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MITIGATION OF CARBON FOOT PRINT USING ENERGY CONSERVING CFLs (COMPACT FLUORESCENT LIGHT)

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ABSTRACT

A carbon footprint is a measure of the impact of human activities on the environment in terms of the amount of greenhouse gases (GHG) produced such as carbon dioxide. Individuals can produce greenhouse gas emissions directly by using gas (LPG) or indirectly by using electricity for running the lights which is generated from fossil fuel. Mitigation of carbon foot prints is the need of time. The present study is "Mitigation of carbon foot prints using energy conservative like CFL'S". CFL is an energy efficient alternative to an incandescent bulb and a FT, commonly known as bulb and tube light, respectively in INDIA. Comparatively the energy consumption by CFL is low than FT, electricity to light conversion is high to that FT, CFL life in hours is 10,000 and FT will be 5000,CFL has very high economy and FT will be less. These parameters indicate that CFL'S are energy conserving and reduce the carbon foot prints.

Key words: *Mitigation, carbon foot prints, CFL, FT.*

INTRODUCTION

In last few years, coal use grew by 22% worldwide and this had led to an increase in CO_2 emission at a record rate of 3% per annum. As per International Energy Agency (IEA), CO2 emission from energy sources may increases up to 90% by 2030 coal will account for 43% of global emissions. A Carbon Footprint is a measure of the impact human activities have on the environment in terms of the amount of greenhouse gases (GHG) produced, measured in units of carbon dioxide. Personal energy use at homes, on the road and daily activities cause emissions of GHG directly by using gas (LPG) or indirectly by using electricity generated from fossil fuel burning and by using fuels in transport. Per person GHG emissions can vary depending on a person's status, habits and personal choices. For example, the types of fuel used to generate the electricity a person uses can lead to different levels of emissions. A power plant run on diesel emits more greenhouse gases per unit of electricity than a power plant that uses hydro or solar energy. The main influences on carbon footprints include population, economic output, and energy and carbon intensity of the economy. These factors are the main targets of individuals and businesses in order to decrease carbon footprints. Mitigation is distinguished from adaptation to global warming, which involves acting to tolerate the effects of global warming. Most often, climate change mitigation scenarios involve reductions in the concentrations of greenhouse gases, either by reducing their sources or by increasing their sinks.

Scientific consensus on global warming, together with the precautionary principle and the fear of abrupt climate change is leading to increased effort to develop new technologies and sciences and carefully manage others in an attempt to mitigate global warming. Most means of mitigation appear effective only for preventing further warming. So, in this paper we depict that CFL are energy efficient and mitigate the carbon foot prints .

Installing fluorescent lights reduces the amount of energy required to attain the same level of illumination compared to using traditional incandescent light bulbs. Compact fluorescent lights use two-thirds less energy and may last 6 to 10 times longer than incandescent lights. Energy efficiency has proved to be a cost-effective. *(American Thinker; April 19, 2011)*

MATERIALS AND METHODS

In this review we have discuss about energy efficient CFL'S which is a spiral-type integrated compact fluorescent lamp, which has been popular among North American consumers since its introduction in the mid-1990s. A CFL is known to convert higher percentage of consumed electricity into light and consumes 2-2.5 times lesser energy for the same lumen

output and may last up to more than two times compared to the normal FT.

This report also includes Comparison between FT and CFL, Lighting Benefits.

OBSERVATIONS

A CFL is known to convert higher percentage of consumed electricity into light and consumes 2-2.5 times lesser energy for the same lumen output and may last up to more than two times compared to the normal FT. Nikola Tessa has first introduced fluorescent bulb at the world Columbian exposition in Chicago in 1893 but it was commercially introduced only in 1980 in USA.CFL is an energy efficient alternative to an incandescent bulb and a FT, commonly known as bulb and tube light, respectively in India.

Table 1. Comparison between FT and CFLs

Description	**FT**	**CFL**
Energy consumption	High	Comparatively very low
Electricity to light conversion	Less	High
Life in hours	5000	10,000
Use of filament material	Yes	No
Use of mercury	Yes	Yes
Economy	Less	High
Required ballast for starting	Yes	No
Cost for same wattage for Life time of light	High	Comparatively very low

RESULTS

Efficient: CFLs are four times more efficient and last up to 10 times longer than incandescent. A 22 watt CFL has about the same light output as a 100 watt incandescent. CFLs use 50 - 80% less energy than incandescent.

Less expensive: Although initially more expensive, you save money in the long run because CFLs use 1/3 the electricity and last up to 10 times as long as incandescent. A single 18 watt CFL used in place of a 75 watt incandescent will save about 570 kWh over its lifetime. At 8 percent kWh, that equates to a $45 savings.

Reduces air and water Pollution: Replacing a single incandescent bulb with a CFL will keep a half-ton of CO_2 out of the atmosphere over the life of the bulb. If everyone in the U.S. used energy-efficient lighting, we could retire 90 average size power plants. Saving electricity reduces CO2 emissions, sulphur oxide and high-level nuclear waste.

High-quality Light: Newer CFLs give a warm, inviting light instead of the "cool white" light of older fluorescents. They use rare earth phosphors for excellent colour and warmth. New electronically ballasted CFLs don't flicker or hum.

Versatile: CFLs can be applied nearly anywhere that incandescent lights are used. Energy-efficient CFLs can be used in recessed fixtures, table lamps, track lighting, ceiling fixtures and porch lights. 3-way CFLs are also now available for lamps with 3-way settings. Dimmable CFLs are also available for lights using a dimmer switch.

Handling and disposal Of CFLs:
The mercury in compact fluorescent bulbs poses no threat while in the bulb, but if you break one:
- open a window and leave the room for 15 minutes or more.
- use a wet rag to clean it up and put all of the pieces and the rag into a plastic bag
- place all materials in a second sealed plastic bag
- call your local recycling centre to see if they accept this material; otherwise put it in your local trash. Wash your hands afterward.

Burned out CFLs can be dropped off at Home Depot and like a stores. Another solution is to save spent CFLs for a community household hazardous waste collection, which would then send the bulbs to facilities capable of treating, recovering or recycling them. For example, from scrap CFL'S night lamp can be construct (Sutar, M. M., et.al 2012), more information on CFL disposal or recycling, you can contact your local municipality.

DISCUSSION & CONCLUSION

The term carbon footprint is a convenient way to measure a global warming impact and is based on CO2 equivalence but carbon does not actually have to be involved. For generating electricity, a technology can be rated in grams of CO2 equivalent to per kilo watt hour of electricity produced (gCO2/kWh).For eg,new solar photovoltaic cells require a lot of heat to manufacture as did the old ones.

One of the ways we can start checking the state of our carbon footprint is by first analyzing what kind of a "footprint" we are currently making. If we run a business what type of footprint is that business making? It is only by first knowing what mistakes we are making that we can then begin to rectify the "heavier" print by making changes to our consumption and make our carbon footprint "lighter". To put some initial structure to a broad theme, the panel IPCC (Intergovernmental Panel on Climate Change) defined two main categories of corporations: firstly, the carbon-intensive industries such as utilities, oil, gas, cement and steel, which are already at the heart of carbon usage, and second, everyone else such as retail, finance, and consumer goods producers, etc.

In this scenario, use of CFLs in place of FT is one sure way of easing energy demand since electrical energy conservation via use of CFLS would imply that the same amount of electrical energy is saved for other used or that much electricity production is avoided in a coal fired thermal power plant, leading to sensor GHG and air pollutant emission.

In conclusion, cost savings emerged as the overall driver for carbon footprint monitoring and reporting, and those companies that diligently apply this are well prepared for any pending legislation, will start with a better hand to play at the carbon trading table, and enjoy an enhanced reputation with their customers. And also Carbon credits or Certificates are issued to the countries that reduce their emission GHG which cause global warming. CER 2012.Software systems are ultimately essential to provide the complex life cycle assessment, carbon credit accounting and trading, internationalization and standardized reporting that will give transparency and understanding to this complex field. (UN Convention on Climate Change).

REFERENCES

Nikola Tessa (1893) Columbian exposition in Chicago.

Sutar M. M, Ghotake Jeevan S. and Joshi P.B.(2012) www.EFYEMAG.com

Wath S. B. And Majumdar D. National environmental Research institute (council of scientific & industrial research) Nehru marg, Nagpur - 440020, India

Journal of Environmental Science & Engg. 2011 Pub. Med. – NCBI

The U.S. Environmental Protection Agency estimate.

The Economic Time – News Paper,24 February 2012.

Report of IPCC(Intergovernmental Panel on Climate Change)

American Thinker; April 19, 2011