

**The requirements call for Design, Supply, Delivery, Installation, Testing & Commissioning and Maintenance of A 5.0kWp (nominal) BIPV System and All Ancillary Works at Sekolah Menengah Kebangsaan St. John, Jalan Bukit Nenas, 50250 Kuala Lumpur.**

**Note**

The request for this quotation is only for Approved PV Service Providers (APVSP). Before submitting the offer, Approved PV Service Provider is 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.

**Visit to the site is allowed only on 2 to 5 March 2010 from 9.00am to 4.00pm.** Persons in charge are:

- 9.00 a.m to 12.00 p.m - Mr. Puvanendran (Tel. No: 019-2641648)
- 12.00 p.m to 4.00 p.m – Ms. Lim Yuet Choon (Tel No: 012-6761423)

**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 5.0kWp (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 mounting structure for PV modules.
- 1.3. To submit work plan within the specified period and necessary TNB interconnection application and registration forms.
- 1.4. To supply and install PV modules, including the necessary mounting mechanism, as per specification.
- 1.5. To supply and install adequately matched inverter, including the necessary equipment, materials and ancillary, as per specification.
- 1.6. To provide and install junction boxes, TNB approved PV meter and other equipment as specified in MS1837.
- 1.7. 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.
- 1.8. To determine requirement for earthing and if necessary, to supply and install earthing system.
- 1.9. To install proper signage and labeling of the necessary system components.
- 1.10. Upon completion of installation, to rectify installation and roof structure against water leakage and any damage done to the roof or walls as necessary.
- 1.11. Upon completion of the site work, to remove all debris.

- 1.12. To conduct testing and commissioning as per instruction from MBIPV project.
- 1.13. To provide warranty, as well as free technical support and maintenances services (minimum 24 months) for the installed BIPV system.
- 1.14. To provide all necessary documentation including wind loading calculation, products specification and warranty, drawings and reports (user guide to be used by the school), 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 crystalline type, Class II, and IEC 61215 (or equivalent) certified, or thin film type, Class II and IEC 61646 (or equivalent) according to MS 1837. All PV modules must comply to IEC 61730 and/or TUV Class II.
- 2.3 The PV modules shall have minimum warranty of 25 years (for crystalline type) or 20 years (for thin film type) and to provide specification and certifications.

### **B. Inverter:**

- 3.1 The inverter shall be installed indoor or weather protected (IP65).
- 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).
- 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 Proper protection devices shall be provided to safeguard the BIPV system against abnormal electrical circumstances.

- 4.3 PV kWh meter shall be TNB approved type. (Note: Please obtain a support letter from MBIPV/PTM 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 All details of design work, wind load calculations for the PV system on the mounting structure and the brackets to the building, drawings, choice of material, etc. shall be first approved by the responsible parties before commencement of work.

#### **E. Information Display:**

- 6.1 A display panel showing minimum information i.e. power, kWh, other necessary information on the BIPV system shall be installed at a specified location.
- 6.2 The information shall be visible from at least 4 meters away.

### **Project Schedule**

It is expected the BIPV system to be installed and completed **within 6 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 **12<sup>th</sup> March 2010, Friday** not later than **12.00 pm** in a sealed envelope marked:

**“DESIGN, SUPPLY, DELIVERY, INSTALLATION, TESTING & COMMISSIONING AND MAINTENANCE OF A 5.0KWP BIPV SYSTEM AND ALL ANCILLARY WORKS AT SEKOLAH MENENGAH KEBANGSAAN ST. JOHN, JALAN BUKIT NENAS, 50250 KUALA LUMPUR”.**

For further information regarding the application or submission procedures, please contact Mr. Puvanendran (GPK 1) at 019-2641648 or Ms Lim Yuet Choon (Nature Society Teacher) at 012-6761423 / 03-20782846.

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

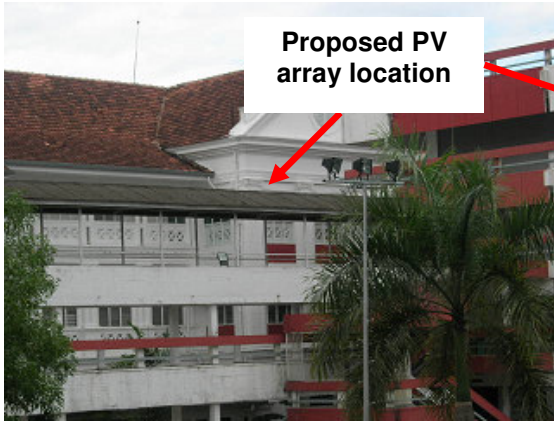
Pejabat Sekolah  
SMK St. John,  
Jalan Bukit Nenas,  
50250 Kuala Lumpur.

### **BIPV Concept for SMK St. John, Kuala Lumpur.**

The plan and photos given below are to serve as only a guideline for the intended locations of the BIPV system.

SMK St. John, Kuala Lumpur.





View of link bridge of SMK St. John, Kuala Lumpur (PV array to be installed at the link bridge roof). APVSPs are required to measure and ensure that the roof space is sufficient to locate the PV array.

**Flat roof for extra PV array location if the space at the link bridge is not sufficient**



View of the building with flat roof (extras PV array to be installed at the flat roof if the space at the link bridge is not sufficient).



## QUOTATION FORM

For "Design, Supply, Delivery, Installation, Testing & Commissioning And Maintenance Of A 5.0kWp (nominal) BIPV System And All Ancillary Works At Sekolah Menengah Kebangsaan St. John, Jalan Bukit Nenas, 50250 Kuala Lumpur".

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)				
<b>*Total price without tax/duty ex project site (RM)</b>				
<b>**Total duty and tax for PV modules and inverter (RM)</b>				
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 90 days** from the date of offer.
- 2) **\*\*To indicate the amount for tax/ duty (as applicable)**

**\*\*Total sum without tax/ duty (Ringgit Malaysia):**

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

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Position: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

## 2. STATEMENT OF COMPLIANCE

Scope of works	Complied (Y/N)	Remarks (if any)
1.1. To design a 5.0kWp (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 submit work plan within the specified period and necessary TNB interconnection application and registration forms.		
1.4. To supply and install PV modules, including the necessary mounting mechanism, as per specification.		
1.5. To supply and install adequately matched inverter, including the necessary equipment, materials and ancillary, as per specification.		
1.6. To provide and install junction boxes, TNB approved PV meter and other equipment as specified in MS1837.		
1.7. 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.		
1.8. To install proper signage and labeling of the necessary system components.		
1.9. To determine requirement for earthing and if necessary, to supply and install earthing system.		
1.10. Upon completion of installation, to rectify installation and roof structure against water leakage and any damage done to the roof or walls as necessary.		
1.11. To conduct testing and commissioning as per instruction from MBIPV project.		
1.12. Upon completion of the site work, to remove all debris.		
1.13. To provide warranty, as well as free technical support and maintenances services (minimum 24 months) for the installed BIPV system.		
1.14. To provide all necessary documentation including wind loading calculation, products specification and warranty, drawings and reports (user guide to be used by the school), as required.		

Specification (Technical requirements)	Complied (Y/N)	Remarks (if any)
<b>PV module</b>		
<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 <u>crystalline type, Class II, and IEC 61215</u> (or equivalent) certified, or <u>thin film type, Class II and IEC 61646</u> (or equivalent) according to MS 1837. All PV modules must comply to IEC 61730 and/or TUV Class II.</p> <p>2.3 The PV modules shall have minimum warranty of 25 years (for crystalline type) or 20 years (for thin film type) and to provide specification and certifications.</p>		
<b>Inverter</b>		
<p>3.1 The inverter shall be installed indoor or weather protected (IP 65).</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 (&gt;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 datalogger including sensors to capture the solar irradiance, PV module temperature, ambient temperature, etc. (capable for data logging).</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>		
<b>Electrical works</b>		
<p>4.1 All product rating, specification and installation shall comply to MS 1837.</p> <p>4.2 Proper protection devices shall be provided to safeguard the BIPV system against abnormal electrical circumstances.</p> <p>4.3 PV kWh meter shall be TNB approved type. (Note: Please obtain a support letter from MBIPV/PTM and indicate the specification: single or three phase and quantity required.)</p>		
<b>Mounting structure</b>		
<p>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.</p> <p>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).</p>		

<p>5.3</p> <p>5.4</p> <p>5.5</p> <p>5.6</p> <p>5.7</p>	<p>Proper allowance for roof structure expansion shall be provided in the design.</p> <p>The metal structures and brackets used shall be of anodized aluminium or stainless steel. Nuts, bolts and washers shall be of stainless steel.</p> <p>Any sealant used shall be of EPDM or silicon material or equivalent with high UV resistant quality, with at least a 10-year warranty.</p> <p>The roof structure shall have a high quality finish (no rough edges, proper bracket and edges, etc).</p> <p>All details of design work, wind load calculations for the PV system on the mounting structure and the brackets to the building, drawings, choice of material, etc. shall be first approved by the responsible parties before commencement of work.</p>		
<p><b>Information Display</b></p>			
<p>6.1</p> <p>6.2</p>	<p>A display panel showing minimum information i.e. power, kWh, other necessary information on the BIPV system shall be installed at a specified location.</p> <p>The information shall be visible from at least 4 meters away.</p>		