Project Name:

INSTALLATION OF A PHOTOVOLTAIC SOLAR FARM FOR SELF-CONSUMPTION AT SFM'S RAILWAY TRACTION FACILITIES

Project Objective:

The construction of this photovoltaic plant for self-consumption will enable 33% of the energy consumed by railway traction to be generated using solar photovoltaic energy.

Specific Benefits:

The installation of the new photovoltaic plant will provide significant environmental benefits through the reduction of CO_2 emissions. With this new facility, it is estimated that 3,300 tonnes of CO_2 emissions will be avoided annually.

This project will also deliver economic benefits through energy cost savings, estimated at approximately €550,000 per year for SFM.

Plant Specifications:

The installation consists of 8,000 modules rated at 510 Wp each.

The solar farm comprises photovoltaic panels with a peak capacity of 4,080 kWp (PHOTOVOLTAIC GENERATOR) and an AC output capacity of 3,350 kW (INVERTERS).

The structural design ensures a low profile, with the panels raised only approximately 2 metres above ground level in order to minimise their visual, landscape and environmental impact.

The installation consists of structures supporting 60 panels each.

The panels are mounted on structures anchored to the ground using ground screws, which are driven into the soil and to which the supporting structures are attached. This system reduces the high costs and lengthy installation times associated with concrete foundations. It also significantly reduces environmental impact, as no concrete is left buried underground. This means that the photovoltaic farm could be dismantled in the future without leaving any permanent trace.

The system converts the direct current generated by the solar panels into alternating current with the same quality characteristics (voltage, frequency, etc.) as the electricity circulating through SFM's internal power grid.

The installation is equipped with a monitoring system to control operations and track the plant's performance, as well as to facilitate public access to its operational results. This system enables remote monitoring via the Internet of real-time energy production, the performance of all the plant's inverters and meteorological variables. It also records operating data and parameters, allowing the plant's performance to be assessed accurately.

The panels will be cleaned periodically without the need for water.

No waste is generated during the operational phase.

The installation has an estimated service life of 25 years. Once this period has elapsed, if the plant is not replaced, all equipment will be dismantled and removed. The affected land will then be restored to its original condition and returned to its previous use (agricultural), should the landowner so decide.

Key Data on the New Photovoltaic Plant

Location: Rural property in the municipality of Santa Maria del Camí.

Plant peak capacity: 4,080 kWp (4 MWp).

Inverter capacity: 3,350 kW (3.35 MW).

Connection point: CMM Consejo.

Total area occupied: 33,463 m².

Expected annual production (kWh): 6,400,000.

CO_2 emissions reduction (tonnes): 3,300 per year.

Share of SFM railway traction energy consumption: 33%.

Estimated annual savings: €550,000.

Planned Investment

€3,042,861.41

EU Funding

€1,825,716.84

Implementation Schedule

March 2023 – November 2023