



Consolidated Contractors Company 2016 IPLOCA Environmental Award “Portable Green Technologies”

INTRODUCTION

Minimizing the construction impacts on the environment is one of CCC’s core values.

Over the years CCC has been striving to become a leader in sustainability in the engineering and construction business by adopting new technologies and sustainable work operations.

As a result CCC decided recently to initiate the use of sustainable green technologies on its projects allowing it to reduce its energy and water consumption.

FINDINGS

Prior to the adoption of green technologies resources consumption at the project, which include energy and water, was inefficient, costly, and had a large environmental footprint.

Such negative impacts were mainly related to high carbon emissions and excessive need for continuous fresh water supply.

Based on the aforementioned situation project management with the collaboration and support from the top management at CCC, took the initiative adopt sustainable solutions to be implemented at the project site. This initiative directly reflected CCC's Environmental Policy and Objectives

Example:

Producing electricity in a remote project using diesel generators used to cost the project around 11,000 U.S. Dollars per month. This figure includes the monthly rental cost of the generators, cost of purchasing diesel, and regular maintenance.

SOLUTIONS

A Life Cycle Cost Analysis (LCCA), which is a tool used to identify the most cost-effective alternative option, was conducted to decide the optimal technology to be adopted.

Photovoltaic Solar Panels

- The photovoltaic solar panels were previously installed at a completed CCC project → No capital cost to purchase new photovoltaic solar panels.

Wastewater Treatment Plant with Membrane Bioreactors (MBR) Technology

- Purchase and installation of two new wastewater treatment plants with MBR Technology (MBR) due to their large capacity and high efficiency in treating polluted water allowing for its reuse and reclamation.

IMPLEMENTATION

The photovoltaic solar panels and the MBR wastewater treatment plants were financed by the project's own budget.

Implemented and installed at the project site starting from December 2013.

Photovoltaic System

- The photovoltaic system produces 381 Megawatt-hours per year.
- Energy generated is used for air conditioning, lighting, and other daytime activities.
- 100 photovoltaic street lighting fixtures were installed along all the camp's streets that generated 15.5 Megawatt-hours per year.



MBR Wastewater Treatment Plants

- The wastewater treatment plants with Membrane Bioreactors (MBR) technology were used for sewage treatment on both site offices and the camp.
- Their average capacity is 250 & 900 m³/day respectively.
- The treated water is used for toilet flushing, dust control and irrigation purposes.



ACHIEVEMENTS

The photovoltaic solar panels have offset 18,052 tons of CO₂ emissions annually.

The photovoltaic lighting fixtures have offset the emission of 10.7 tons of CO₂ annually.

The offset CO₂ emissions are due to abandoning the use of the diesel generators and the trucks used to transport the diesel to the project.

The reliance on solar energy for power generation has reduced the expenses of the project by primarily dispensing the purchase and transport of diesel. Additionally, once the project is complete the solar panels can be easily dismantled and reinstalled at another remote site project.

The MBR wastewater treatment plants reclaims and reuses more than 410,000m³ of water per year, reducing the project expenses embodied in the purchase of additional freshwater and transportation to the project site.

However, most importantly the treatment plants have conserved valuable freshwater resources.

LONG TERM PLANNING

Expanding these initiatives to other CCC projects and camps by integrating a variety of energy-efficient and conservation best practices into everyday operations.

Developing all future project camps to pertain specific sustainability specifications that are based on the use of solar power and heating, water reuse, and waste recycling.

Working on continuously adopting new technologies and methods to reduce the emission of greenhouse gases.

Setting targets and objectives within a specific timeframe regarding CCC's reduction in greenhouse gases emissions and towards the commitment to sustainable initiatives and technologies.

Focusing on developing new training material on sustainable initiatives, their benefits, and the reasons for adopting them.

Utilizing CCC's online knowledge platform to share ideas, thoughts, and experiences from different projects.