



Case Study

Al Dhafra Recycling Plant, Al Dhafra, Abu Dhabi, UAE

Solar-Diesel-Battery Hybrid System with 1.5 Axis Trackers



114 pieces
1.5-Axis Solar Trackers



1,510 tons/year
CO₂ saved



125,000 USD/year
Saved on energy cost

Project Description

Al Dhafra Recycling industries (ADRI) is responsible for the processing of construction and demolition materials across Abu Dhabi, to further produce recycled products suitable for use as road base aggregates, structured and non-structured backfill projects. Due to the remote location of ADRI, the facility relied solely on diesel generators to provide power to jaw crushers, cone crushers, screening plant, conveyor belts and site offices. Aside the increased carbon footprint and the cost involved, ADRI suffered from generators continuously heating up, which resulted in frequent shutdowns culminating in loss of power.

Project Highlights

- Solar-Diesel-Battery Hybrid System
- 1.5-axis solar trackers
- Dusty and windy environment

Project Details

Industry	Construction Waste Recycling
Plant type	Solar-Battery-Diesel hybrid
Capacity	1.9 MVA of DG 692 kWp Solar 300 kW/300 kWh Storage
Location	Al Dhafra, Abu Dhabi
Deployed	January 2018

Enerwhere first deployed a solar-diesel hybrid at ADRI in January 2018. Trackers were later mobilized on site to increase vastly the solar share. The usage of 1.5-axis trackers enables an increase in 10-15% of solar energy harvested, being not as costly as a dual-axis tracker but superior in performance to a single-axis tracker. Maximum energy from the sun is harvested at each point in time during the day, hence matching better industrial load curves. Ultimately, a total of 114 trackers along with an Energy Storage System (ESS) ensure sustainable microgrid operation, where Enerwhere's custom built Energy Management System (EMS) is utilized to control the energy flows within the system and optimize overall fuel efficiency of the plant, allowing to reach up to 80% penetration of renewable power generation.

This power is supplied on the basis of a Power Purchase Agreement (PPA) and invoiced monthly on a kWh basis, eliminating the financial burden of a heavy initial investment.



System Diagram

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Enerwhere's Solar-Hybrid System For Off-Grid Facilities

