

Design, Access & Planning Statement

Proposed installation of roof mounted solar (PV) panels.

Zestec Assest Management

Man 1 Amazon Facility
Manchester Airport
6 Sunbank Lane
M90 5AA

May 2021

Introduction

This statement is submitted in support of a planning application for the installation of solar photovoltaic (PV) panels onto the roof slope of the existing Man 1 Amazon distribution facility building.

Man 1 Amazon distribution facility is a purpose built warehouse used for the operations of Amazon.

The proposal is for a renewable energy provision to reduce the energy use of the existing building.

Amazon has made a commitment to power its global infrastructure with 80% renewable energy by 2024, reaching 100% renewable energy by 2030, on its path to net zero carbon by 2040.

To this end, Amazon to date has installed more than 50 solar rooftops on fulfilment and sortation facilities around the globe that generate 98MW of renewable capacity and deliver 130,000MWh of energy annually.

Amazon aims at accelerating the process of installing behind-the-meter (or onsite) solar PV systems across its fulfilment and sortation facilities in Europe

Amazon's objective is to facilitate the installation of solar PV systems for its own 'onsite' consumption, and through the Power Purchase Agreement (PPA) mechanism achieve long-term price certainty and electricity cost savings compared to a business-as-usual scenario with no solar installed. Amazon are committed to purchasing electricity under the PPA with system capacities designed to achieve a minimum 80% of the on-site annual consumption.

Executive Summary

1. Roof mounted solar array on an existing building to help reduce the energy use.
2. The proposal provides a renewable energy source and associated long term environmental benefits.
3. The proposal is designed to achieve a minimum 80% of the on-site annual consumption.

Application site & Existing Building

The application site is a large purpose built commercial warehouse with shallow pitched roof and parapet wall to the perimeter.

Due to the parapet wall and shallow roof slope, the proposed solar panels will not be visual from elevation.

At present there is a small section of solar panels on the roof.

Proposed Energy Usage

1. The proposal is designed to achieve a minimum 80% of the on-site annual consumption.
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Proposed Layout

The application site consists of a large storage and distribution building.

After a number of feasibility studies, it was concluded that solar panels would be installed on the roof, given its structural integrity, its overall roof area, orientation and position.

Due to the nature of Solar Photovoltaic installation, once installed, there is minimal on-site activity required during the life cycle of the project, other than through maintenance activities.

Proposed Design

The proposal is to place a solar panel array on the southeast facing roof slopes, of the existing building.

The panels will be arranged in a rectangular format to maximise roof covering.

Scale

There will be no increase in building mass or scale as a result of the introduction of the solar panels.

The solar will protrude 150-200mm from the existing roof slope.

Appearance

A visual study of the locality, and surrounding area was undertaken, this informed the proposals in terms of scale, mass, architectural values and position.

The proposed collective of solar panels have been designed harmoniously with the sites surroundings.

Given the shallow pitch of the existing roof it is deemed that the solar panels will blend seamlessly within its surrounding context, whilst still maintaining some individual character and proving fit for purpose and will not conflict with the surrounding countryside.

The solar panels will sit on removable metals guide rails on the outer face of the existing roof covering.

The solar panels and frames have been designed for easy installation and removal once the life of the solar panels /tariffs ends, returning the roof back to its original state.

Solar PV-About

A Photovoltaic (PV) cell consists of two thin layers of semi-conducting material, most commonly silicon. When the silicon is exposed to light, electrical charges are generated and this can be conducted away by metal contacts as direct current (DC).

The electrical output from a single cell is small, so multiple cells are connected together and encapsulated (usually behind the glass) to form a module (sometimes referred to as a "panel").

The PV module is the principal building block of a PV system and any number of modules can be connected together to give the desired electrical output.

PV panels have no moving parts and, as a result, require minimal maintenance.

The panels generate electricity without producing emissions of greenhouse or any other gasses.

There will be no noise associated with the solar panels.

Landscaping

Existing landscaping will not be affected by the proposal.

Screen planting can be incorporated but has not been detailed as deemed unnecessary given the busy surrounding locality.

Access

Access will remain as existing and is not affected by the proposals.

Visual Impact and Harm to the Countryside

The application site is located upon a busy commercial location.

In terms of any visual impact, as highlighted, the proposals are a roof based proposal and given the lower roof pitch of the existing building and the minimal protrusion above the roof slope the visual impact will be extremely minimal.

Neighbour Impact

As highlighted, the panels would not create noise or glare issues due to the nature of this renewable energy provision.

Impact on Aviation

Solar Photovoltaic Glint and Glare Study

Manchester airport is within close location and therefore a Glint & Glare and an Aviation Impact assessment were commissioned. A copy of the reports is including in the planning submission documentation.

The report concludes.

"A moderate impact towards observers within the ATC Tower is predicted. Pager Power's position is that the impact can be accommodated without the need for mitigation. This should be discussed with the aerodrome safeguarding manager.

The airport's position regarding this potential glare should be confirmed. The results should be made available to the safeguarding team at Manchester Airport."

Aviation Impact Assessment

Overall Conclusion and Recommendations

"The proposed rooftop solar development will produce a negligible change to the baseline condition already present due to the presence of the commercial unit.

This report should be shared with the safeguarding team at Manchester Airport."

Ecological

The actual application site has little in the way of ecological habitats with the exception of the bordering maturing trees and hedges within and bordering the adjacent fields. These trees would remain unaffected with no proposals sought to remove any. The proposed solar panels will be passive in nature

and therefore will not present any harmful impacts to local or migratory birds or bat

Impact on Heritage Assets

The application building is not listed and there are no listed buildings upon the application site.

Economic and Social Benefits

The Government has made a clear commitment in continuing to tackle climate change by stating that “in their local plans authorities should contribute to the move to a low carbon economy, cut greenhouse gas emissions, help secure more renewable and low carbon energy to meet national targets, and to adapt to the impacts arising from climate change” (DCLG, July 2010). The prominence of EU targets and national objectives in national policy does still make them an important consideration.

Flood Risk

The site has no history of flooding and the site is not within the flood plain. It is proposed that the surface water from the roof will remain as currently existing.

No increase in surface water run-off is proposed.

Relevant Planning Policy

Under the Kyoto Protocol in 1997, the UK agreed to reduce emissions of greenhouse gases by 12.5% below the 1990 levels by 2008 to 2012. Under the 2010 Copenhagen Accord, the EU agreed to further emission cuts of between 20% and 30% by 2020 against the 1990 levels.

It is recognised internationally that the development of renewable energy will play an important role in reaching these targets.

The 2009 Renewable Energy Directive sets ambitious targets for all EU member states, aiming for the EU to reach a 20% share of its energy being generated from renewable sources by 2020.

Manufacturer's data for the array of panels proposed for this installation estimate that their use for electricity generation will save just over 450,000 kg of CO2 emissions over their 25 year lifespan.

Planning for Renewable Energy

The UK Climate Change Bill 2008 sets a target of an 80% reduction in greenhouse gas emissions by 2050 (against the 1990 levels).

Two key aims of the Act:

1. Improve carbon management, helping the transition towards a low-carbon economy in the UK.
2. Demonstrate UK leadership internationally, signalling we are committed to taking our share of responsibility for reducing global emissions in the context of developing negotiations on a post-2012 global agreement at Copenhagen in December 2009

The 2009 UK Renewable Energy Strategy provides a series of measures to meet the legally binding target set out in the 2009 Directive. The summary of this strategy states *"We need to radically increase our use of renewable electricity, heat and transport."* The Strategy sets out the roadmap to meet other legally binding targets, ensuring that 15% of our energy will come from renewable sources by 2020; an almost seven-fold increase in the share of renewable in little more than a decade.

It further states

"Our planning system must enable renewable deployment in appropriate places, at the right time, and in a way that gives business the confidence to invest. Thus we must speed up the system and make it more predictable, while ensuring that we continue to protect our environment and natural heritage and respond to the legitimate concerns of local communities."

The UK has significant **solar and thermal resources**.

Photovoltaic panels can generate renewable electricity for on-site use, or for export to the grid, even when the sky is overcast.

Rolling out renewables as a part of everyday life – for instance a wind turbine at the local hospital, or solar panels on the neighbour's roof – can increase public acceptance of renewable energy projects such as wind farms, and encourage everyone to reduce their energy demand.

Environmental impacts

Tackling climate change is vital for protecting our natural environment. If unchecked the impacts will be severe. Actions to address climate change can bring other environmental benefit. For example, solar energy can reduce local levels of pollution.

Sharing the Benefit

If we are to meet our renewable energy target and longer-term carbon reduction ambitions, many communities will need to 'host' renewable energy projects such as wind farms, biomass plants or solar rooftop arrays. Individuals and communities can therefore play a key role by supporting large-scale renewable energy projects in their localities, both through their involvement in the formal planning process and through broader support for, and involvement in, developing renewable energy.

National Planning Policy Framework (NPPF)

The UK Government is committed to increasing domestic renewable energy provision to address the projected growth in global energy demand and concern over long term fossil fuels supplies. Together, these issues place our long term energy supply at risk. In addition to these trends, global warming and climate change means we have to ensure that we make the most of our renewable resources to provide a secure basis for the UK's future energy needs.

These aims were reflected in the 2009 UK Government Energy Strategy White Paper which states within its

Executive Summary that:

'We need to radically increase our use of renewable electricity, heat and transport. (The Strategy) sets out the path for us to meet our legally binding target to ensure 15% of our energy comes from renewable sources by 2020: almost a seven-fold increase in the share of renewables in scarcely more than a decade.'

The Government has confirmed that the targets on renewable energy will continue to remain the same as those outlined within the 2009 Energy Strategy White Paper.

Ministerial foreword

At the heart of the NPPF is a presumption in favour of sustainable development, Development that is sustainable should go ahead, without delay.

Core planning principles

Support the transition to a low carbon future in a changing climate, and encourage the use of renewable resources (for example, by the development of renewable energy);

Paragraph 91

When located in character landscape areas, elements of many renewable energy projects will comprise inappropriate development. In such cases developers will need to demonstrate very special circumstances if projects are to proceed. Such very special circumstances may include the wider environmental benefits associated with increased production of energy from renewable sources.

Paragraph 97

To help increase the use and supply of renewable and low carbon energy, local planning authorities should recognise the responsibility on all communities to contribute to energy generation from renewable or low carbon sources.

Renewable and low carbon energy

Includes energy for heating and cooling as well as generating electricity. Renewable energy covers those energy flows that occur naturally and repeatedly in the environment – from the wind, the fall of water, the movement of the oceans, from the sun and also from biomass and deep geothermal heat.

Low carbon technologies are those that can help reduce emissions (compared to conventional use of fossil fuels).

Paragraph 98

When determining planning applications, local planning authorities should:

- Not require applicants for energy development to demonstrate the overall need for renewable or low carbon energy and also recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions; and
- approve the application if its impacts are (or can be made) acceptable.

Once suitable areas for renewable and low carbon energy have been identified in plans, local planning authorities should also expect subsequent applications for commercial scale projects outside these areas to demonstrate that the proposed location meets the criteria used in identifying suitable areas.

Conclusion

In assessing this application in relation to policy and environmental context, it is considered that the application should be granted for the following reasons:

- Roof mounted solar array on an existing building to help reduce the energy use of the business.
- The proposal provides a renewable energy source and associated long term environmental benefits
- The proposed panels would be positioned on the roof slopes of the existing building and as such visual intrusion would be minimize by the busy surroundings, existing vegetation and existing buildings.
- The proposed panels would not be an isolated feature due to nature of the locality.
- The scale and location of the panels would be such that the impact on its surrounding would be negligible.
- The proposal is designed to achieve a minimum 80% of the on-site annual consumption.

There are no other material planning considerations that would outweigh the overriding benefits of this proposal in providing a renewable energy source and the long term environmental benefits this brings. Having regard to the above and all other matters, it is considered that the proposed development meets the expectations of policies of the Development Plan and other policy guidance including specifically the provisions of PPS22. It is thus felt that this application should be granted.

Supplementary Documents

Harvest the Sunshine

Mono

390W MBB Half-Cell Module

JAM60S20 365-390/MR Series

Introduction

Assembled with multi-busbar PERC cells, the half-cell configuration of the modules offers the advantages of higher power output, better temperature-dependent performance, reduced shading effect on the energy generation, lower risk of hot spot, as well as enhanced tolerance for mechanical loading.



Higher output power



Lower LCOE



Less shading and lower resistive loss

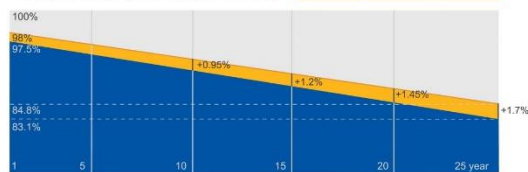


Better mechanical loading tolerance

Superior Warranty

- 12-year product warranty
- 25-year linear power output warranty

0.55% Annual Degradation Over 25 years



■ New linear power warranty ■ Standard module linear power warranty

Comprehensive Certificates

- IEC 61215, IEC 61730, UL 61215, UL 61730
- ISO 9001: 2015 Quality management systems
- ISO 14001: 2015 Environmental management systems
- ISO 45001: 2018 Occupational health and safety management systems
- IEC TS 62941: 2016 Terrestrial photovoltaic (PV) modules – Guidelines for increased confidence in PV module design qualification and type approval



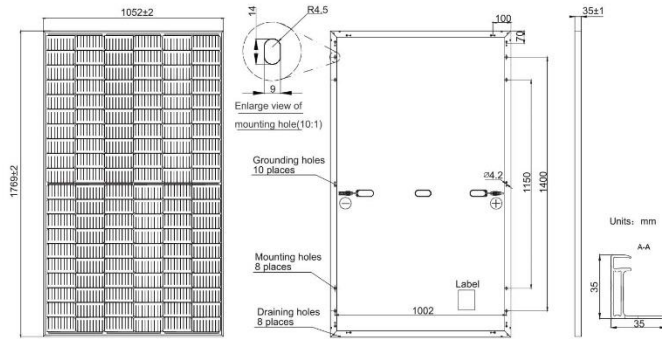
JA SOLAR

www.jasolar.com

Specifications subject to technical changes and tests.
JA Solar reserves the right of final interpretation.



MECHANICAL DIAGRAMS



Remark: customized frame color and cable length available upon request

SPECIFICATIONS

Cell	Mono
Weight	20.5kg±3%
Dimensions	1769±2mm×1052±2mm×35±1mm
Cable Cross Section Size	4mm ² (IEC) , 12 AWG(UL)
No. of cells	120(6×20)
Junction Box	IP68, 3 diodes
Connector	QC 4.10(1000V) QC 4.10-35(1500V)
Cable Length (Including Connector)	Portrait:300mm(+)/400mm(-); Landscape:1000mm(+)/1000mm(-)
Packaging Configuration	31pcs/Pallet 806pcs/40ft Container

ELECTRICAL PARAMETERS AT STC

TYPE	JAM60S20 -365/MR	JAM60S20 -370/MR	JAM60S20 -375/MR	JAM60S20 -380/MR	JAM60S20 -385/MR	JAM60S20 -390/MR
Rated Maximum Power(P _{max}) [W]	365	370	375	380	385	390
Open Circuit Voltage(V _{oc}) [V]	41.13	41.30	41.45	41.62	41.78	41.94
Maximum Power Voltage(V _{mp}) [V]	33.96	34.23	34.50	34.77	35.04	35.33
Short Circuit Current(I _{sc}) [A]	11.30	11.35	11.41	11.47	11.53	11.58
Maximum Power Current(I _{mp}) [A]	10.75	10.81	10.87	10.93	10.99	11.04
Module Efficiency [%]	19.6	19.9	20.2	20.4	20.7	21.0
Power Tolerance	0~+5W					
Temperature Coefficient of I _{sc} (α _{Isc})	+0.044%/°C					
Temperature Coefficient of V _{oc} (β _{Voc})	-0.272%/°C					
Temperature Coefficient of P _{max} (γ _{Pmp})	-0.350%/°C					
STC	Irradiance 1000W/m ² , cell temperature 25°C, AM1.5G					

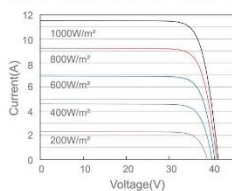
Remark: Electrical data in this catalog do not refer to a single module and they are not part of the offer.They only serve for comparison among different module types.

ELECTRICAL PARAMETERS AT NOCT

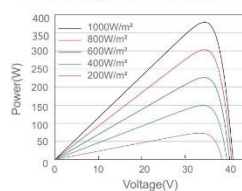
TYPE	JAM60S20 -365/MR	JAM60S20 -370/MR	JAM60S20 -375/MR	JAM60S20 -380/MR	JAM60S20 -385/MR	JAM60S20 -390/MR	Maximum System Voltage	1000V/1500V DC
Rated Max Power(P _{max}) [W]	276	280	284	287	291	295	Operating Temperature	-40°C~+85°C
Open Circuit Voltage(V _{oc}) [V]	38.41	38.65	38.89	39.14	39.38	39.63	Maximum Series Fuse Rating	20A
Max Power Voltage(V _{mp}) [V]	32.05	32.30	32.55	32.72	32.96	33.20	Maximum Static Load,Front	5400Pa (112 lb/ft ²)
Short Circuit Current(I _{sc}) [A]	9.15	9.20	9.25	9.30	9.35	9.40	Maximum Static Load,Back	2400Pa (50 lb/ft ²)
Max Power Current(I _{mp}) [A]	8.61	8.66	8.71	8.78	8.83	8.88	NOCT	45±2°C
NOCT	Irradiance 800W/m ² , ambient temperature 20°C, wind speed 1m/s, AM1.5G						Safety Class	Class II
							Fire Performance	UL Type 1

CHARACTERISTICS

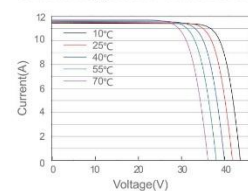
Current-Voltage Curve JAM60S20-380/MR



Power-Voltage Curve JAM60S20-380/MR



Current-Voltage Curve JAM60S20-380/MR



Premium Cells, Premium Modules

Version No. : Global_EN_20201118A