

621.384.3

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... , ... , ... , ... , ...

... ” ... ”  
[3 – 5].

... [1].

[6, 7].

1200 / <sup>2</sup> .  
1000 1350 50 ( ).  
/ <sup>2</sup> [2].

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22													
50.5 N, 30.5 E	1,69	2,56	3,15	3,49	4,71	4,19	4,48	4,40	3,14	2,44	1,39	1,44	3,10
49.5 N, 24 E	1,66	2,49	2,90	3,23	3,96	3,81	3,90	4,06	3,01	2,34	1,48	1,34	2,85
49.59 N, 46.13 E	1,19	2,18	3,42	4,48	5,65	5,89	5,83	5,05	3,71	2,24	1,27	0,93	3,49
46.30 N, 30.46 E	1,08	1,78	2,68	3,87	5,40	5,70	6,39	5,63	3,96	2,45	1,06	0,87	3,41
49.33 N, 25.5 E	1,09	1,86	2,85	3,85	4,84	5,00	4,93	4,51	3,08	1,91	1,09	0,85	2,99
44.29 N, 34.9 E	1,27	2,06	3,05	4,30	5,44	5,84	6,20	5,34	4,07	2,67	1,55	1,07	3,58
48.37 N, 22.18 E	1,13	1,91	3,01	4,03	5,01	5,31	5,25	4,82	3,33	2,02	1,19	0,88	3,16
49.25 N, 27 E	1,09	1,86	2,87	3,85	5,08	5,04	4,58	3,33	3,14	1,98	1,10	0,87	3,06
48.36 N, 34.58 E	1,21	1,99	2,98	4,05	5,55	5,57	5,70	5,08	3,66	2,27	1,20	0,96	3,36

25 %

... ( ) ,

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(1):

$$N = \frac{...SV^3}{2}, \quad (1)$$

N - ;

... - ;

10 S - ;

V - .

... [8]:

(,, ” ) .

... ;

... / -

... ;

... 1 - 5 - 7 ;

50-85 % - 15 - 20 .

[9, 12].

( . 1, 2) [10,12].

[6, 7]

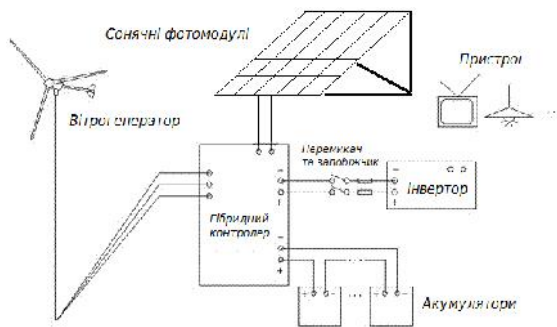
1. ( .1):  
KV150/12-M [6,  
7],

155A- ;  
12 ;  
4. ;  
5. ;  
6. ;  
7. .

[10]:

150 ; [13].  
12 ;  
8.  
9. ( . ).

[13].  
8.  
9. ( . ).

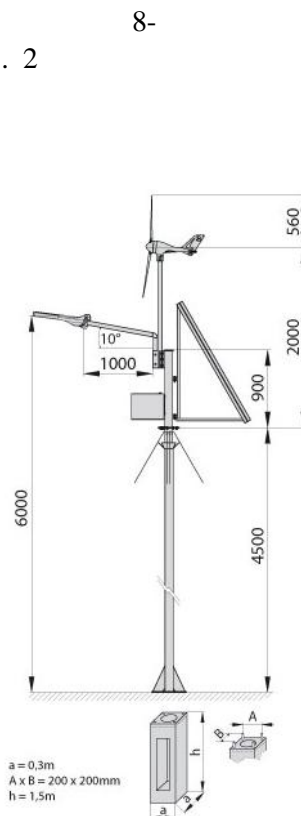


. 1. [11].

2. SF-600-5,  
12 [12]:

1,23 ;  
2,5 / ;  
600 ,  
15 / ;  
50 /

[10].



. 2.

3. ( .2).  
( )

[8].

. [9, 10, 12].

2.

		) ( -
67	5	
	6-12	LED 50 5-7
	550	100%

[//http://www.zamnoy.com/blogs/aleksey\\_arapov/114057145/2012-06-15/aine](http://www.zamnoy.com/blogs/aleksey_arapov/114057145/2012-06-15/aine).

2.

[ ] . -

[//http://alternativenergy.ru/solnechnaya-energetika](http://alternativenergy.ru/solnechnaya-energetika)

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3. i 20.02.2003 . 555-IV //

- 15-25 .

. - ,, 2003. - 24. - .

155. - : <http://zakon.rada.gov.ua/cgi-bin/laws/main.cgi?nreg=555-15>.

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**INDEPENDENT LIGHTING HYBRID**

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*One of the problems of using solar energy is the high cost of crystalline silicon, which is the basis of solar power plants. Low efficiency solar cells, due to the fact that all of the solar spectrum only a small part is used for conversion into electricity. To solve this problem using a completely new and original approach - solar cells with holographic concentrator. Flat holographic concentrator is a holographic membrane that is tightened between two layers of glass. The battery represents the structure of stripes, alternating: hologram strip - a strip of photovoltaic panels. Rainbow hologram is multiplex, which is written a lot of pictures. Hologram is formed so that a fall at her sunlight recovered beam, which is necessary for the effective operation of the photoelectric cell chromaticity fit into a corner of total internal reflection of the external glass. In this case, after several reflections, rays will shift to areas between holograms, where photovoltaic panels. There were also considered the advantages and disadvantages of holographic concentrators. A solution to the problem of weather conditions when using battery lighting. A system that uses the energy of two sources: the sun and wind. Present construction of an experimental light system, which consists of the following elements: photovoltaic panels, wind turbines, battery, charge controller, light sensor, lamps with light emitting diodes, column, cables. System efficiency parameters were given. The hybrid wind-solar street lighting system provides illumination duration for an average of 8 hours. The comparative analysis of the costs of the traditional street lighting with autonomous lighting. Future plans consider the specifications of the system, an analysis of the lighting duration depending on the time of year and the percentage value cost of each element of the system. Payback period of autonomous lighting about 3 years, and service life - 15-25 years.*

**Keywords:** *fotovoltaika, Alternative energetika, lighting, Sun Energy, light-emitting diodes, holographic concentrator, wind turbine.*