

Power Saving Solar Street lights

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Abstract –This project is based on the idea of maintaining maximum utilization and minimum loss of available energy. The plenty of solar energy available during the day time is stored in a solar cell and the stored energy is used to glow the street lights during the whole night. Also the system provides a power saving mode of operation by adapting the method of automation. A dark sensor and a light sensor provides the automatic "ON"/"OFF" facility to the street lights, so that it will glow automatically when it is required(i.e. when the surrounding will be dark) and it will be turned "OFF" automatically if sufficient light is available in the surrounding. Again the auto intensity control mechanism has been applied by the help of a microcontroller to control the light intensity of the luminaries as per the requirement. Hence the loss of energy due to unnecessary glow of the street lights can be avoided.

Index Terms – PV module, DS1307, intelligent Street light, LDR (Light depending Resistor), IR Sensor (Infra red Sensor).

1. INTRODUCTION

The gradually growing requirement of energy and the limited resource of traditional energy sources has become a challenge for both developed and developing countries. For this reason, in policy makers' agenda, energy efficiency and sustainability are given the first priority for any project to be installed. Solar street lighting system is an effective way to reduce power consumption and CO₂ impact on the environment with the maintenance of the safety standards of the road. Electric street lighting consumes 114 TW h annually, leading to the emission of 69 million tones of CO₂ [1]. By PV (Photovoltaic) effect the solar radiation can be directly converted into electrical energy. This energy is stored in a rechargeable battery and supplied to the luminary when it is required to glow. The system is designed to provide an automatic control facility. This control may be of three types. First one is optical control method, by using light/dark sensor the street lights can be automatically turn "ON" in the evening after dark, turn "OFF" automatically after dawn in the morning, but the night street lighting is too bright and also a wastage of energy [2]. Second one is time control method, in which the lights will be glow time to time automatically as per the adjustment [3] and the third one is time-optical control, in

which the lights will glow automatically from time to time with automatically controlled intensity[4]. Thus the unnecessary power wastage is reduced up to a large extent.



Figure 1 Stand alone Solar streetlight

2. POWER SAVING FEATURES OF AUTOMATIC SOLAR STREET LIGHT

The solar street light has been designed after too much research work. Its uniqueness and best features can make it the most preferable choice in rural area. With gradual development in this research, new features are being added to increase the efficiency. The proposed model may be considered as the third generation of street light which is also known as intelligent street light. The intelligent street light control system uses the latest international intelligent street light energy-saving control technology [5]. The main aim behind the research of designing the system is to find a way for maximum utilization of available energy with minimum

Project Report On Solar Street Light

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STUDY OF AUTOMATIC SOLAR STREET LIGHT Mr.P.Sai Niranjan Kumar, **Voluntary Reporting Of Greenhouse Gases 1997, DOE/EIA-0608(97), May 1999, S/N 610-030-01068-7 ,1999** **Voluntary Reporting of Greenhouse Gases 2001 , 427 Eco-Friendly Business Ideas** Mansoor Muallim, Discover 427 innovative and eco conscious business ideas tailored for a sustainable future in 427 Eco Friendly Business Ideas Project Report Overviews This comprehensive guide not only provides a wealth of green business concepts but also offers insightful project report overviews giving you a glimpse into the practical implementation and potential impact of each idea From renewable energy startups to zero waste initiatives this book covers a wide range of eco friendly ventures suitable for entrepreneurs environmental enthusiasts and business professionals alike Each idea is accompanied by a concise project report overview detailing key aspects such as feasibility market analysis environmental impact assessment and more Whether you re seeking inspiration for your next green business endeavor or looking to deepen your understanding of sustainable entrepreneurship 427 Eco Friendly Business Ideas Project Report Overviews is your essential resource for navigating the landscape of eco conscious innovation Dive in explore and embark on the journey towards a greener more sustainable future today [Energy Research Abstracts](#) ,1985 **Energy: Sources, Utilization, Legislation, Sustainability, Illinois As Model State** G Ali Mansoori,Nader Enayati,L Barnie Agyarko,2015-11-05 This 800 page premier book on energy focuses on energy sources utilizations legislations and sustainability as it relates to a state a province or a country or a community within a state This book presents various kinds of energy sources ways to convert energy for end use better use of energy towards conservation and energy and environmental sustainability As a very proper model state the authors chose the State of Illinois which has the largest overall fossil energy reserves including the largest strippable bituminous coal reserves the largest user of nuclear energy in USA and has also been investing in all kinds of renewable energies including wind energy solar energy biofuels geothermal energy and various energy storage options In the authors opinion State of Illinois is a pioneer in legislations for proper development and use of all kinds of energy Their motivation to do this project was to educate the public including students energy engineers and planers as well as state and country wide policy makers about all aspects of energy In this book the authors present various energy sources conversions technologies and conservation possibilities In every case the authors have presented various options available for a country for a state or for a community to achieve its goal of energy sufficiency clean environment and as a result sustainability Variety of schemes related to each energy source and its related conversion technologies are presented and sustainability of renewable energy sources is discussed All the possible energy sources including coal natural gas petroleum nuclear solar wind biofuels and geothermal energy are presented in this book as well as energy storage options The authors have also presented various ways of dealing with carbon dioxide which is produced from fossil fuels combustion including its collection transportation storage and sequestration The energy storage systems

presented in this book will facilitate reliable and full integration of renewable power to the grid **Voluntary Reporting of Greenhouse Gases** ,1997 Energy Abstracts for Policy Analysis ,1979-11 **Photovoltaics in the Urban Environment** Bruno Gaiddon,Henk Kaan,Donna Munro,2009-09-02 The concept of cities as potential photovoltaic power plants is rapidly gaining prominence but until now there has been no large scale study of the impacts of such development on urban fabric and infrastructure or on inhabitants This book based on wide ranging studies supported by the European Commission and International Energy Agency is the first to properly address these issues It sets out by looking at the implications on planning policy of PV in the urban environment and giving an overview of the implementation and occupation processes It then moves on to present detailed case studies from a range of European cities examining the role of large scale PV installations in urban renewal and new urban area development stretching back over 15 years It ends with a review of technical guidelines for PV and regulation legalities surrounding planning building and grid connection The book will form an essential resource for planners and developers who are considering including large scale PV in their plans and who want to understand what has or hasn't worked and why Published with Intelligent Energy *21st Century Security and CPTED* Randall I. Atlas,2013-06-25 The concept of Crime Prevention Through Environmental Design CPTED has undergone dramatic changes over the last several decades since C Ray Jeffery coined the term in the early 1970s and Tim Crowe wrote the first CPTED applications book The second edition of 21st Century Security and CPTED includes the latest theory knowledge and practice of

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