Photovoltaic Installation

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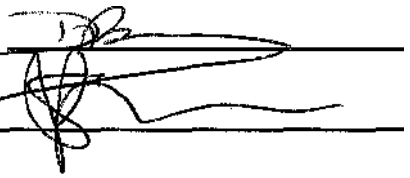

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3.22 Photovoltaic installations (PV)

3.22.1 System Requirements

All PV systems configurations shall be formally submitted to OUES electrical section for approval.

The design shall provide the university with the following information:

- year 1 output
- year 20 output
- annual degradation in efficiency
- outputs relative to kWp installed and capital cost
- All data used to form the calculation.

Two options for photovoltaic systems shall be designed for each installation:

- Option 1 Provide the minimum size required to meet any planning / building regulation requirement and as detailed within this document
- Option 2 uplift to a larger system to take maximum advantage of space available for the array.

The minimum PV installation size shall be no less than 4KW, unless agreed with OUES.

All PV installations shall comply with the following:

BS7671 Electrical installation Regulations

BS EN 62446:2009 Grid connected photovoltaic systems - Minimum requirements for system documentation, commissioning tests and inspection

BS EN 50438. Requirements for the connection of micro-generators in parallel with public low-voltage distribution networks

Engineering reference G83

Engineering Reference G59

PV systems shall be only installed by a MCS accredited contractor unless otherwise agreed with OUES.

3.22.2 PV Modules / Arrays

PV systems mounted above or integrated into a pitched roof should utilise products that have been tested and approved to MCS012 (test procedures used to demonstrate the performance of solar systems under the action of wind loads, fire, rainfall and wind driven rain).

PV systems utilising bespoke building integrated PV modules should utilise products that have been tested and approved to MCS017 Product Certification Scheme Requirements: Bespoke Building Integrated Photovoltaic Products.

All PV Modules must comply with the following international standards:

IEC 61215 in the case of crystalline types
IEC 61646 in the case of thin film types
IEC 61730 - Photovoltaic (PV) module safety qualification
Modules must carry a CE mark

The University has a strong preference for PV Modules from one of the following manufacturers:

- Panasonic(HIT)
- Sun power (E20)
- Suntech

Any other modules offered must be certificated and listed on the MCS product database.

Any other modules offered will need approval from OUES Electrical section.

Unless otherwise specified or dictated by site conditions and OUES preferences, all PV arrays shall be oriented facing south at tilt angles between 30 and 40 degrees from horizontal for maximum solar energy exposure. Arrays should be located to prevent shading from trees, poles or other structures at anytime between 7am and 5pm solar time, any day of the year.

All PV arrays must be securely installed to the facility roof or ground-mount structure as dictated by site conditions.

Mounting kits will be one of the following manufacturers.

- Schuco
- SolarWorld

Rooftop mounted arrays should have a minimum of 75 millimeters between the top surface of the module and roof surface, with no obstructions preventing air flow between (beneath) the array and roof surface.

3.22.3 Inverters

SMA Sunnyboy invertors shall be installed, the University preference from the SMA range is for transformerless unless otherwise required by the array. Size of unit is specific to the design requirements.

3.22.4 Remote Energy Management

Each invertor must be connected to the university data network via a SMA Webbox.

3.22.5 Metering

In addition to the OFGEM approved meter a separate OUES meter shall be installed on the AC side of the invertor. This shall be connected into the OUES metering system in accordance with the current philosophy document.