

**Rawlemon™**

**MicroTrack500HY**

promoted by Sbotic Ltd

Simulation of the "Six Cities High Rise" call in different geographical situations (south face)

LOCATION	SOLAR RADIATION PER DAY (Wh/m2)*	ANNUAL SOLAR RADIATION (kWh/m2)	BETA.RAY SURFACE 50% eff. (m2)	SYSTEM RATED POWER (kW)	TOTAL ENERGY GENERATED PER YEAR (GWh)	CONVERTED TO MWh	CONVERTED TO kWh	TOTAL ENERGY OPERATED PER YEAR (GWh) **	ENERGY SURPLUS PER YEAR (GWh)	ELECTRICITY HOUSEHOLD \$/kWh 2014	Feed-in Tariff Household \$/kWh 2014	ANNUAL ENERGY OFF-GRID SAVINGS (\$) 30 years	AVERAGE ANNUAL ENERGY REVENUE (\$/5,1%) 30 years	CONSTRUCT ION COST PER m2 BY CITY/COUNT RY (\$/M2)	TOTAL COST OF CONSTRUCTION BY CITY (\$)	AVERAGE FINANCING COST OVER 30 YEARS (\$/6%)	COST PER CELL OF 30m2 (\$) OF TOTAL 80 CELLS + 25% risk	COST PER m2 (\$)	BREAK EVEN % LOAN PER m2	CO2 EMISSION SAVINGS (Tons) vs. COAL
BARCELONA	6.164	2.250	406	201	0,46	457	456.660	0,15	0,31	0,26	0,00	88.476	269.356	1.338	6.741.000	238.182	105.328	3.511	113%	441
NEW YORK	5.780	2.110	406	201	0,43	428	428.185	0,15	0,28	0,19	0,22	64.656	184.563	3.023	15.233.581	538.253	238.025	7.934	34%	413
PARIS	4.603	1.680	406	201	0,34	341	340.973	0,15	0,19	0,18	0,19	61.253	139.236	2.408	12.133.800	428.728	189.591	6.320	32%	329
TOKYO	4.973	1.815	406	201	0,37	368	368.372	0,15	0,22	0,12	0,55	40.835	100.283	3.547	17.877.132	631.659	279.330	9.311	16%	355
BERLIN	4.466	1.630	406	201	0,33	331	330.825	0,15	0,18	0,33	0,11	115.699	255.175	1.562	7.872.480	278.161	123.008	4.100	92%	319
LONDON	3.750	1.369	406	201	0,28	278	277.802	0,15	0,13	0,22	0,29	74.864	138.649	4.803	24.208.279	855.359	378.254	12.608	16%	268
Average					0,37	367	367.136	0,15	0,22	0,22	0,23		181.211	2.780	14.011.045	546.432	218.923	7.297	51%	
Sum					2,20	2.203	2.202.816	0,91	1,30			445.783	1.087.264		84.066.273	2.970.342	1.208.207			2.126
Estimated annual energy profit in a 5 years period in percentage of 5 years financial cost													5.436.319	14.851.708			37%			
Perks (KS01) in a 5 years period full booked														16.601.353			20%			
Estimated funding goal														50.000			0%			
20 cells - 99 years sales after campaign														26.270.710			31%			
Estimated sales after 5 years period														42.872.063			51%			

Example: Feed-in Tariff (FIT) - what are basically subsidies

TOKYO FIT	4.973	1.815	500	250	0,37	368	368.372	0,15	0,22	0,12	0,55	187.161	459.632	3547	17.877.132	631.659	223.464	7.449	27%	355
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\* source: <http://re.jrc.ec.europa.eu/NREL-PVwatts> - Solar irradiation: G 2-axis tracking

\*\* source: Lemon Consult Zurich / total consumption / year: 30 kWh/m2

\*\*\* Feed-in Tariff (FIT) - basically subsidies/surcharge from government to promote renewables

Total consumption / year: 30 kWh/m2	30000	Wh/m2
Floor surface of the building: 240m2 per level x 21 levels	5040	m2
South oriented surface: 15,35m x 61,50m (Brutto 944m2) - Ball lens net area 43%	405,92	m2 (43%)
50% efficiency = 500W/m2 (measured by 1.5AMd, 1000W/m2, T= 25°)	0,5	kW/m2
1 year	365	days

1 Module: 20 Balls / 0,25m2 / 50% efficiency = 5,014m2	2507	W/Module rated power output
80 Modules = 200560 W	200,56	System rated power /kWp
Efficiency per m2:	0,215	kW/m2

UNITS CONVERSION

1 Kilowatt	kW	1.000 W
1 Megawatt	MW	1.000.000 W
1 Gigawatt	GW	1.000.000.000 W
1 Terawatt	TW	1.000.000.000.000 W

ANNUAL ENERGY LOSSES by TILT and Reflection

horizontal	25,00%
optimized angle	20,00%
vertical	60,00%
dual axis tracking system	0,00%

YEARLY ENERGY OPERATED

Office average : 30-50 kWh/m2	40
Residential: 50-150 kwh/m2	100
Mix use:	70

Lemon Consult Zurich - kW/m2:	30
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