with a capacity of 5 m<sup>3</sup>, for a total capacity of 25 m<sup>3</sup>. These tanks act as intermediaries between the main tanks and the generator sets, ensuring a continuous and controlled fuel supply, allowing a constant flow and avoiding possible interruptions.



### LV and MV synchronisation systems

Low and medium voltage synchronisation systems enable the generators to work together in a coordinated manner. Our synchronisation system also includes very high quality engineering and design. Our integrated management system is not only capable of synchronising 5 MV generator sets at medium voltage level and feeding all systems, but can also provide control and coordination with local LV generators according to different emergency scenarios.



### Low voltage (LV) synchronisation

This system is responsible for synchronising generator sets operating at low voltage to ensure that the frequency and voltage remain constant and within the appropriate parameters. Key components include synchronising units and switching modules that allow LV generators to be switched on and off as required. These devices communicate with the central control system. The system also allows parallel start-up of the generator sets, thereby optimising load sharing and operational efficiency, as well as the flexibility to disconnect individual units for maintenance without affecting the continuity of supply.



### Medium voltage (MV) synchronisation

The system ensures that the medium voltage generator sets, which are configured at 6.3 kV, operate together in a stable manner to meet the site's higher capacity power requirements. Key components include control logic developed using our application expertise, digital synchronisation panel monitors, a reverse grid synchronisation function, switches and protection transformers to safely manage the transfer of power between generators and to the site's medium-voltage grid. Additional functions include voltage regulation and protection against overloads, imbalances and other grid problems, thus maintaining the stability of the medium-voltage systems and protecting the units from possible failures or fluctuations.



### Mechanical site installations

Mechanical site installations include all the ancillary infrastructure required for the safe installation, operation and maintenance of the generation and fuel systems. For this solution, HIMOINSA has designed and installed ventilation components and thermal insulation for the exhaust pipes, manufactured and installed hoods, completed fuel pipelines and power and signal cables, and supplied and installed components and spring-loaded seismic anti-vibration devices for earthquake-prone areas.

## Adaptation to climatic conditions

As temperatures in the region can be very high, a **high-capacity 50°C radiator**, also known as a tropical radiator, has been included in the solution to reduce the risk of the generator set losing power during such periods.

## Reliability | Generator sets

The proposed solution for Malatya airport consists of a series of HIMOINSA generator sets to cover different levels of demand. The system includes **five HTW-2555 T5 medium voltage (6.3 kV) units, designed for high-capacity critical loads** to ensure the stability of the main supply. **One HFW100 T5 unit, three HFW160 T5 units and fifteen HFW200 T5 low-voltage** units have been integrated into the system to provide scalability and redundancy for lower demand operations.

In addition, **four HTW765 T5** units complement the **low-voltage** system, providing additional power and increasing the overall reliability of the installation. This complete configuration ensures a robust and adaptable power supply to meet the airport's needs.



In a highly competitive market where generator sets have achieved a considerable degree of standardisation in terms of diesel engine quality, HIMOINSA's main advantage lies in its ability to **offer customised solutions** adapted to each customer's individual needs.

By positioning ourselves as an integrated supplier of turnkey solutions, we can differentiate our offering by combining expertise and design flexibility to provide added value beyond simply choosing an engine. This approach also allows us to strengthen our relationship with our customers by offering them a comprehensive service tailored to their specific requirements.