

Detailed Design Rev B - South

MMU - Vine Halls, Manchester M15 6GR, UK

Report

Project Name	MMU - Vine Halls
Project Address	Manchester M15 6GR, UK
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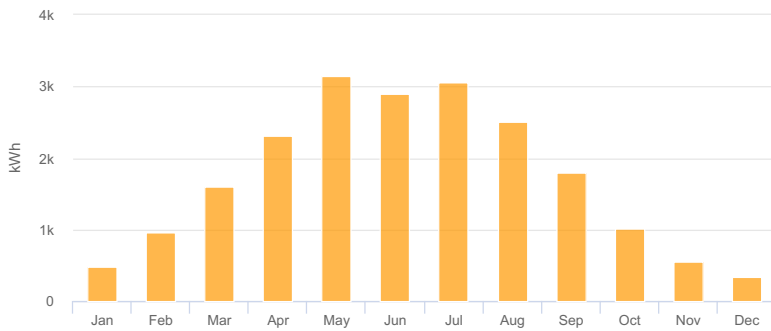
System Metrics

Design	Detailed Design Rev B - South
Module DC Nameplate	22.5 kW
Inverter AC Nameplate	20.0 kW Load Ratio: 1.13
Annual Production	20.64 MWh
Performance Ratio	85.7%
kWh/kWp	917.4
Weather Dataset	TMY, 10km Grid, meteonorm/nasa low resolution (meteonorm)
Simulator Version	29eddcad3a-7a4dce91a7-91691775d4-b09c1fb2c2

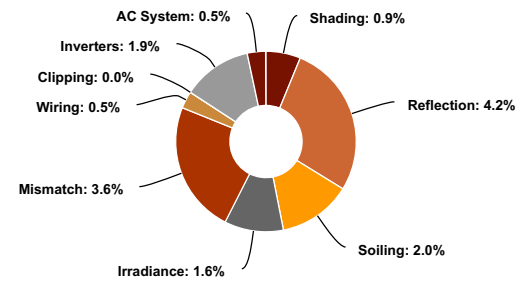
Project Location



Monthly Production



Sources of System Loss



Annual Production

	Description	Output	% Delta
Irradiance (kWh/m ²)	Annual Global Horizontal Irradiance	986.7	
	POA Irradiance	1,070.4	8.5%
	Shaded Irradiance	1,060.3	-0.9%
	Irradiance after Reflection	1,015.8	-4.2%
	Irradiance after Soiling	995.5	-2.0%
	Total Collector Irradiance	995.5	0.0%
Energy (kWh)	Nameplate	22,401.1	
	Output at Irradiance Levels	22,038.8	-1.6%
	Output at Cell Temperature Derate	22,040.9	0.0%
	Output After Mismatch	21,246.8	-3.6%
	Optimal DC Output	21,147.6	-0.5%
	Constrained DC Output	21,147.3	0.0%
	Inverter Output	20,745.5	-1.9%
	Energy to Grid	20,641.7	-0.5%
Temperature Metrics			
	Avg. Operating Ambient Temp		12.3 °C
	Avg. Operating Cell Temp		17.5 °C
Simulation Metrics			
	Operating Hours	4584	
	Solved Hours	4584	

Condition Set

Description	Condition Set 1											
Weather Dataset	TMY, 10km Grid, meteonorm/nasa low resolution (meteonorm)											
Solar Angle Location	Meteo Lat/Lng											
Transposition Model	Perez Model											
Temperature Model	Sandia Model											
Temperature Model Parameters	Rack Type	a	b	Temperature Delta								
	Fixed Tilt	-3.56	-0.075	3°C								
	Flush Mount	-2.81	-0.0455	0°C								
Soiling (%)	J	F	M	A	M	J	J	A	S	O	N	D
	2	2	2	2	2	2	2	2	2	2	2	2
Irradiation Variance	5%											
Cell Temperature Spread	4° C											
Module Binning Range	-2.5% to 2.5%											
AC System Derate	0.50%											
Module Characterizations	Module	Uploaded By		Characterization								
	LR4-60HIH-375M (Longi)	HelioScope		Spec Sheet Characterization, PAN								
Component Characterizations	Device	Uploaded By		Characterization								

Components

Component	Name	Count
Inverters	S5-GR3P20K (400V) (Solis)	1 (20.0 kW)
Strings	4 mm2 (Copper)	3 (139.7 m)
Module	Longi, LR4-60HIH-375M (375W)	60 (22.5 kW)

Wiring Zones

Description	Combiner Poles	String Size	Stringing Strategy
Wiring Zone	-	5-24	Up and Down Racking

Field Segments

Description	Racking	Orientation	Tilt	Azimuth	Intrarow Spacing	Frame Size	Frames	Modules	Power
Field Segment 1	Fixed Tilt	Landscape (Horizontal)	10°	161.9204°	0.5 m	1x1	47	31	11.6 kW
Field Segment 3	Fixed Tilt	Landscape (Horizontal)	10°	162.5228°	0.5 m	1x1	27	14	5.25 kW
Field Segment 4	Fixed Tilt	Landscape (Horizontal)	10°	162.48982°	0.5 m	1x1	18	15	5.63 kW

