ANNUAL ANALYZING OF INFLUENCE OF ENVIRONMENT ON PHOTOELECTRIC STATION WITH VARIOUS GRID CONNECTION TYPES: ANDIJAN REGION

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PROGRAM of the
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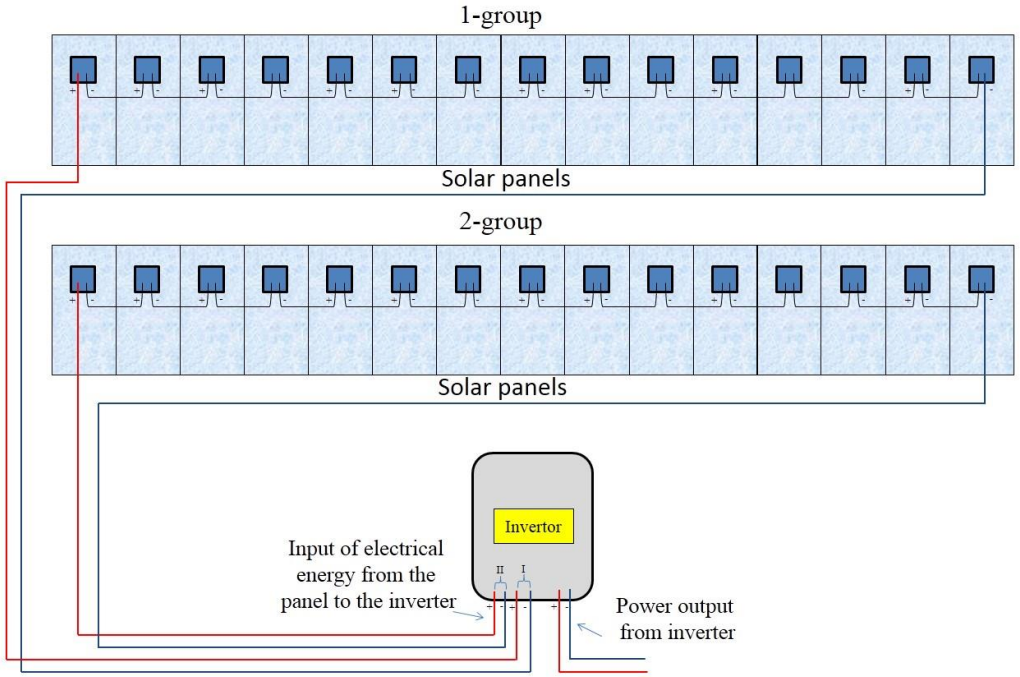
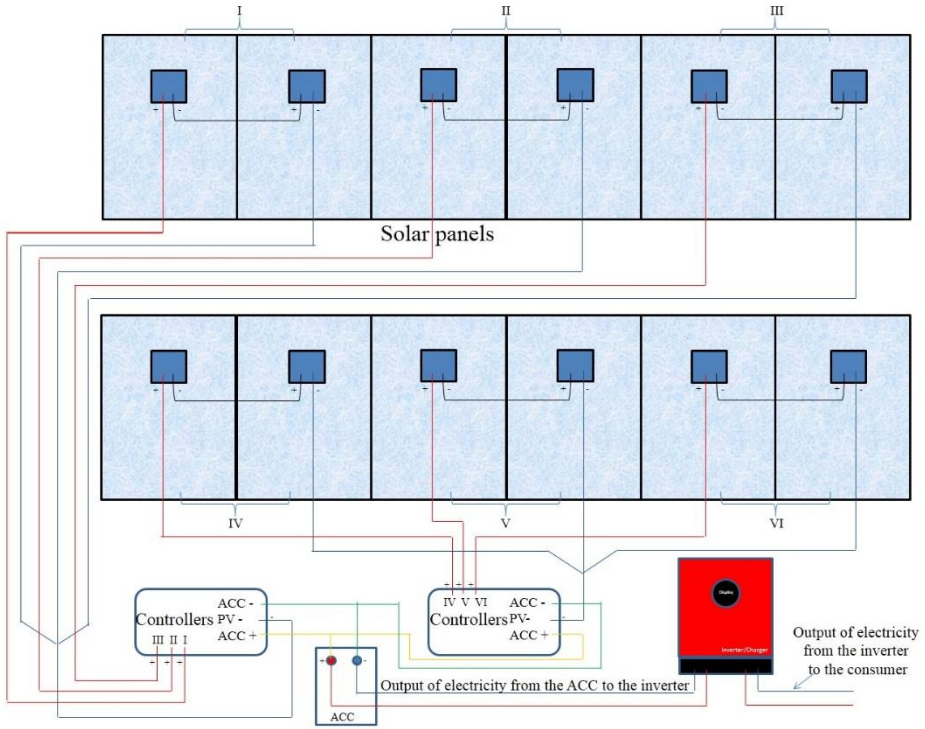
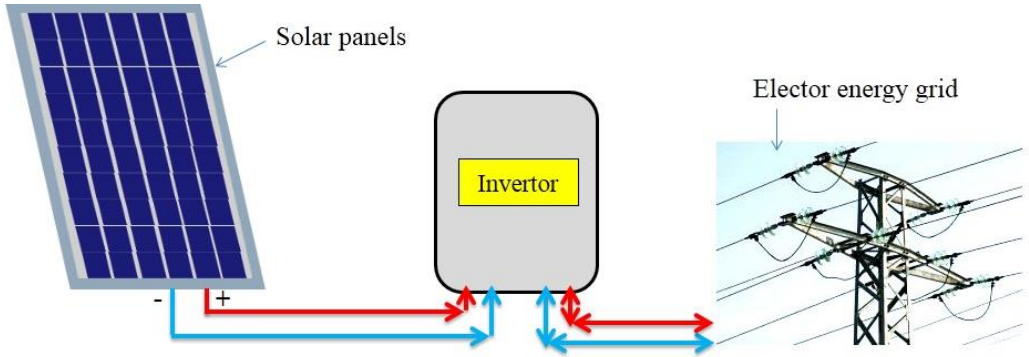
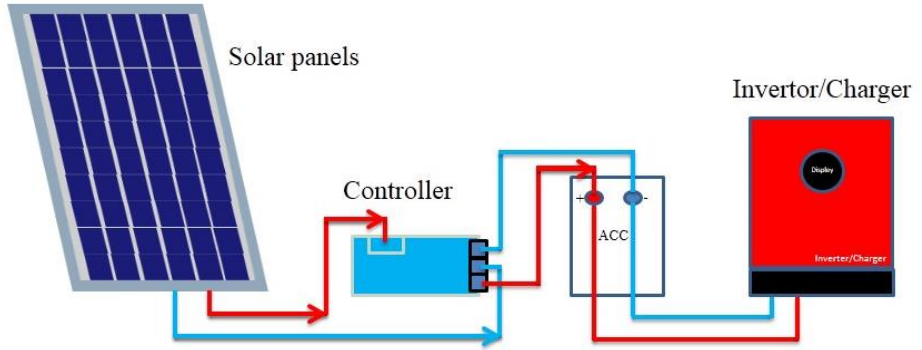
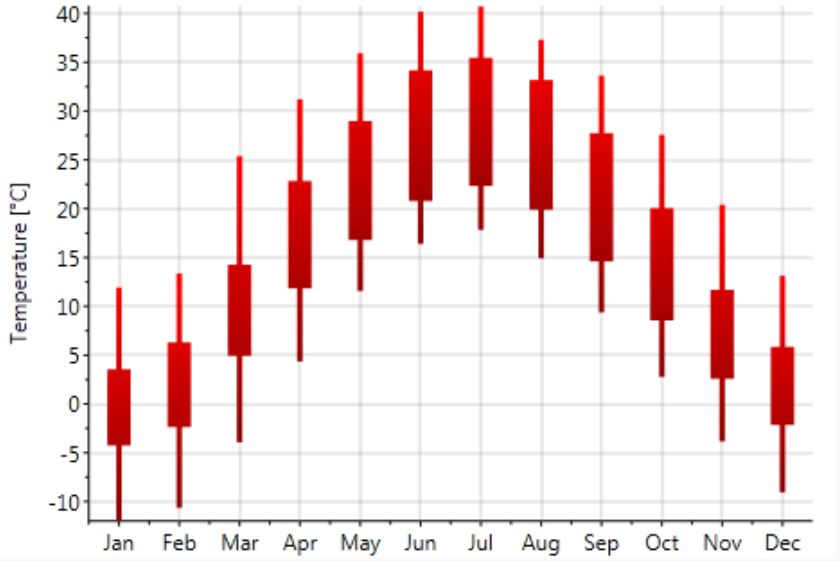
Block diagram of a solar module consisting of monocrystalline and polycrystalline silicon-based solar cells

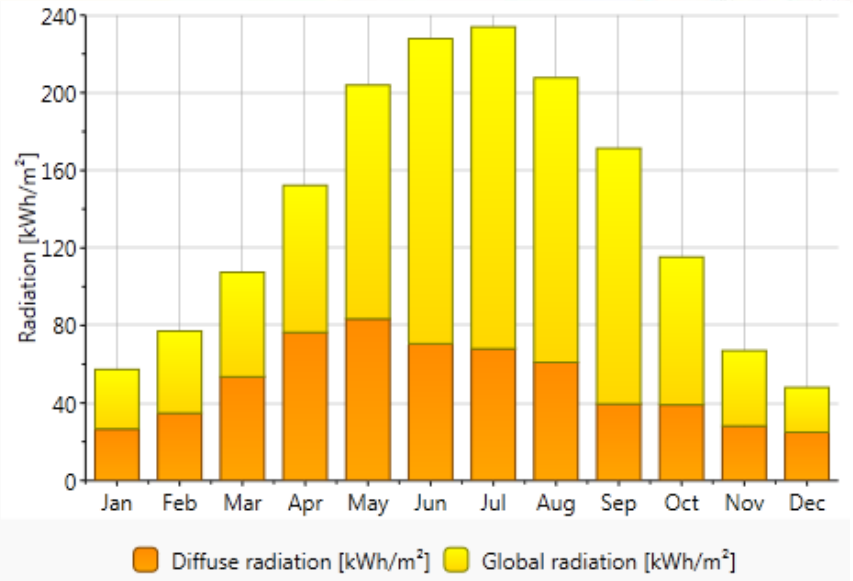


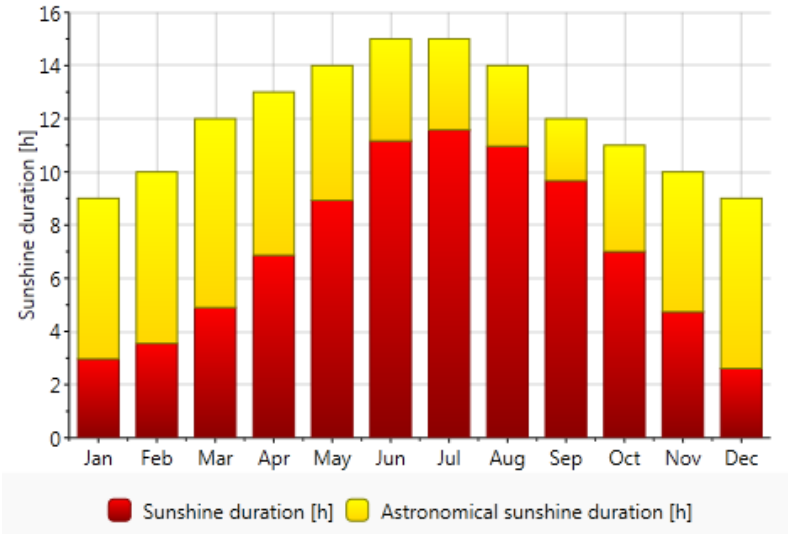


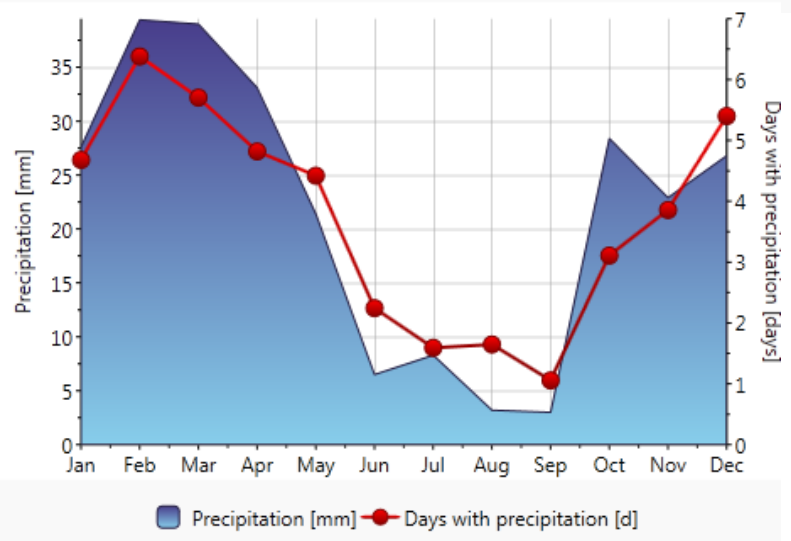






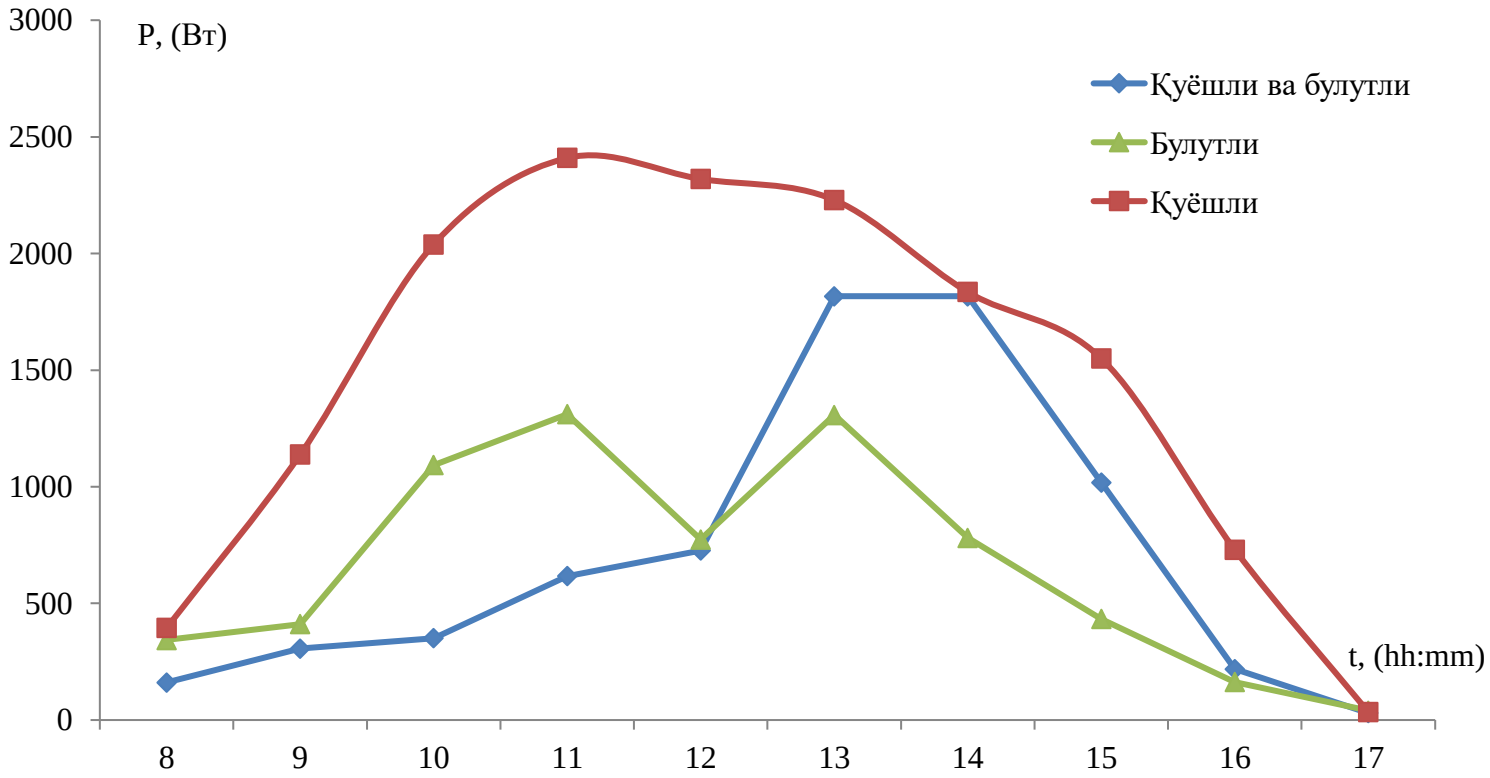




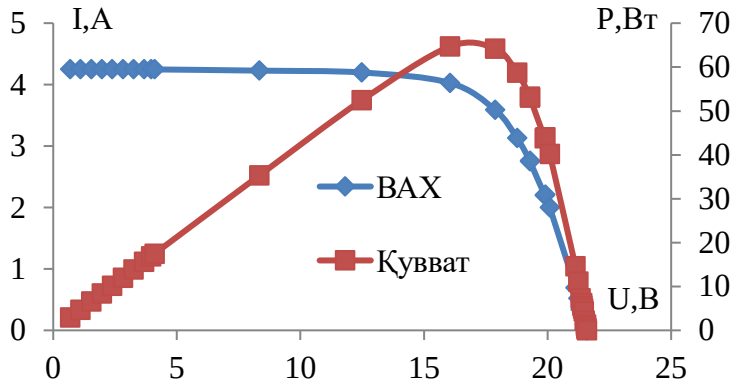


Meteonorm 7.3

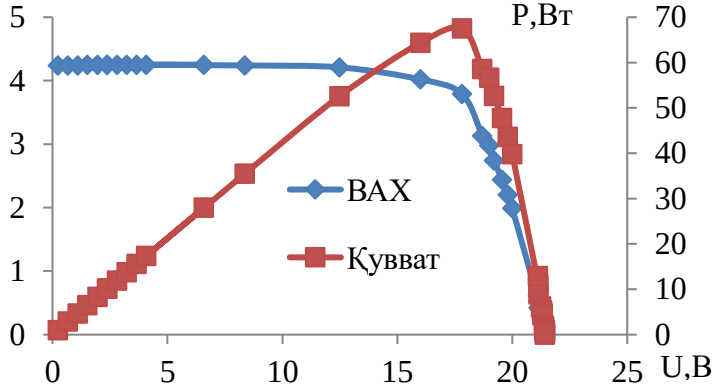
Inspection results and graphs



Power graph in case of weather conditions



I-V characteristics and power graph of a dusty panel



I-V characteristics and power graph of the cleaned PV panel from the dust

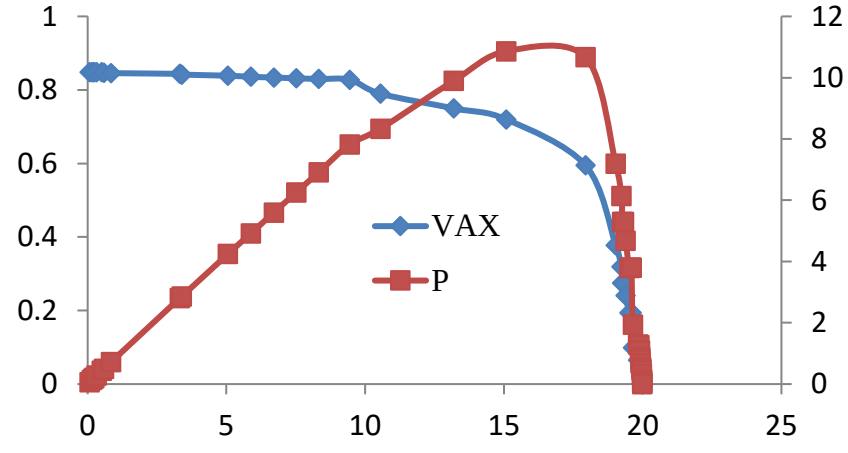
$$\eta = \frac{I_{эф} \cdot U_{эф}}{P_0} \cdot 100\% = \frac{P_{эф}}{P_0} \cdot 100\%$$

W_i=665 W/m²

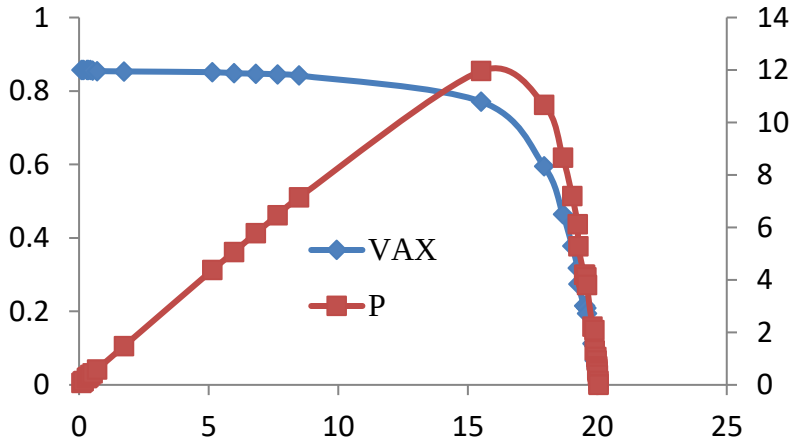
T_t=22 C^0 , T_p=43 C^0

$$P_0 = W_i \cdot S = 665 \frac{W}{m^2} \cdot 0,5625 m^2 \approx 374 W$$

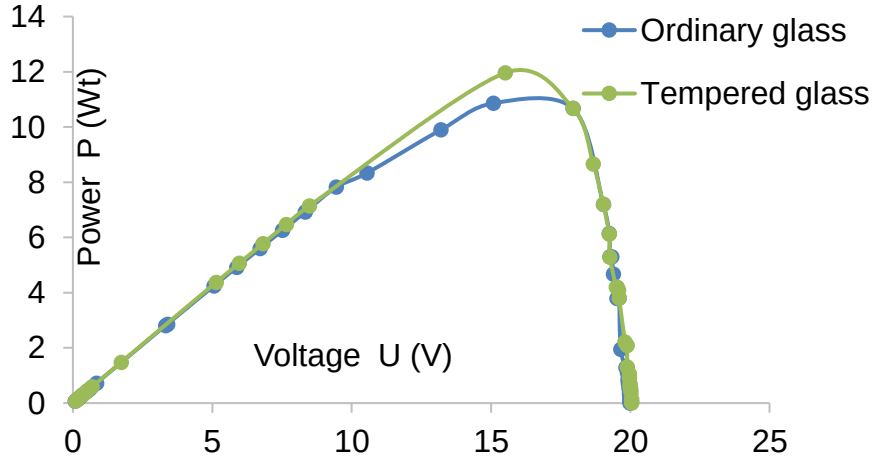
In a dusty condition	in dust-free condition
$P_{эф}$=64,6815 W	$P_{эф}$=67,5378 Wt
$\eta_{dusty} = \frac{P_{ef}}{P_0} \cdot 100\% = \frac{64,6815W}{374W} \cdot 100\% \approx 17,3\%$	$\eta_{dust-free} = \frac{P_{ef}}{P_0} \cdot 100\% = \frac{67,5378W}{374W} \cdot 100\% \approx 18\%$
$\Delta\eta = \eta_{dust-free} - \eta_{dusty} = 18\% - 17,3\% = 0,7\%$	



Outside temperature t = 40 ^{0}C, panel temperature t = 68 ^{0}C,
Light intensity W = 369 W / m^2
(ordinary glass)

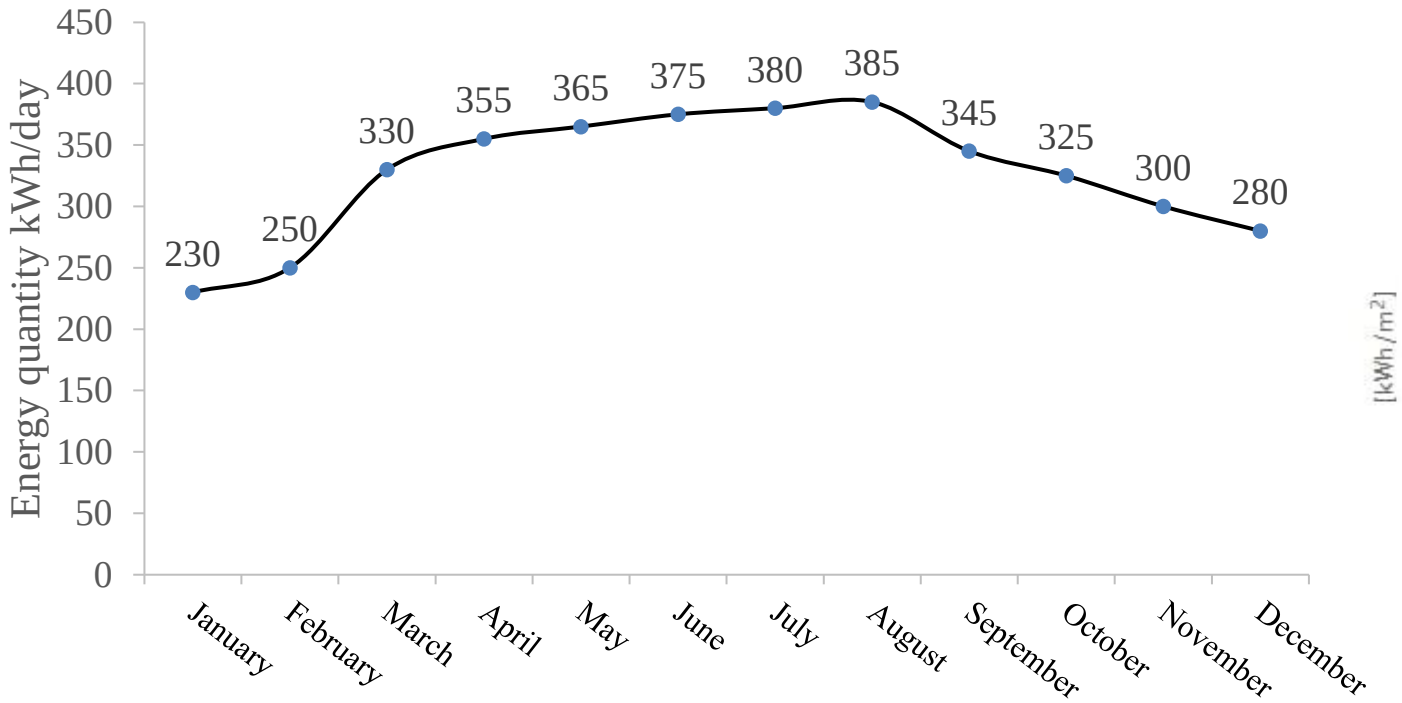


Outside temperature t = 40 ^{0}C, panel temperature t = 68 ^{0}C,
Light intensity W = 369 W / m2
(Burnt (tempered) glass)

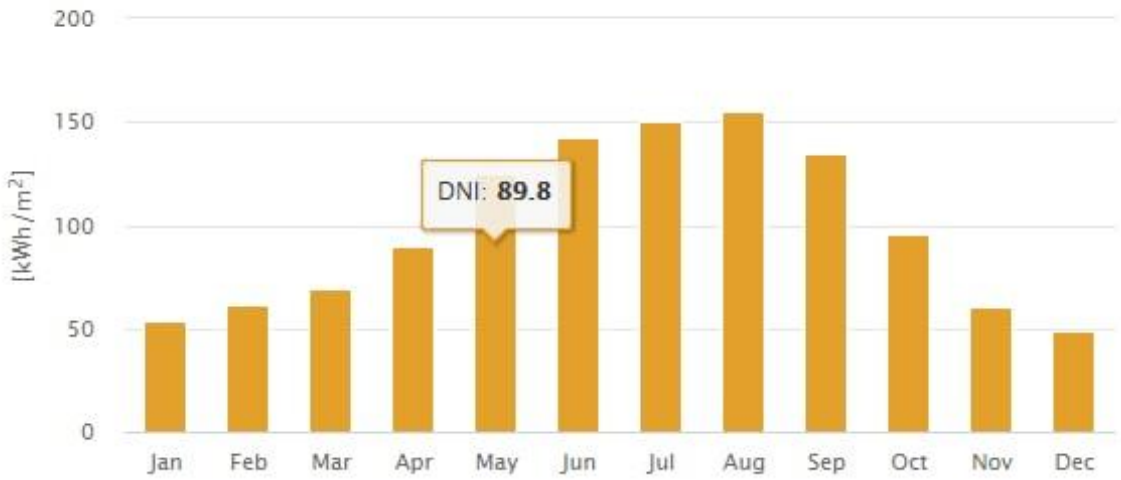


Comparison of the power of solar panels covered with ordinary and Burnt (tempered) glass

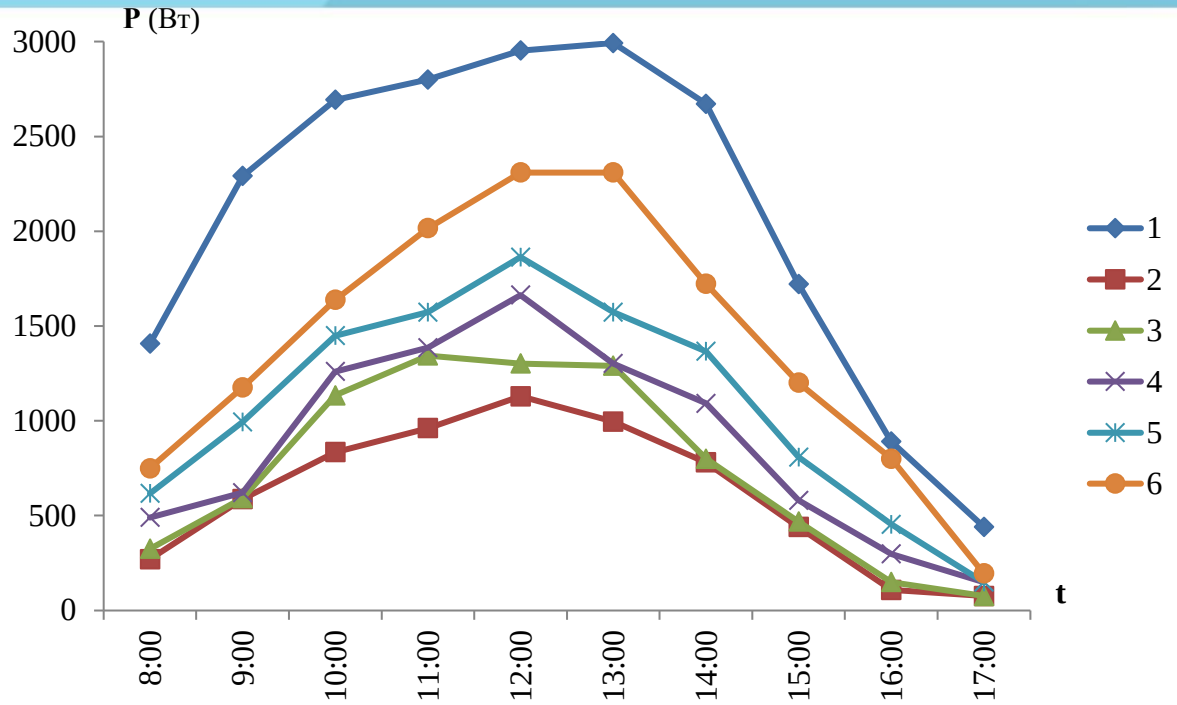
The graph of power at the intersection of months depends on the intensity of light

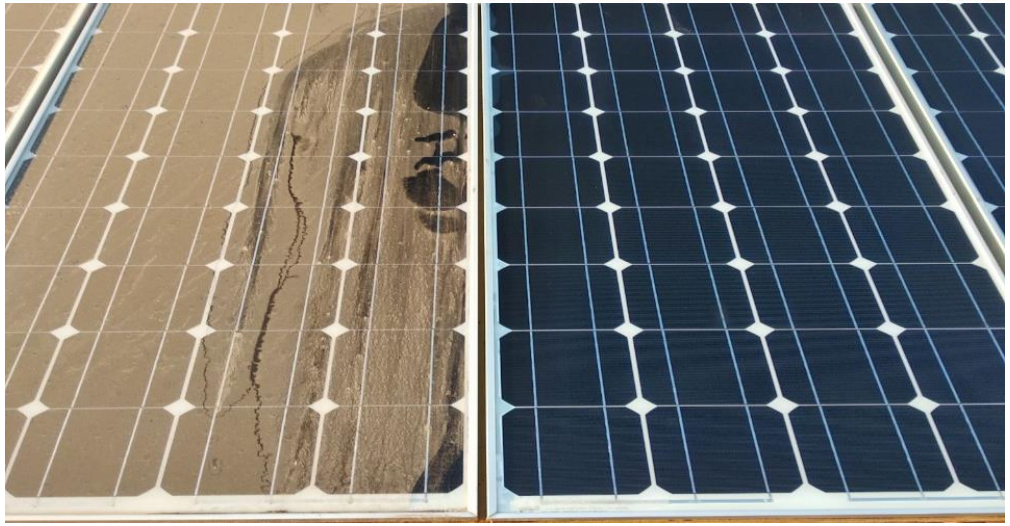


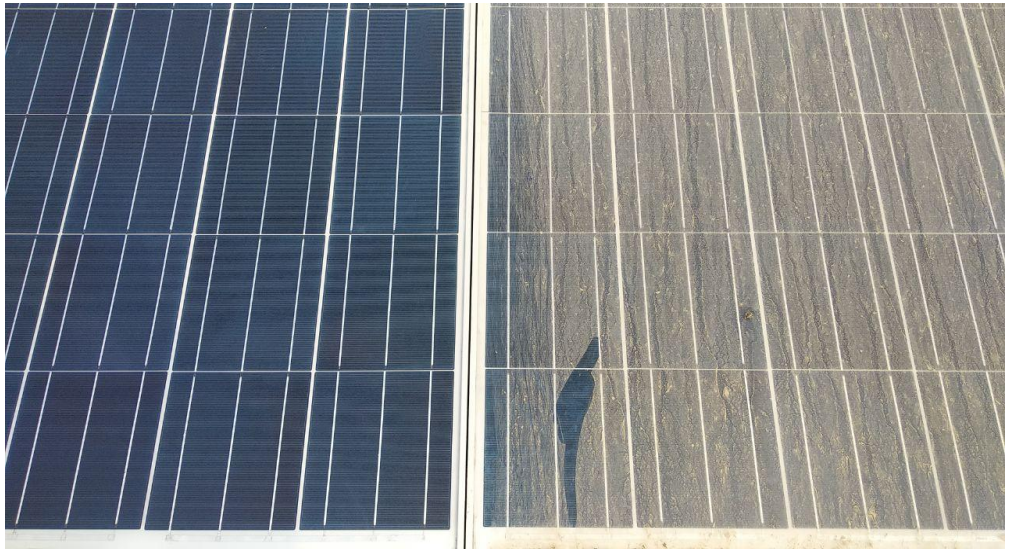
Monthly Energy Graph



Light intensity at the intersection of the months







1-23.10.2021 day sunny weather-there is no dust in the air, 2-06.11.2021 day sunny weather-the air contains 5 times more dust, 3 – 8.11.2021 day sunny weather-the dust content in the air is slightly less than the previous day, 4-9.11.2021 day sunny weather – the air contains a situation when the dust content in the air has significantly decreased compared to the previous days, 5 – 10.11.2021 the weather is sunny-there is practically no dust content in the air, 6-12.11.2021 days the surface of the solar module is cleared of dust, and the weather is partly cloudy.

The average daily production capacity of the solar module operating in the network system reaches 15 kW. It can produce an average of 5475 kWh of energy per year.

$$T = N_{tp} / (Q \cdot C_{ep} \cdot 365)$$

Here, general price of PV module
N_{tp} – the total body price of the PV module, Q-tariff plan for electricity consumption (1kW of electricity 450 sum for legal entities and 295 sum for individuals), C_{ep}-average annual energy production.

- For the first type solar module $T = 45.000.000 / (450 \cdot 5475 \cdot 365) = 18,26\ year$
- The second type is for the solar module $T = 30.000.000 / (450 \cdot 5475 \cdot 365) = 12,17\ year$

Thank you for your attention