

## NATURE SWITCH

Energy Conservation is a societal need:

The human progress through ages is throwing the challenges of saving nature from the ill effects of uncontrolled growth. Global warming, environmental pollution, light pollution, over illumination, etc. have become the signals of the impending danger in the times ahead to nature and human life. Energy conservation has emerged as a major area of focus towards conserving nature.

Recognising this need and responsibility Kakatiya Energy Systems has pioneered in evolving effective lighting control solutions which contribute to energy saving in all the areas of outdoor lighting. Kakatiya Energy Systems offers solutions for automatic switching and automatic dimming of outdoor lamps to meet the objectives of power saving and to avoid all wastages involved in outdoor lighting usage.

Energy saving potential in outdoor lighting:

Outdoor lighting comprises of various lighting installations like street lighting, hoarding lighting, glow sign lighting, light box lighting, architectural lighting, land-scape lighting, front lit board lighting, back lit board lighting, park lighting, area lighting, yard lighting, campus lighting etc. The energy wastages in all these areas is primarily caused due to errors in manual switching or use of technologies which are not refined. Over illumination is another form of energy wastage which needs to be avoided through proper automation.

The potential savings through automation vary among various applications and the energy conservation will be highest if we can effectively replace manual switching in areas characterised by access problems or inefficiency. The examples include remote areas or public lighting. The energy wastages in these areas due to late switching OFF or early switching ON could be even upto a few hours each day. This provides a scope for power saving by adopting automatic switching systems to ensure objectivity in switching.

Another example for energy conservation is to opt for part night operation of certain lighting systems like Signage, Hoarding, Yard lighting etc. which need not be switched ON for the entire night. Another major area offering intensive energy conservation is reducing the light pollution in outdoor areas by opting for late night dimming.

We have solutions for all the above needs and please see the products page for details.

General info on Energy Conservation

Energy conservation is the practice of decreasing the quantity of energy used while achieving a similar outcome. This practice may result in increase of financial capital, environmental value, national security, personal security, and human comfort. Individuals and organizations that are direct consumers of energy may want to conserve energy in order to reduce energy costs and promote economic, political and environmental sustainability. Industrial and commercial users may want to increase efficiency and thus maximize profit.

On a larger scale, energy conservation is an important element of energy policy. In general, energy conservation reduces the energy consumption and energy demand per capita, and thus offsets the growth in energy supply needed to keep up with population growth. This reduces the rise in energy costs, and can reduce the need for new power plants, and energy imports. The reduced energy demand can provide more flexibility in choosing the most preferred methods of energy production.

By reducing emissions, energy conservation is an important part of lessening climate change. Energy conservation facilitates the replacement of non-renewable resources with renewable energy. Energy conservation is often the most economical solution to energy shortages, and is a more environmentally benign alternative to increased energy production.

Lighting includes both artificial light sources such as lamps and natural illumination of interiors from daylight. Lighting represents a major component of energy consumption, accounting for a significant part of all energy consumed worldwide. Artificial lighting is provided today by electric lights, but previously by gas lighting, candles or oil lamps. Proper lighting can enhance task performance or aesthetics, while there can be energy wastage and adverse health effects of lighting. Indoor lighting is a form of fixture or furnishing, and a key part of interior design. Lighting can also be an intrinsic component of landscaping.

Artificial lighting consumes a significant part of all electrical energy consumed worldwide. In homes and offices from 20 to 50 percent of total energy consumed is due to lighting (Hawkin, 2000). Most importantly, for some buildings over 90 percent of lighting energy consumed can be an unnecessary expense through over-illumination (Hawken, 2000). Thus lighting represents a critical component of energy use today, especially in large office buildings where there are many alternatives for energy utilization in lighting. There are several strategies available to minimize energy requirements in any building:

- \* Specification of illumination requirements for each given use area.
- \* Design of time of day use that does not expend unnecessary energy.
- \* Selection of fixture and lamp types that reflect best available technology for energy conservation.
- \* Training of building occupants to utilize lighting equipment in most efficient manner.
- \* Maintenance of lighting systems to minimize energy wastage.

The commercial sector consists of retail stores, offices (business and government), restaurants, schools and other workplaces. Energy in this sector has the same basic end uses as the residential sector, in slightly different proportions. Space conditioning is again the single biggest consumption area, but it represents only about 30% of the energy use of commercial buildings. Lighting, at 25%, plays a much larger role than it does in the residential sector.[5] Lighting is also generally the most wasteful component of commercial use. A number of case studies indicate that more efficient lighting and elimination of over-illumination can reduce lighting energy by approximately fifty percent in many commercial buildings.

Commercial buildings can greatly increase energy efficiency by thoughtful design, with today's building stock being very poor examples of the potential of systematic energy efficient design. Commercial buildings often have professional management, allowing centralized control and coordination of energy conservation efforts. controlled Building automation system guarantees energy efficiency.

Recent advances include use of occupancy sensors to turn off lights when spaces are unoccupied, and photosensors to dim or turn off electric lighting when natural light is available. In air conditioning systems, overall equipment efficiencies have increased as energy codes and consumer information have begun to emphasise year round performance rather than just efficiency ratings at maximum output. Controllers that automatically vary the speeds of fans, pumps, and compressors have radically improved part-load performance of those devices. For space or water heating, electric heat pumps consume roughly half the energy required by electric resistance heaters. Natural gas heating efficiencies have improved through use of condensing furnaces and boilers, in which the water vapor in the flue gas is cooled to liquid form before it is discharged, allowing the heat of condensation to be used.

A BROAD OVERVIEW OF BUSINESS: Kakatiya Energy Systems Private Limited (KESPL) develops, manufactures and distributes lighting controls in India and Middle East. These are based on electronic hardware and software with the aim of providing twin functions of automatic switching and automatic dimming of outdoor lamps. KESPL wishes to be a global player in this segment in the near future based on its patented products. The company has already completed the design of a new concept based product range and has proven the products in the actual field conditions for their functioning and robustness. The company has frozen the designs and has consolidated the production processes and quality control systems. Keeping in view the global potential the company wishes to implement the growth phase project now at an investment of Rs. 1650 lakhs.

COMPANY HISTORY: KESPL incorporated in the year 1999 has taken up the task of development of Lighting controls for energy conservation. The company has successfully developed the products and has developed many customers including OEM users like BAJAJ ELECTRICALS LTD, CROMPTON GREAVES LTD. It has also received product acceptance from PHILIPS ELECTRONICS INDIA Ltd and C & S GEWISS INDIA Pvt Ltd apart from many dealers and end

users in the country. The company has received an award from FAPCCI under the category of "Best new product commercialized by an SSI for the first time from the state of Andhra Pradesh". KESPL has received the patent rights under the title of "A DEVICE FOR AUTOMATIC SWITCHING AND/OR DIMMING OF LAMPS AT A PREDETERMINED AMBIENT LIGHT: vide the INDIAN PATENT Number 198710 granted on 6th April 2006. The company has already obtained the registration of the Product designs vide Design No. 179810 and the company has also obtained the trade mark registration for the product name NATURE SWITCH vide Trade Mark No. 1322680 in class 12.

**PRODUCT SUMMARY:** The product NATURE SWITCH and its variants are to automatically switch ON and switch OFF all the categories of outdoor lamps like street lamps, Aviation obstruction lamp mounted on towers, Back lit Glow sign lighting, Front lit hoarding light, public lighting like parks, monumental lighting, façade lighting, factory campus lighting, path way lighting systems etc.

**THE PRODUCT OFFERING:** Kakatiya Energy Systems Private Limited has offered NATURE SWITCH range to meet this serious need by way of a very advanced hybrid solution based on a state of the art infrared sensing and micro controller based processing and protective device for the complete satisfaction of the user segments. The automatic switching products can save about 10-15% of energy in outdoor lighting by ensuring an objective switching. KESPL has also sensed a serious need among many users for late night dimming of High Intensity Discharge (HID) lamps for intensified energy conservation and the product MAGIC BOX was offered as a robust solution to meet the needs of many public bodies for late night dimming of HID lamps using the concept of bi-level dimming. The dimming product can save about 20-25% of energy in HID lighting by ensuring late night dimming. This is in tune with the expectations of many user organizations. The product was tested and approved for OEM use by the major lighting companies in India. The company's products for switching and dimming are universal for use any where in the world.

**UNIQUENESS OF PRODUCTS:** The products are based on unique concepts of infrared sensing and duration based timing to offer a holistic and a robust product to the field. The company's product comes with an IP65 rated enclosure and they offer a hybrid operation of a sensor based switching and an option of duration based timing for the convenience and ease of the user. The product range for automatic switching are suitable to a variety of outdoor lamps and offer a user selectable option for part night or full night operation. They also offer protective functions like automatic over voltage sense, trip and auto reset. The products come with all the needed memory back up using a rechargeable battery for an uninterrupted service over years. The products were designed keeping in view the need to offer a universal product valid for use any where in the world. The products are designed to be highly cost effective for their function and they are quite compact and are based on state of the art technology in terms of enclosure/ inner processing using a digital microcontroller.

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