



Universitatea Tehnică a Moldovei

**MODERNIZAREA SISTEMULUI ACTUAL DE
ILUMINAT STRADAL ÎN ORAȘUL SÎNGEREI**

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REZUMAT

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Cuvinte cheie: Iluminat stradal, energie regenerabilă, panou fotovoltaic, lampă stradală solară hibridă.

Obiectul de studiu: Studiul căilor de optimizare a sistemului de iluminat stradal

Scopul tezei: Majorarea eficienței energetice a sistemului actual de iluminare stradală în cadrul orașului Sîngerei.

În lucrare se prezintă informații generale și stadiul actual al iluminatului stradal din cadrul orașului Sîngerei, a numărului de corpuri de iluminat, a consumului de curent anual. Se analizează problemele cauzate de un iluminat necorescuzător cu surse ineficiente energetic. Prezentarea informațiilor despre beneficiile surselor de iluminat LED comparativ cu cele ineficiente energetic (lămpi cu sodiu, lămpi cu mercur, incandescente). Se arată importanța integrării și utilizării surselor de energie regenerabilă disponibile pe teritoriul R. Moldova și trasarea căilor optime de soluționare a problemei crizei energetice. Descrierea procesului de colectare a energiei solare folosind panouri fotovoltaice și analiza celor mai eficiente tipuri de panouri pentru a putea capta energia soarelui la un preț accesibil. Prezentarea avantajelor unui iluminat stradal folosind seturi de iluminat stradal solar hibridă AC/DC cu panou, baterie, lampă LED și suport integrat. Analizând astfel nivelul de iradiere solară și capacitatea de încărcare a bateriilor pe tot parcursul anului, pentru a putea estima care va fi consumul din rețea și care va fi procentul de iluminare autonomă. Astfel arătând care ar fi economiile autorităților publice locale.

ABSTRACT

MODERNIZATION OF THE CURRENT STREET LIGHTING SYSTEM IN THE CITY OF SINGEREI

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Keywords: Street lighting, renewable energy, photovoltaic panel, hybrid solar street lamp.

The object of the study: The study of ways to optimize the street lighting system

The purpose of the thesis: Increasing the energy efficiency of the current street lighting system in the city of Sîngerei.

The paper presents general information and the current state of street lighting in the city of Sîngerei, the number of lighting fixtures, the annual electricity consumption. The problems caused by improper lighting with inefficient energy sources are analyzed. Presentation of information about the benefits of LED lighting sources compared to energy-inefficient ones (sodium lamps, mercury lamps, incandescent). The importance of the integration and use of renewable energy sources available on the territory of the Republic of Moldova and the drawing of optimal ways to solve the problem of the energy crisis are shown. Description of the process of collecting solar energy using photovoltaic panels and analysis of the most efficient types of panels to be able to capture the sun's energy at an affordable price. Introducing the advantages of street lighting using AC/DC hybrid solar street lighting kits with panel, battery, LED lamp and integrated support. Analyzing the level of solar radiation and the charging capacity of the batteries throughout the year, in order to be able to estimate what will be the consumption from the network and what will be the percentage of autonomous lighting. Thus showing what the local public authorities' savings would be.

INTRODUCERE

Modernizarea sistemului actual de iluminat stradal

În prezent se pune un accent deosebit pe reducerea consumului de energie , sursele energetice regenerabile pentru a înlătura problemele ce țin de poluarea mediului și care ar permite obținerea și utilizarea energiei electrice fără a avea deșeuri, dar în același timp nu trebuie să scadă productivitatea muncii. Din cauza situației globale actuale a crizei energetice este prioritar valorificarea surselor de „energie verde”. Una din surse regenerabile ar fi energia obținută de la soare, care este o resursă gratuită și inepuizabilă. Un domeniu care ar permite un potențial real de economisire a energiei electrice este iluminatul public.

Cu toate că iluminatul stradal tinde spre economisirea energiei, prin înlocuirea becurilor care nu sunt eficiente energetic cu becuri de tip LED, pot fi adaptate măsuri care ar economisi energia electrică în proporții de 100%. Astfel, strategia de modernizare are ca scop reducerea cheltuielilor financiare și de a obține potențialele beneficii cum ar fi, iluminarea de calitate a întregii zone a orașului, perioada de amortizare etc.

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