Nablus West Waste Water Treatment Plan (WWTP)

Success Story of Using the Photovoltaic System as Pilot Project

2019

1. Summary

Within the frame of financial and technical cooperation, Nablus Municipality and Nurnberg city -Germany have signed financial agreement to implement photo voltaic system at the Wastewater Treatment Plant Nablus West.
The project aimed to supply and install Ground mounted On-grid PV Systems at Wastewater Treatment Plant -Nablus West with capacity of 125 kWp with east-west arrays orientation as pilot project. This pilot project contributed with about 6 % of the total power demand of the WWTP.

2. Project Objective

The project aimed to supply and install Ground mounted on-grid PV Systems east/west oriented at Wastewater Treatment Plant Nablus West with capacity around 125 kWp, as first stage to contribute with 6% of the total power demand of the WWTP.

3. PV system pilot project 125 KWp

Since May 2018 the PV system was operated to recover the sun energy and using it for the operation of the WWTP and for the reuse of treated waste water in agriculture for the pilot reuse projects. Nablus Municipality after tendering procedures, the project have been supplied and installed by the local Palestinian contracting company and operated by the technical staff of Nablus WWTP. The implementation of the works was supervised by local consultant and international consultant from Germany.

The Total produced energy since start of operation is 280,000 KWh and represents about 6% of the daily demand of the operation of Nablus wastewater treatment plant which in turn shows the effectiveness and the successful use of the renewable clean energy.

At the same time energy recovery of nearly 60% of the daily electrical demand is being executed by utilizing the generated biogas.

4. Achieved results of operation of the PV pilot project

- Providing On-grid PV solar system with capacity around 125 KWp was attained.
- Reduction of the energy demands from local public electrical network has been done, because the treatment of wastewater plant consumes a lot of electrical power and energy for the treatment process.
- A sustainable, reliable, safety and cost-effective electrical energy supply was being practiced.
- Plants tested, validated and monitored on integration with SCADA system at site using SCADA or another monitoring tool for a public demonstration have been conducted by Nablus operation staff.

5. Operation and maintenance of PV systems

The O&M is being done by the Nablus west WWTP staff successfully since start of operation in May /2018 in terms of routine check and cleaning of the panels at specified time from dust.

On the other hand monitoring the PV system parameters from SCADA system was achieved by the plant staff hereby recording the whole energy production data was attained for proper reference.



6. Future plan

Utilizing more sun renewable energy for the operation of the WWTP and the biggest reuse project about 300 hectares for the entire treated effluent necessitates extending the present pilot project of the PV systems to be three times of the implemented pilot project. The produced energy will be utilized irrigation purposes for around 4 million cubic meters per year of treated waste water and the remaining energy will be used for the operation of the treatment plant as we have so far only 60 % recovery of energy from biogas utilization and 6 % from PV pilot project as mentioned before.

The extension of PV pilot project in case of implementation will cost approximately 0.5 M Euro and will reduce the O&M cost on farmers and citizen of Nablus and enhance their income. On the other hand protect the environment by using of the renewable clean energy as we have in Palestine more than 300 days a year sunny days.

7. Lessons learned

- Using of PV systems is feasible in our country.
- Enhance the autonomy of WWTP and reduce the cost with using such renewable energy.
- The operation staff of WWTP is able to do operation and maintenance at regular basis.
- Based on the recovered energy from the pilot project the expected produced energy from the future project will cover the demand of energy for irrigation of the reuse area project, which will have positive impact on the living conditions of the beneficiary farmers.
- Installing the PV panels with self-cleaning technology will enhance the energy production and decrease the cleaning time compared to normal manual methods.