A Review on Solar Energy Conservation

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***Abstract*: Conservation and energy efficiency make the solar energy system's job easier likewise, by analysis we came to know that solar system reduces the need for auxiliary heat well below levels attainably by conservation alone. Good thermal design consists of achieving a proper balance of strategies. This paper presents quantitative but simple methods for energy conservation that takes proper account of the solar and weather characteristics of each location. The investigations are applicable to residential and small commercial buildings**

***Keywords*: Energy conservation, Lighting system, Optical fiber, Solar energy.**

1. Introduction

We know that, due to population growth, an increase in living standards and technological advancement, the rate of energy consumption will steadily rise. The main energy input into the terrestrial system is solar energy. This resource could theoretically meet the global energy demand on its own, considering its relatively low power density. In order to make solar energy feasible and competitive on a large scale, the challenges that need to be addressed include improving the performance of solar energy conversion systems by increasing efficiency by using robust materials, reducing material, manufacturing and installation costs so that these systems can be deployed on a large scale and overcoming the irregular existence of the resource to allow demand to be met at all times by supply. For large-scale energy production, solar thermal technologies are appropriate and can be combined with thermal energy storage systems to provide a realistic solution for smooth intermittent supply over time periods of several hours.

A. Different solar energy conservation methods by using optical fibers

1) Solar lighting system

Energy from sunlight is guided by a solar collector system towards its final moment of a bunch of optical fibers. Means that may include a method of control are provided to preserve the receiver sensor aimed at the heat during the day so that an upper limit of light energy is acquired. In a building or other place where the light energy is to be used, the optical fiber bundle is stationed where the bundle can be split which provide light in different areas by means of various devices for use, such as lamps, indicators, signs, etc.

The invention relates creates a system for generating and disseminating sunlight thru all the fiber optics to light-use devices, thereby reducing the need for artificial light sources during bright daylight hours and thus saving energy. The invention relates creates a system for generating and disseminating sunlight thru all the fiber optics to light-use devices, thereby reducing the need for artificial light sources during bright daylight hours and thus saving energy. The structure is also important for getting lighting in mines, removing outliers lighting or gas lighting power consumption, the latter of which is expensive in nature reserves and the latter of which can be slightly troublesome.

A continuous supply of luminance could be generated on cloudy or overcast days when solar power is woefully inadequate or irregular in intensity, by using a photocell to regulate electric lights. The invention's structure is as follows: a collector gadget functioning in accordance with a convex lens in the preferred form of a parabolic reflector (employed to make the light rays more parallel so they will enter the optical fibers at an optimum angle) And made up of a primary lens or a parabolic rear view by itself in other personifications, it is used to focus sunlight mostly on ends of a bundle of fiber optics that are sponsored in accordance with the beam of light provided by the collector gadget. It was also possible to use azimuthally or other mountings. The fiber optic bundle is supplied from outside into regions to be shaded where, if required, the bundle can be divided into smaller bundles and even differentiate single fibers to provide different light-use systems with light energy, such as bulbs, mirrored signs, indicators, glow bulbs or tubes, etc., as may be required.

2. Hybrid Solar Lighting System

By integrating solar technologies into multi-use hybrid systems that allow better use of the full spectrum of solar energy, this transformation includes the energy efficiency of solar energy displacement. A secondary mirror is the origin of everything in this solar spectrum of emitted photon.

This Hybrid Solar Lighting (HSL) solar energy system is an innovative solution for the use of solar energy in houses. It uses solar energy from a dynamic, system-level perspective, implements various interdependent mechanisms and makes better use of the full spectrum of solar energy on a real-time basis. The HSL system utilizes a solar hybrid concentrator which productively consumes, segregates, and transmits the visible portion of sunlight. The optimized wide-core optical fiber polymer light distribution system's optical and mechanical properties provide buildings with substantial quantities of visible sunlight more efficiently. Visible sunshine is used much

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more accurately than before when supplied. This innovation reroutes and more great emphasis portions of the spectrum of solar energy emanating from a standard two-axis to control solar concentrators in real time using electro-optic and/or opt-mechanical equipment. Analytical/experimental models and smart strategy implementation promote the use of hybrid solar lighting systems in many implementations, including industrial buildings and show lamps.

3. Solar Energy System with Composite Concentrating Lenses

Consequently, the purpose of the current innovation should provide an improved condensed lens assembly for use in a solar energy device. The presented method achieves this object by using only the central part of a linear Fresnel lens where the optimum propagation performance is achieved. For example, in the central part of what would otherwise be an 86 cm wide lens, only 60 cm is used, allowing a minimum efficiency of about 85 percent. A sequence of reflective slats, called a slide assembly, are positioned in a frame and assisted on either side to mirror solar incident rays to the same intensity as the Fresnel lens focus, A wide aperture is given to reach a higher concentrations of solar radiation from either side, identical to both the Fresnel lenses.

They are at opposite angles and are separated from each other in such a way that an identical slide that is bent at a completely different perspective is not obscured in order for all slats to reflect radiation at the very same focal point depending on the distance from the center of the image. The slats may have different widths of up to about 4 cm.

For illustration, the slats would have had a diameter of 50 to 90 cm and it has the same length in this illustration as the Fresnel lens, i.e. around 240 cm. The intensity will be 180 cm down to 4 cm or 45 times if one acknowledges that the energy is concentrated on a 4 inch conduit system and a 60 cm wide Fresnel lens with 60 cm wide slip devices on either side is also believed.

4. Solar Greenhouse Roof

The present invention to a process that successfully pipes visible light into a greenhouse or other shelter, but removes ultraviolet and infrared light. On one or more small focal reflectors, the system contains a multitude of large reflectors of light reflecting sunlight. The light emission is directed downwards from there to the edges of the glass plate of the "pipes"

The "pipes" are panes installed at the bottom of the greenhouse roof, placed on the surface of regular plate glass. A Tedlar film or a coated glass that blocks ultraviolet and infrared light to a limited degree will covering the full roof for safety. The specific reflectivity of broad reflectors and small focal reflectors blocks these light wavelengths as well. "However, much of the ultraviolet and infrared light is blocked during transit via the glass light "pipes". The performance from the glass light pipes is transmitted downward on plants or even other desired materials. The "pipes" of glass can be aluminized on their flat surfaces to maximize their internal reflectivity to visible light. Because of it's absorption of infrared light, a cooling system passing through the concentrating reflectors and also through tubes mounted on the base of the roof in a close relationship with the glass pipe is carried away by energy released in the small reflectors as well as in the glass light pipes.

The innovative system is particularly suitable for growing plants, as studies have shown that plants require visible light for photosynthesis and should be maintained at an optimum temperature depending on the plant.

5. Lighting System for Building

In combination, the updated invention's lighting system involves a building with a significantly annular cross-section, with the exception of the first floor, a collector of sunlight installed at the top of the building in order to replicate sunlight. In a cylindrical open space indicated by the annulus of the building, the light radiator is disposed of as a light conductor to conduct the sunlight collected by the sunlight collector and a light radiator to glow the sunlight carried out by the light conductor.

In accordance with the new eureka moment, sunlight is essential in every room in a building, including spaces that have seldom been used, such as the basement and groundwater pit. Optical cables absorb the sunlight and direct it to light radiators configured in the house's targeted spaces.

The basement has a water cistern in it to provide a shelter in case of emergencies, while the groundwater pit that is also illuminated by the sunlight carried out is ideal for growing fish, plants, and other foodstuffs .The building is significantly annular except for its first floor, so that a cylindrical open space is formed within it and also illuminated by sunlight, thus taking daylight even into the radially innermost spaces of the building. The aim of the current innovation is to provide a lighting system which improves the utility of the entire annular or substantially annular building. Another purpose of the new breakthrough is to provide a lighting device that promotes the effective use of the previously ignored subordinate spaces of a building, thus significantly exploiting the building's usefulness. It is another object of the present invention to provide a generally improved lighting system for building.

6. Optical Energy Collecting and Transmitting Apparatus Using Tubular Light Transmitting Element

In one aspect of the present invention, a tubular refractive index device for transmitting optical energy from a light source to a designated spot encompasses a tubular member made of silica glass and a bore specified by the tubular member. Thus, optical energy is transmitted through both the tubular member and the bore. In perhaps a aspect of the major advance, a tubular light transmission assembly transmits optical energy from a light source to a target location and has a range of tubular light transmitting methodologies. A silica glass tubular member and a tubular member bore are used in each of the tubular units, so that optical energy is transmitted through the tubular member.

In the proposed embodiment of the present invention, the bore inside a tubular member is plugged into its light inlet and light outlet end sections, each with a substrate whose refractive index is equal to or smaller than that of the tubular member.

The goal of the latest major advance is a cost-effective tubular light transmission component that absorbs a much smaller amount of private silica glass than traditional glass. Another goal of the present invention is to provide a light-transmitting tubular component where the extremely easy integration of optical energy is managed to achieve by increasing the light-receiving region of the light-transmitting component at the optical energy inlet portion.

Another object of the present invention is to provide a tubular light transmission feature that effectively transmits optical energy with barely any loss. Another goal of the present invention is to provide a component of tubular light transmission that reduces the weight of a component of light transmission and gives it flexibility, thus strengthening the component's ease of handling. Some other aim of the present invention is to allow for the long - term preservation of optical energy consisting of the transmitting elements of tubular light referred to above. An even more aim of the present invention is to use a frequently improved tubular light transmitting unit and an optical energy compilation and drivetrain unit to include the tubular light transmitting fraction.

7. Conclusion

Using optical fibers, myriad solar energy conservation systems have been summarized and analyzed in this paper. It appears to offer a simple and economical solution for the use of lighting systems and electrical gizmos.

We have come to know from the Solar Lighting System that light energy from the sun is focused to the end of a bundle of optical fibers by a solar collector tube. In the event of power downturn or power reduction, the system may be used as an emergency lighting system to combine or replace the normal lighting system. The system is also helpful in providing luminance in mines, lowering electrical lighting or gas lighting electricity demand.

A truly unique alternative to using solar energy in buildings is the hybrid solar lighting (HSL) method. Every other solar spectrum of incoming sunlight is premised on a secondary mirror by a main mirror. For filtering and delivery to the fiber optic lighting network, sunlight is mimicked through a fiber receiver. The Inventor is a solar energy piece of equipment with composite intensified lenses to provide an optimized concentrate lens assembly for use in a solar energy system. Uses only the central part of a linear Fresnel lens where the optimum value of transmission is obtained. Reflective slats up from about 4 cm may even have different widths. A plurality of large light reflectors that reflect sunlight to one or more small focusing reflectors comprises the solar greenhouse roof structure. From there, the light emission is particular type of device through the edges of "pipes" of plate glass. Much of the ultraviolet and infrared radiation is reflected during travel through the "pipes" of glass light. On plants or other desired objects, the glass light pipes are reflected downward.

In accordance with the latest innovation, illumination by sunlight is accessible in any space in a building as a lighting device for infrastructure. The sunlight is captured and directed to light radiators by optical cables.

Supporting a lighting device which always increases the capabilities of a building as a whole is an aim of the new invention.

Optical energy is transmitted through the tubular member and the bore in the optical energy collection and drivetrain apparatus using the tubular light transmitting element. Providing an economical tubular brightness feature that consumes a much smaller amount of costly silica glass is an end goal of the current invention.

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