

The requirements call for Design, Supply, Delivery, Installation, Testing & Commissioning and Maintenance of a 4kWp (nominal) BIPV System and All Ancillary Works at the Ministry for Energy, Green Technology and Water Malaysia (MEGTW-LEO) building in Putrajaya.

Note

The request for this quotation is only for Approved PV Service Providers (APVSP) or PV consortiums (consists of an International PV system integrator and an Approved PV Service Provider). Before submitting the offer, Approved PV Service Providers or PV consortiums are advised to visit the site for necessary roof measurement and make him/her self thoroughly acquainted with the location and all aspects of the Works.

The technical requirement as stipulated herein shall not be taken as complete and/or comprehensive. It should be taken as guidance for the bidder to prepare the technical proposal for the said system.

A briefing will be held on 23 July 2010 from 10.00am to 11.30am at site (MEGTW-LEO building). All tenderers are strongly encouraged to attend the briefing.

Scope of Works

The scope of works shall consist of the following items and according to MS 1837 but not limited to the equipment and services defined below:

- 1.1. To design a 4kWp (nominal) BIPV system including inverter (adequately matched) and ancillary for installation, as indicated in the concept and as per specification.
- 1.2. To design, supply and install mounting structure for PV modules.
- 1.3. To supply and install PV modules, including the necessary mounting mechanism, as per specification.
- 1.4. To supply and install adequately matched inverter, including the necessary equipment, materials and ancillary, as per specification.
- 1.5. To provide and install junction boxes, TNB approved PV meter and other equipment as specified in MS1837.
- 1.6. To neatly install and connect all PV cables, wires, ancillary equipment, to the main electrical system as indicated in the electrical drawing and as per specification. The cables shall be properly secured in conduit/ trunking/ conceal.
- 1.7. To determine requirement for earthing and if necessary, to supply and install earthing system.
- 1.8. To install proper signage and labeling of the necessary system components.
- 1.9. Upon completion of installation, to rectify installation and roof structure against water leakage and any damage done to the roof or walls as necessary.
- 1.10. Upon completion of the site work, to remove all debris.

- 1.11. To conduct testing and commissioning as per instruction from MBIPV project.
- 1.12. To provide warranty, as well as free technical support and maintenances services (minimum 24 months) for the installed BIPV system.
- 1.13. To provide all necessary documentation including wind loading calculation, products specification and warranty, drawings and reports, as required.

Specification (Technical Requirement)

A. PV Module:

- 2.1 To comply with MS1837: Malaysian Standard on Installation of Grid-Connected Photovoltaic (PV) System.
- 2.2 All PV modules shall be semi-transparent/ see-through type with the necessary safety and quality requirement.
- 2.3 All PV modules shall either be glass-glass or glass with transparent Tedlar back foil with mono/ poly crystalline or thin-film PV cells.
- 2.4 The PV modules shall be designed with the cable connectors placed at the side of the modules. No junction box at the back of the PV modules. The wiring shall be hidden between the PV modules or at the edge of the PV modules to maintain the elegant design of the entrance glass canopy.
- 2.5 The PV modules shall have a minimum warranty of 10 years or with a duration acceptable by MBIPV project. To provide specification & certification (as applicable) and to state period of warranty.

B. Inverter:

- 3.1 The inverter shall be installed indoor or weather protected.
- 3.2 The inverter shall be designed for grid connected applications and suitable for the use in the tropical environment.
- 3.3 The inverter shall be of high efficient type (>90%).
- 3.4 The inverter shall be certified to IEC (or equivalent), according to MS1837. Please include copy of certificates.
- 3.5 The inverter shall be provided with PV monitoring features i.e. data-logger including sensors to capture the solar irradiance, PV module temperature, ambient temperature, etc. (capable for data logging etc).
- 3.6 The inverter shall be able to operate under Malaysian operating grid voltage of 230Vac nominal.
- 3.7 The inverter shall have minimum warranty of five (5) years and to provide certifications.

C. Electrical Works:

- 4.1 All product rating, specification and installation shall comply to MS 1837.
- 4.2 PV kWh meter shall be TNB approved type. (Note: Please obtain a support letter from MBIPV and indicate the specification: single or three phase and quantity required.)

D. Mounting Structure:

- 5.1 The PV roof design/mounting structure shall meet national wind load requirements (if applicable), and shall be able to withstand the loading imposed by the PV modules and the wind, and is properly connected to the existing building.
- 5.2 The back of the PV modules shall have a sufficient clearance from any surface to allow for proper air flow/ventilation (if applicable).
- 5.3 Proper allowance for roof structure expansion shall be provided in the design.
- 5.4 The metal structures and brackets used shall be of anodized aluminium or stainless steel. nuts, bolts and washers shall be of stainless steel.
- 5.5 Any sealant used shall be of EPDM or silicon material or equivalent with high UV resistant quality, with at least a 10-year warranty.
- 5.6 The roof structure shall have a high quality finish (no rough edges, proper bracket and edges, etc).
- 5.7 A structural calculation report (consists of the details of design work, wind load calculations for the PV arrays on the mounting structure and the brackets to the building, drawings, choice of material, etc.) prepared and endorsed by a qualified structural engineer shall be submitted and approved by the responsible parties before commencement of work.

Project Schedule

It is expected the BIPV system to be installed and completed **within 16 weeks from the date of award.**

Documents for Submission

1. Quotation form; and
2. Statement of compliance

Quotation Submission

Deadline for receipt of the quotation document is by **10 August 2010** not later than **12 noon** in a sealed envelope marked:

“DESIGN, SUPPLY, DELIVERY, INSTALLATION, TESTING & COMMISSIONING AND MAINTENANCE OF A 4kWp (nominal) BIPV SYSTEM AND ALL ANCILLARY WORKS AT THE MINISTRY OF ENERGY, GREEN TECHNOLOGY AND WATER MALAYSIA (MEGTW-LEO) BUILDING IN PUTRAJAYA”.

For further information regarding this request for submission, please contact Ir. Abdul Khalid (03 8883 6261) or Mr. Vincent Tan (012 212 46448).

Proposal and Quotation Form shall be forwarded to, and/or deposited at:

Energy Sector
Ministry of Energy, Green Technology and Water
Level 2, Block E4/5
Government Complex Parcel E
Federal Government Administrative Centre
62668 Putrajaya
Malaysia

BIPV Concept for the Ministry for Energy, Green Technology and water (MEGTW-LEO) Building in Putrajaya.

The plan, photos and other information given below are to serve as only a guideline for the intended location of the BIPV system. The tenders are advised to visit the site for necessary roof measurement and make him/her self thoroughly acquainted with the location and all aspects of the Works.



Pic 1: MEGTW-LEO Building (artiest impression)

Site details

The entrance (facing exactly south) is covered with a metal construction and transparent glass-glass panels. The construction is slightly inclined ($\sim 3^\circ$), towards south.

Following some images:



Pic 2: View from west



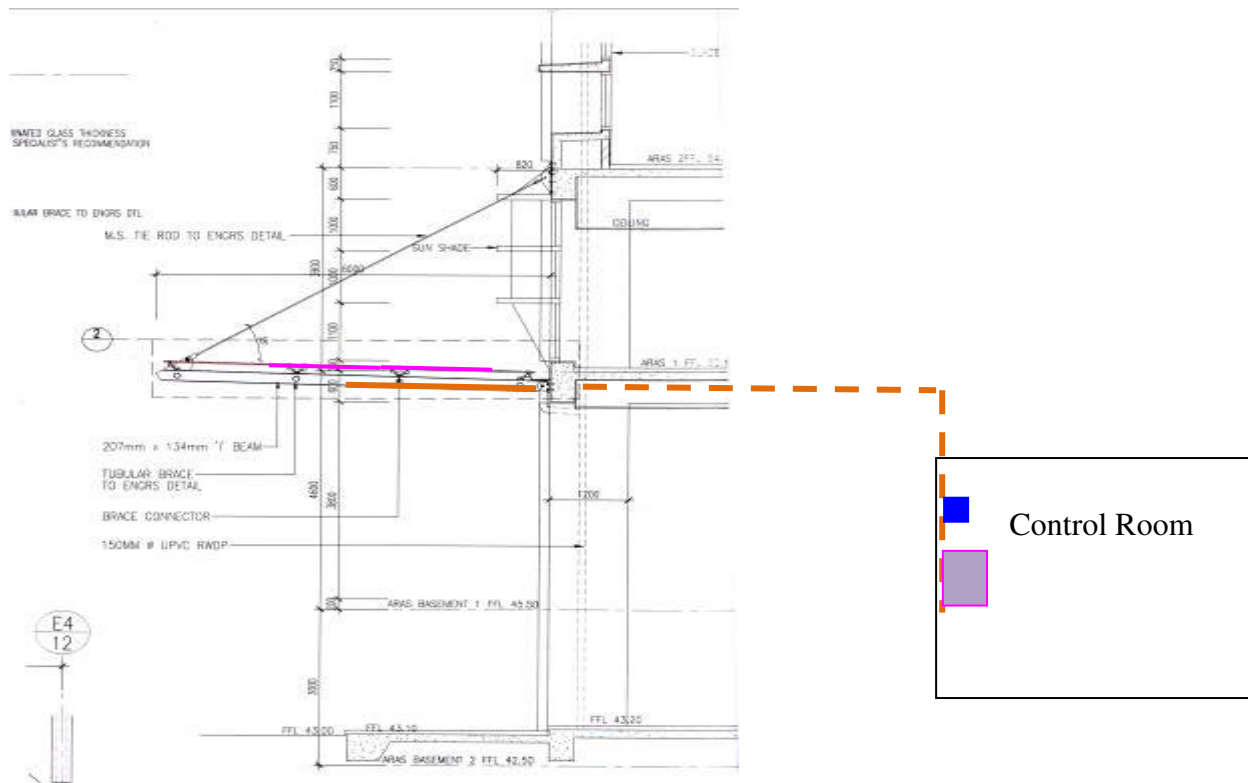
Pic 3: View from east

The canopy is constructed with two rows (west-east) glass panels (each panel is approximately 2.7m by 2.1m). Each row has eight glass panels fix to a quadra-pod on the metal structure.

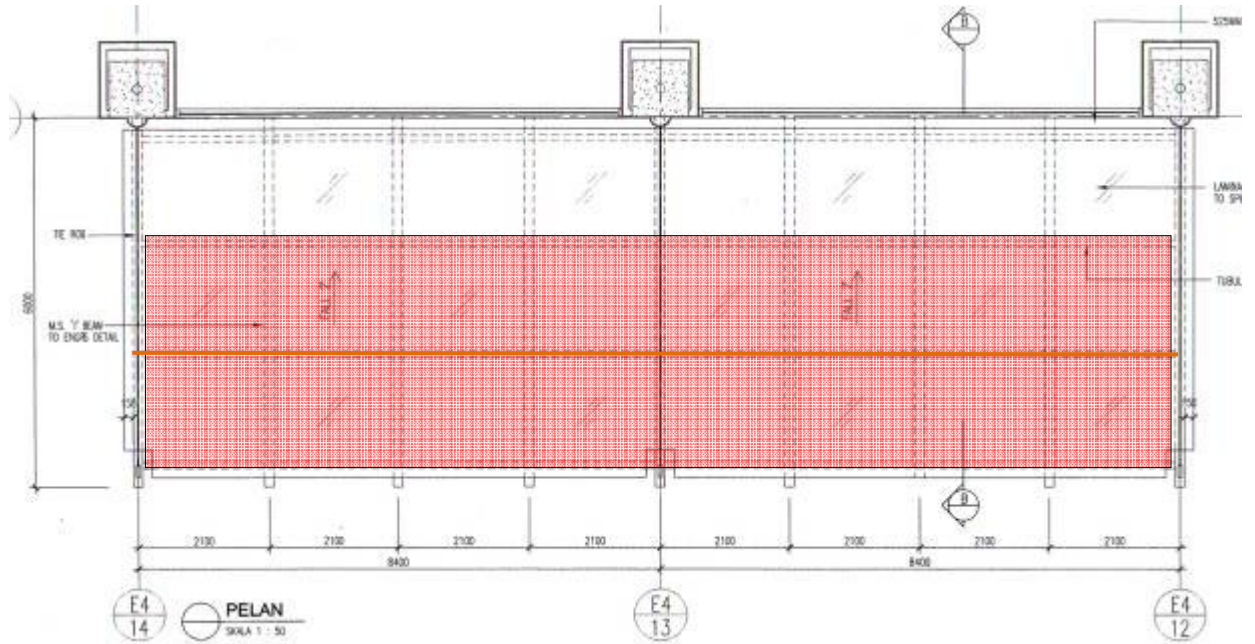


Pic 4: View from below (detail fixation)

Proposed locations for major BIPV system components



Pic 5: Side view (PV modules in pink, wiring in brown, DB in blue and inverter in purple)



Pic 6: Plan view (PV modules in pink, wiring in brown)

1. QUOTATION FORM

For Design, Supply, Delivery, Installation, Testing & Commissioning and Maintenance of a 4kWp (nominal) BIPV System and All Ancillary Works at the Ministry for Energy, Green technology and Water Malaysia (MEGTW-LEO) building in Putrajaya.

Components	Brand/ Model	Quantity/ Lot	*Unit rate (RM)	*Total Price (RM)
PV modules				
Inverter				
Electrical components and works				
Mechanical components and works				
PV monitoring system and display				
Others (Design, transportation, etc. please provide in detail)				
*Total price without tax/duty ex project site (RM)				
**Total duty and tax for PV modules and inverter (RM)				
Total price with tax/duty ex project site (RM)				
Expected duration for total project completion (weeks).				

Note:

1) All prices quoted shall be in Ringgit Malaysia (RM), ***exclusive** of duties, taxes, etc. and valid for a **minimum of 120 days** from the date of offer.

2) **To indicate the amount for tax/ duty (as applicable)

Total sum (Ringgit Malaysia): _____

I/ We hereby confirm that the above-mentioned details are correct.

Signature: _____

Name: _____

Position: _____

Company name: _____

Address: _____

2. STATEMENT OF COMPLIANCE

Scope of works	Complied (Y/N)	Remarks (if any)
1.1. To design a 4.0kWp (nominal) BIPV system including inverter (adequately matched) and ancillary for installation, as indicated in the concept and as per specification.		
1.2. To design, supply and install the mounting structure for PV modules.		
1.3. To supply and install PV modules, including the necessary mounting mechanism, as per specification.		
1.4. To supply and install adequately matched inverter, including the necessary equipment, materials and ancillary, as per specification.		
1.5. To provide and install junction boxes, TNB approved PV meter and other equipment as specified in MS1837.		
1.6. To neatly install and connect all PV cables, wires, ancillary equipment, to the main electrical system as indicated in the electrical drawing and as per specification. The cables shall be properly secured in conduit/ trunking/ conceal.		
1.7. To install proper signage and labeling of the necessary system components.		
1.8. To determine requirement for earthing and if necessary, to supply and install earthing system.		
1.9. Upon completion of installation, to rectify installation and roof structure against water leakage and any damage done to the roof or walls as necessary.		
1.10. To conduct testing and commissioning as per instruction from MBIPV project.		
1.11. Upon completion of the site work, to remove all debris.		
1.12. To provide warranty, as well as free technical support and maintenances services (minimum 24 months) for the installed BIPV system.		
1.13. To provide all necessary documentation including wind loading calculation, products specification and warranty, drawings and reports, as required.		

Specification (Technical requirements)	Complied (Y/N)	Remarks (if any)
PV module		
<p>2.1 To comply with MS1837: Malaysian Standard on Installation of Grid-Connected Photovoltaic (PV) System.</p> <p>2.2 All PV modules shall be semi-transparent/ see-through type with the necessary safety and quality requirement.</p> <p>2.3 All PV modules shall either be glass-glass or glass with transparent Tedlar back foil with mono or poly crystalline or thin-film PV cells.</p> <p>2.4 The PV modules shall be designed with the cable connectors placed at the side of the modules. No junction box at the back of the PV modules. The wiring shall be hidden between the PV modules or at the edge of the PV modules to maintain the elegant design of the entrance glass canopy.</p> <p>2.5 The PV modules shall have minimum warranty of 10 years or with a duration acceptable by MBIPV project. To provide specification and certification (as applicable) and to state period of warranty.</p>		
Inverter		
<p>3.1 The inverter shall be installed indoor or weather protected.</p> <p>3.2 The inverter shall be designed for grid connected applications and suitable for the use in the tropical environment.</p> <p>3.3 The inverter shall be of high efficient type (>90%).</p> <p>3.4 The inverter shall be certified to IEC (or equivalent), according to MS1837. Please include copy of certificates.</p> <p>3.5 The inverter shall be provided with PV monitoring features i.e. data-logger including sensors to capture the solar irradiance, PV module temperature, ambient temperature, etc. (capable for data logging etc).</p> <p>3.6 The inverter shall be able to operate under Malaysian operating grid voltage of 230Vac (nominal).</p> <p>3.7 The inverter shall have minimum warranty of five (5) years and to provide certifications.</p>		
Electrical works		
<p>4.1 All product rating, specification and installation shall comply to MS 1837.</p> <p>4.2 PV kWh meter shall be TNB approved type. (Note: Please obtain a support letter from MBIPV and indicate the specification: single or three phase and quantity required.)</p>		

Mounting structure			
5.1	The PV roof design/mounting structure shall meet national wind load requirements (if applicable), and shall be able to withstand the loading imposed by the PV modules and the wind, and is properly connected to the existing building.		
5.2	The back of the PV modules shall have a sufficient clearance from any surface to allow for proper air flow/ventilation (if applicable).		
5.3	Proper allowance for roof structure expansion shall be provided in the design.		
5.4	The metal structures and brackets used shall be of anodized aluminium or stainless steel. nuts, bolts and washers shall be of stainless steel.		
5.5	Any sealant used shall be of EPDM or silicon material or equivalent with high UV resistant quality, with at least a 10-year warranty.		
5.6	The roof structure shall have a high quality finish (no rough edges, proper bracket and edges, etc).		
5.7	A structural calculation report (consists of the details of design work, wind load calculations for the PV arrays on the mounting structure and the brackets to the building, drawings, choice of material, etc.) prepared and endorsed by a qualified structural engineer shall be submitted and approved by the responsible parties before commencement of work.		