Azelio

Prefeasibility Study Moghra Oasis Project, Egypt

ITPEnergised is a trusted advisor providing client-focused, reliable, commercially minded, environmental and energy consulting services. We have a wealth of experience in renewable energy developments including solar and storage.

ITPEnergised provided technical consultancy services to Azelio which involved carrying out an independent energy modelling and performance verification of the integrated Azelio TES.POD Power Unit at the Moghra Oasis Project in Egypt.

The project was managed and delivered by senior staff with an extensive collective of experience in renewable energy development.

We provided a cost effective approach providing high quality deliverables at best value which allowed the project to proceed towards development and operation and to assist in creating added value and bankability.

We provided a prefeasibility study report that included the outcomes of the activities below.

- Initial Review of Data Room
- Load Profile & Future Demand Growth
- Solar Resource Assessment
- Solar PV System Sizing
- System Energy Techno
- Operational Modes, Energy Management System & Control Logic Requirements

A single line diagram was created of the complete system. The principal components of the hybrid plant were also defined which included solar array, inverter, TES.POD, BESS and diesel generator.

We then provided a preliminary list of required components along with their specifications.

Work was carried out on time and the project was completed in April 2022.

For more information, please contact :
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Azelio who are a privately held Swedish technology company founded in 2008 and specialising in energy storage with electricity and heat production requested ITPEnergised to act as a Technical Consultant and undertake a prefeasibility study for the Moghra Oasis Project located in Egypt.

Our role was to evaluate the solar potential of the Moghra site in PVsyst, main equipment component sizing, integrated system modelling with performance evaluation and techno economic optimisation with Azelio's TES.POD in Homer PRO, proposal of the system control logic diagram and integrated system architecture.

A solar resource assessment was carried out for the site which requires the assessment of the historical and present solar data. The potential energy yield prediction strongly relies on the accuracy of the weather resource datasets.

Specialist PVsyt software was utilised to estimate the energy yield potential for the Moghra site. This is the preceding step before undertaking actual modelling and sizing in Homer PRO. The aim with PVsyst was to estimate the specific power production potential per PV plant capacity and utilise the obtained energy yield results in Homer PRO.

The system optimisation of the PV plant capacity and number of TES.PODs was undertaken with Homer PRO v3.14.3. This software was utilised to simulate and optimise the system components of the hybrid power system as well as undertaking the calculation of the energy yield and carbon saving estimates for the integrated system.

The energy simulations and techno economic optimisation were undertaken for high renewable energy fractions. It was indicated by Azelio that the initial objective was to achieve solar energy fractions of at least 80% if possible.

The PV plant will aim during daylight hours to deliver power directly to the loads and if there is an excess of PV electricity generation, then simultaneously charge the energy storage systems. The function of the diesel generator will be merely utilised as a backup.

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