

MASTERPLAN WITH A PHOTOVOLTAIC STRUCTURE

Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec In Masdar city, the average daily shortwave solar energy has a significant seasonal variations over the year. The brightest period of the year is during three month, from April to July, with an average daily incident shortwave energy per square meter above 7.2 kWh. Based on the weather records of Abu Dhabi, the brightest day of the year is June 5, with an average of 8.0 kWh. The darkest period of the year is during three month, from middle November to early February, with an average daily shortwave energy per square meter below 4.9 kWh. Based on the reports of the United Arab Emirates reports the darkest day of the year is December 20, with an average of 4.2 kWh.

of "Solar Energy \na!"

Onyx Solar Photovoltaic medium transparent (34WP/sqm) glass system was chosen

to represent the roof structure. The photovoltaic glass generates free and clean energy. Moreover, its optimized solar factor enhances thermal comfort inside the building, it completely offsets the energy demand for indoor air conditioning and it drastically reduces the cost of electricity. Photovoltaic glass also filters 99% of ultraviolet radiation (UV), which may have a harmful effect on interiors, furniture and humans. Moreover, it reduces the transmission of infrared radiation by up to 90%. Given these properties, PV photovoltaic Glass maximizes the performance of the building's envelope, enabling buildings to become vertical power generators.



In order to analyze how muc photovoltaic roof some calculation square feet of the panels and the c The results of the calculation [•] that becomes a home for the pho erate 1, 4<mark>6</mark>4, 992 kWh per year tha light 167, 009 Lights 4 hours per d 10, 851,789km electric car mileag emissions per year.



In order to analyze Solar radiation and average daily incident shortware solar energy in Masdar city deeper and observe the most suitable areas for the photovoltaic panels, 3d model of Masdar city was analyzed in Sketchup by using the extension model

0W/m2



,464,992 kWh Electricity generated per year

ELECTRIC CAR MILEAGE THANKS TO THE ENERGY GENERATED

	2993 (* 1694 (9952091)	electricity production from the given system (kwh)	electricity production from the given system (kwh)	irradiation per square meter received by the modules of the given system (kwh/m2)	irradiation per square mete received by the modules of the given system (kwh/m2)
	January	2, 747.87	85,183.92	3.53	109.52
h average energy could generate the	February	3,218.98	90,130.30	4.16	116.36
is were made based on the location,	March	4,175.90	129,453.03	5.47	169.58
apacity of selected photovoltaic glass.	April	4,230.66	126,919.77	5.55	166.59
showed that the biophilic structure	May	4,764.13	147,687.94	6.33	196.15
ovoltaic glasses has a capacity to gen-	June	5,108.53	153,255.98	6.88	206.53
t is equivalent of 1 464 MWH. It can	July	5,468.00	169.507.95	7.45	230.94
av sava 864 barrals par year gaparata	August	5,309.37	164,590.47	7.21	223.59
ay, save out barrels per year, generate	September	4,501.08	135.032.53	6.04	181.21
e thanks and avoid 941,544 kg CO2	October	3,686.11	114,269.39	4.86	150.72
	November	2,649.22	79,476.51	3.43	102.98
	December	2,241.41	69,483.74	2.89	89.45
	Yearly	4,008.44	122,082.63	5.32	161.97

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Average daily

Average monthly Average daily sun of global Average sum of global

1,464,991.53

1,943.63