Utilization of Renewable Energy in Water Station

EWA
هيئة الكهرباء والماء
Electricity & Water Authority

مؤتمر الخليج الخامس عشر للمياه
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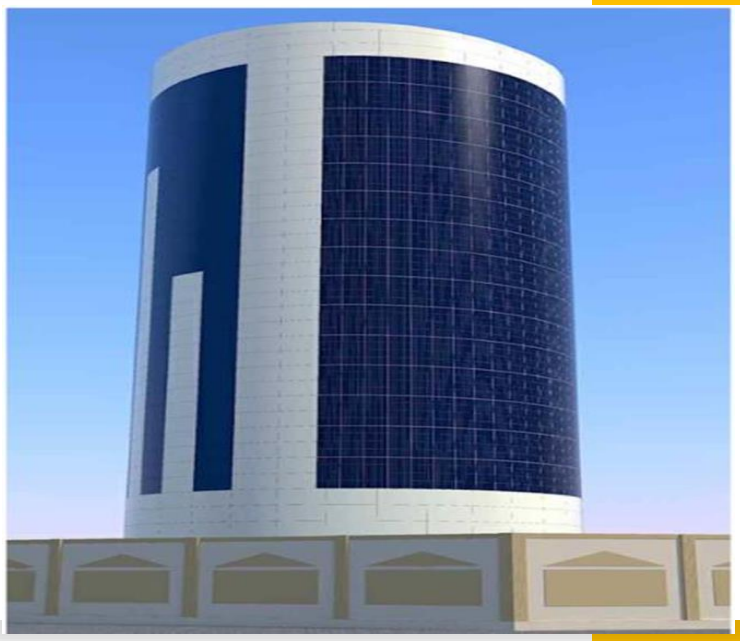
Renewable Energy Production in Bahrain

- Bahrain is committed to progress towards Sustainable Development by introducing renewable energy into the energy mix
- Bahrain's National Renewable Energy Action Plan (NREAP) provides details for the sustainable energy transition envisioned in the Economic Vision 2030 and the Government Action Plan and actions required for implementation of the Kingdom's regional and international commitments under the Paris Agreement, the United Nations Sustainable Development Goals, and the League of Arab States Renewable Energy Framework.
- NREAP sets a target of Integrating renewable energy in the overall energy mix: - 5% by 2025 (i.e 255 MW) and 10% by 2035 (i.e 710 MW).

Solar Power Generation in Water Distribution Station

- In accordance with the National objective of increase in the production of Renewable Energy, Solar (Photo Voltaic) Systems are being installed as part of various ongoing Water Distribution Stations.
- PV systems have been installed on the structure for Cladding of Elevated Storage Reservoirs and on the Roof of Ground Storage Reservoirs.
- These installations have helped in meeting a large portion of the water pumping Station Power Requirement. With the advancement of PV system technology, we are progressively able to install more efficient systems with higher capacity and at lower unit costs.
- A 1727 kWp Solar Power System is being currently implemented at various water station construction projects. The Annual Energy Generation from these projects is projected to be 2.69 GWhr.



Water Transmission Facilities at Madinat Khalifa (DS)

EWA currently implementing a project that include design, supply, installation, testing and commissioning of On-Grid Solar PV system to be installed on two Ground Storage Reservoirs under the project Water Transmission Facilities at Madinat Khalifa DS.

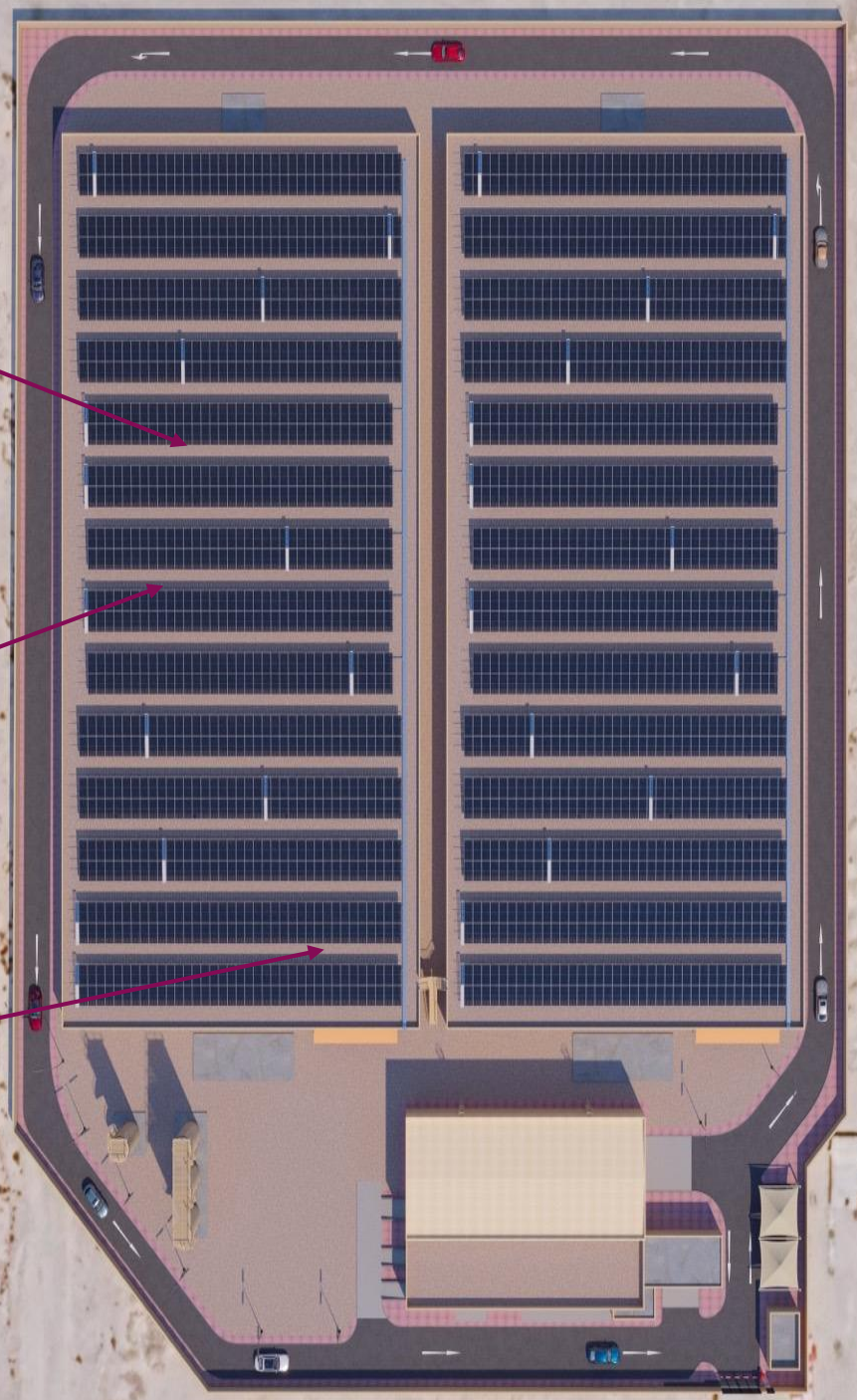
Summary of Solar System:

- Capacity 1.402 MW
- Solar PV N-type Bifacial Dual Glass
- No. of Solar Panels 2,032 Nos / 690W Each
- No. of On-Grid Inverters 10 Nos
- No. of Solar PV System Cleaning Robot 28 Nos
- Estimated Solar Generation per Year 2,374,548 kWh

Solar PV Cleaning Robot

Solar PV Modules

Solar PV Inverters



Ground Storage Reservoirs at Madinat Khalifa

Solar PV Plant Capacity (DC)	1.402 MW
Solar PV Plant Capacity (AC)	1.25 MW
No.of Solar Panels	2,032 Nos
No.of On-Grid Inverters	10 Nos
No.of Solar PV System Cleaning Robot	28 Nos

Estimated Solar Generation/Year	2,374,548 kWh

01 Construction Methodology

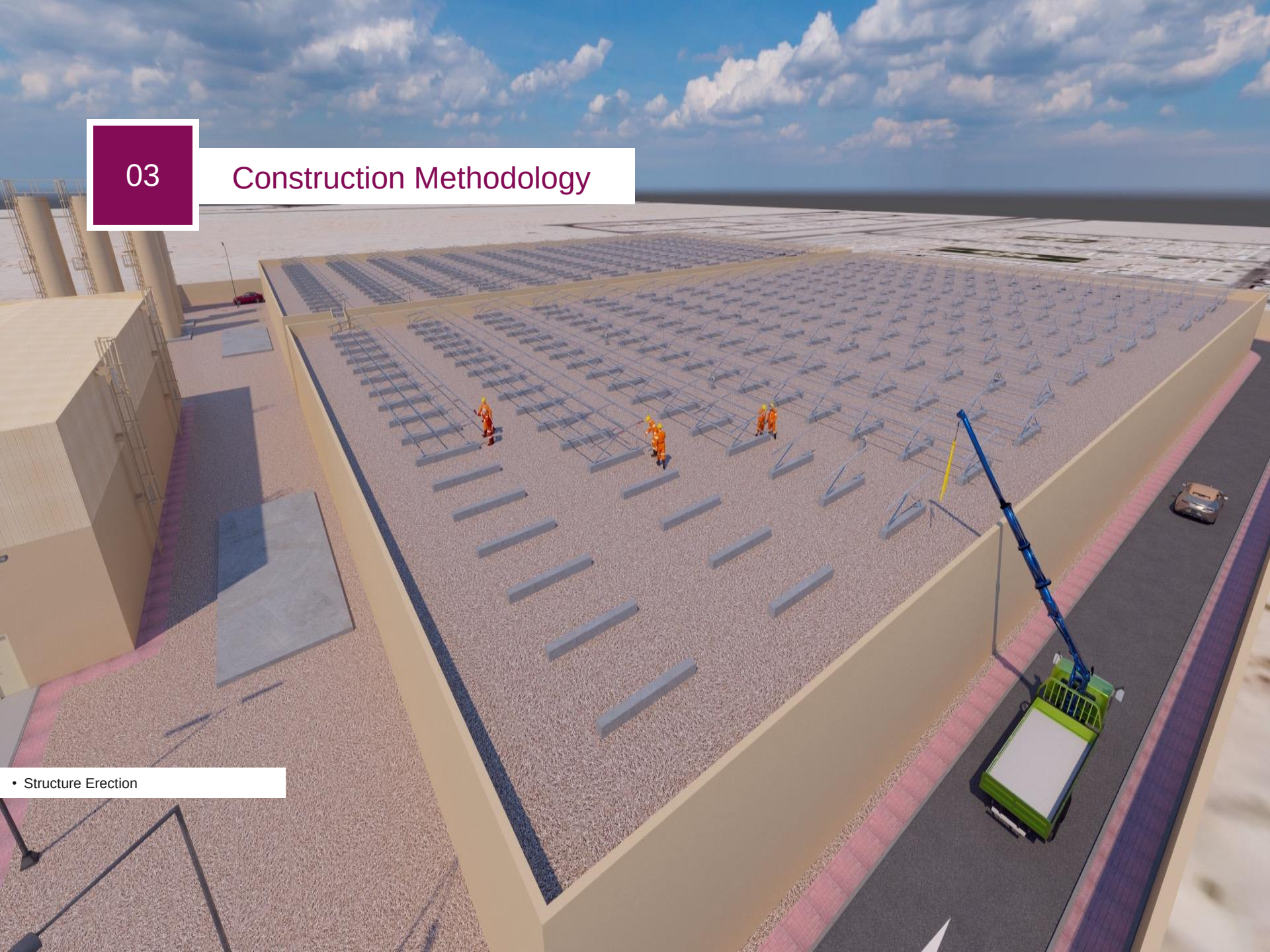
- Site Survey
- Detailed Engineering Design

02 Construction Methodology

- Casting of Civil Foundations

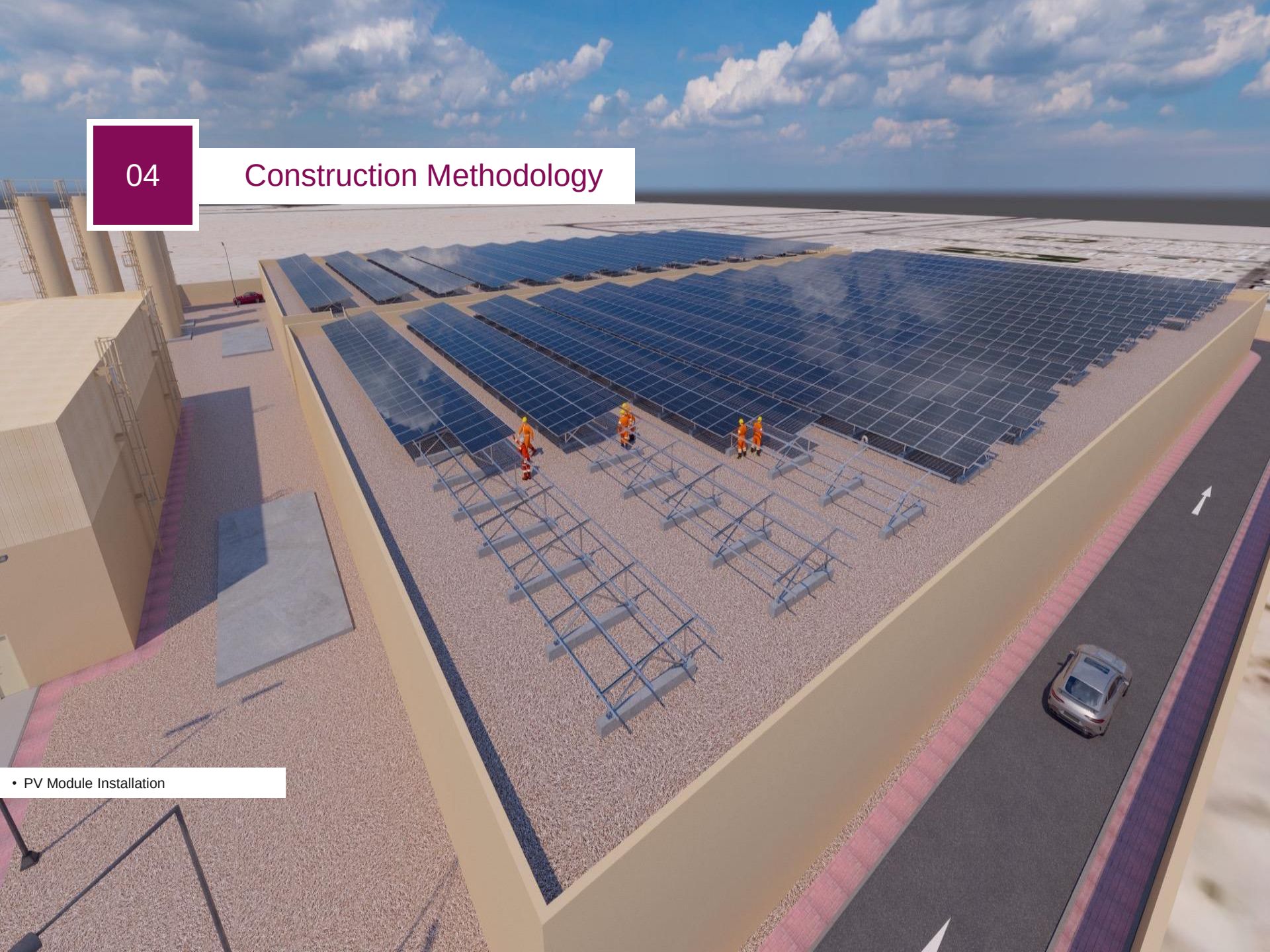
*Image for Illustration purpose only. Design subjected to change during detailed engineering design

03 Construction Methodology



- Structure Erection

04 Construction Methodology



- PV Module Installation

05 Construction Methodology

- Solar PV System Cleaning Robot Inst.

250kW Solar System at Seef DS

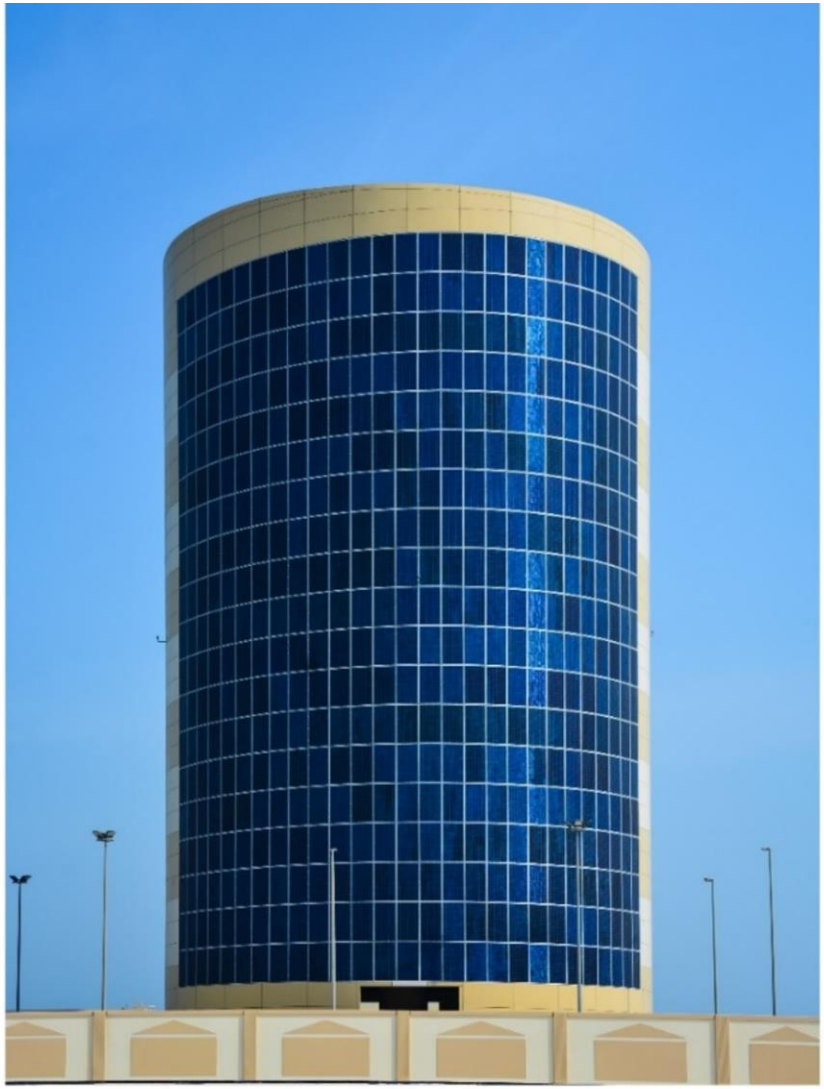
Summary of Solar System:

- Implemented on Ground Storage Reservoir.
- Capacity 250kWp
- Estimated Yield 415 MWh per year
- No. of PV Panels 803 Nos / 310W Each
- No. of Inverter 4 Nos String Inverters
- Monitoring at SCADA System.
- Roof Mounted PV Panels at GSR with fixed tilt 20°

155kW Solar System at Seef DS

Summary of Solar System:

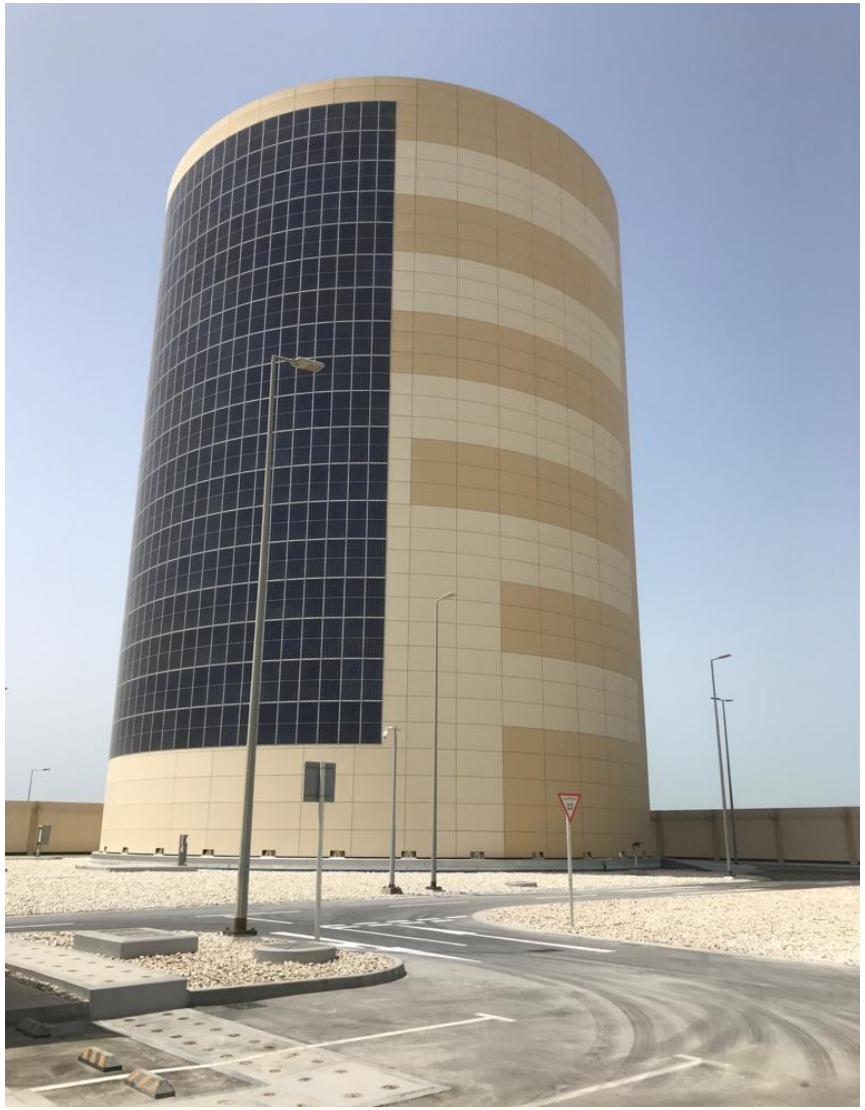
- Implemented on Elevated Storage Reservoir.
- Capacity 155kWp
- Estimated Yield 165 MWh per year
- No. of PV Panels 513 Nos / 313W
- No. of Inverter 3 Nos String Inverter
- Monitoring at SCADA System
- Facade PV Panels Mounted with fixed tilt 90°



251kW Solar at Nabih Saleh DS

Summary of Solar System:

- Implemented on Elevated Storage Reservoir.
- Capacity 251kWp
- Estimated Yield 249 MWh per year
- No. of PV Panels 670 / 375W Each
- No of Inverter 4 Nos String Inverter
- Monitoring at SCADA System
- Facade PV Panels Mounted with fixed tilt 90°



254kW Solar at Juffair DS

Summary of Solar System:

- Implemented on Elevated Storage Reservoir.
- Capacity 254kWp
- Estimated Yield 207 MWh per year
- No of PV Panels 705 Nos / 375W Each
- No of Inverter 4 Nos String Inverter
- Monitoring at SCADA System
- Facade PV Panels Mounted with fixed tilt 90°

251kW Solar System at Busaiteen DS

Summary of Solar System:

- Implemented on Elevated Storage Reservoir.
- Capacity 283kWp
- Estimated Yield 221 MWh per year
- No of PV Panels 525 Nos / 545W Each
- No of Inverter 4 Nos String Inverter
- Monitoring at SCADA System
- Facade PV Panels Mounted with fixed tilt 90°

163kW Solar System at Madinat Salman DS

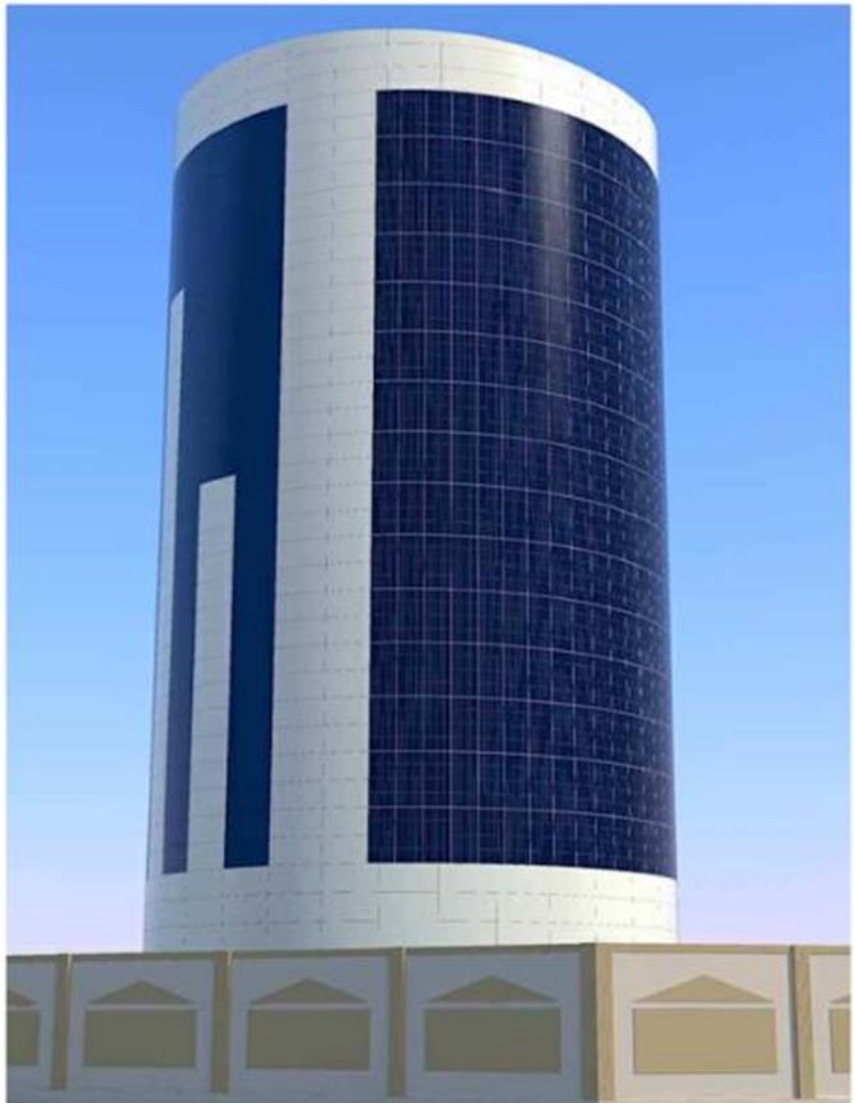
Summary of Solar System:

- Implemented on Elevated Storage Reservoir.
- Capacity 163 kWp
- Estimated Yield 162 MWh per year
- No of PV Panels 300 Nos / 545 W Each
- No of Inverter 3 Nos String Inverter
- Monitoring at SCADA System
- Facade PV Panels Mounted with fixed tilt 90°

163kW Solar System at Madinat Ramli DS

Summary of Solar System:

- Implemented on Elevated Storage Reservoir.
- Capacity 163 kWp
- Estimated Yield 162 MWh per year
- No of PV Panels 300 Nos / 545 W Each
- No of Inverter 3 Nos String Inverter
- Monitoring at SCADA System
- Facade PV Panels Mounted with fixed tilt 90°



THANK YOU