NOVATEUR PUBLICATIONS
INTERNATIONAL JOURNAL OF INNOVATIONS IN ENGINEERING RESEARCH AND TECHNOLOGY [IJIERT]
ISSN: 2394-3696
VOLUME 2, ISSUE 1, JAN.-2015

OVERVIEW OF RENEWABLE ENERGY SOURCES IN THE PERSPECTIVE OF CARBON FOOT PRINTING REDUCTION

MADHAVI RAJENDRA HARISHCHANDRA
PhD. Scholar, Shri Jagdish Prasad Jhabarmal Tibrewala University, Jhunjhunu, Rajasthan

DR. ANWAR M. MULLA
Principal, A.D.C.E.T, Ashta

ABSTRACT

A review is done on the different methods to reduce the carbon emission ultimately the carbon footprint in the different sectors in the perceptive of the renewable sources. In method for the Regional energy targeting along with the supply chain synthesis different algorithms are proposed such as Regional Energy Clustering (REC) for the biomass supply chains. Some method as are based on the scheduling the manufacturing processes in process industries so as to reduce the carbon footprint and energy consumption. Here in this paper methods are proposed to reduce the carbon footprint in architecture firms are also discussed which the sources of CO2 emission are also. Last, role of renewable sources to reduce the carbon footprint and comparison is done among them by 2020.

KEYWORDS: Carbon footprint, REC, Regional Energy Clustering, Renewable energy Electricity generation, Carbon emissions

INTRODUCTION

By using the algorithm for the developed Regional Energy Clustering (REC) the given region is partitioned into a number of clusters. The REC targets his aim to minimize the system carbon footprint (CFP). Regional Energy Surplus–Deficit Curves (RESDC) visualizes the formation and the sizes of introduced energy clusters. Regional Resource Management Composite Curve (RRMCC) a method for the Process Integration. It is the approach to show the energy imbalances helping in trading-off resources management. These graphical tools provided the straightforward information of how to manage the surplus resources (biomass and land use) in a region. This paper presents a method of mathematical modeling is done for flow shop scheduling that includes problems such as peak power load, energy consumption associated with carbon footprint. A survey proposes the design and positive handprint for the architecture firms and new buildings to reduce the greenhouse gases so as to trade in the carbon markets. The renewable energy technologies provide an excellent opportunity for mitigation of the greenhouse gas emission and reducing global warming instead of using conventional energy sources. A statistics has been done on the basis of the total amount of

carbon emission as a result of global electricity sector by 2010-2020.A study showed that the generation industries has the potential to reduce the emission of green house gases by 15% by 2020. Following are the various methods are discussed to reduce the carbon footprint with the use of renewable resources.

1. Minimizing carbon footprint of regional biomass supply chains

In the method of the Regional energy targeting along with the supply chain synthesis number of ways are defined so as to transfer energy from renewable energy sources to customers incorporates a region is given with a demand driven approach .A new algorithm is proposed that is the REC. The REC (Regional energy Clustering) algorithm in which given region is partitioned into the number of clusters. The main aim of the algorithm is to minimize the system carbon footprint (CFP). In this approach the renewable source like biomass energy supply and management is targeted with its graphical representations. Regional Energy Surplus–Deficit Curves (RESDC) imagines the formation and introduced energy clusters sizes. Regional Resource Management Composite Curve (RRMCC) an analogy of the Process Integration should be approach and shows the energy imbalances helping in trading-off resources management. These graphical tools provided the straightforward information of how to manage the surplus resources (biomass and land use) in a region.

2. Scheduling in manufacturing industry for power consumption and carbon footprint reduction

In this proposed method mathematical modeling is done for flow shop scheduling that includes problems such as peak power load, energy consumption associated with carbon footprint. This scheduling method emphasized on the cycle time for all cases excluding the environmental and energy factors. A case study has been proposed for the flow shop where production of variety of parts by two employed machines. As the operation speed of machines is an independent variable while considering the scheduling problem; can make a big difference while considering the peak load and energy consumption in processing order of the jobs. This method emphasized on the approaches or specialized algorithms for finding the near-optimal schedules to overcome on above problems. Energy use continues to rise and with the production and discharge of CO2.So, Energy efficiency methods have been applied across sectors so as to reduced the efficiency gain and the energy used for the single manufacturing unit. One of the methods of energy efficiency is nothing but Total site targeting method applied to locally integrated energy sectors to reduce the carbon footprint successfully implemented in process industry.

3. Methods to reduce the Carbon footprint in architecture firms

An experimental survey was conducted for the architectural firms for the reduction of carbon footprint as the forty percent of global energy used and the one –third of global greenhouse gases emission in building industry. As per the UNEP 2009 this sector has the greatest potential in reduction in the greenhouse gases. In this proposed survey an internship is carried out throughout the year in the architecture firm and report was generated on the basis of the

calculations taken in collaborative research. A handprint is proposed for the architecture firms based on the research and calculation so as to reduce the carbon footprint and developed the more energy efficient buildings. A survey proposes the design and positive handprint for the architecture firms and new buildings to reduce the greenhouse gases so as to trade in the carbon markets.

4. Role of renewable sources in mitigation of CO2.

In this proposed theory the use of the renewable sources to reduce the carbon emission by using the household applications such as solar cooker, water heater, dryer and industrial applications. Clean sources of energy are considered as renewable technologies and best uses of these resources minimize environmental impacts, produce minimum secondary wastes and these sustainable based on our current and future economic and social needs. The source of all energies is Sun. Heat and light are the primary forms of solar energy. The sunlight and heat are transformed and absorbed by environment in a number of ways. Some of these transformations give the result in renewable energy flows such as biomass and wind energy. The renewable energy technologies provide an excellent opportunity for mitigation of the greenhouse gas emission and reducing global warming instead of using conventional energy sources.

5. Carbon emission and mitigation cost comparisons between fossil fuel, nuclear and renewable energy resources for electricity generation.

A study was conducted to measure the electricity generation cost of number of current commercial technologies with technologies regard to become commercially available within the coming decade or so. The amount of greenhouse gas the production and discharge of resulting per kWh of electricity generated were evaluated. The renewable generation sources like nuclear stations, wind turbines, bioenergy from such as biomass and solar generating plants were also evaluated. A statistics has been done on the basis of the total amount of carbon emission as a result of global electricity sector by 2010-2020.A study showed that the generation industries has the potential to reduce the emission of green house gases by 15% by 2020.It having also benefit of cost saving in generation of electricity with existing technology.

CONCLUSION

Increase in Carbon emission is the warning bell to the world as it is dangerous for the existence of all living beings. Reduction of carbon footprint or in other words the reduction in the emission of greenhouse effects is the major challenge in front of us. Different topologies, methods and algorithm are reviewed to reduce the carbon emission. Increase in the use available renewable sources led to reduction carbon footprint.

REFERENCES

1) Lam, Hon Loong, Petar Varbanov, and Jiří Klemeš. "*Minimising carbon footprint of regional biomass supply chains." Resources, Conservation and Recycling 54.5 (2010): 303-309.*

2) Fang, Kan, et al. *"A new approach to scheduling in manufacturing for power consumption and carbon footprint reduction." Journal of Manufacturing Systems 30.4 (2011): 234-240.*

3) Perry, Simon, Jiří Klemeš, and Igor Bulatov. "*Integrating waste and renewable energy to reduce the carbon footprint of locally integrated energy sectors." Energy 33.10 (2008): 1489-1497.*

4) Poudyal, Dikshya. *Carbon footprint and architecture firms: a case study approach for mitigation. Diss. Kansas State University, 2014.*

5) Panwar, N. L., S. C. Kaushik, and Surendra Kothari. "*Role of renewable energy sources in environmental protection: a review." Renewable and Sustainable Energy Reviews 15.3 (2011): 1513-1524.*

6) Sims, Ralph EH, Hans-Holger Rogner, and Ken Gregory. "*Carbon emission and mitigation cost comparisons between fossil fuel, nuclear and renewable energy resources for electricity generation." Energy policy 31.13 (2003): 1315-1326.*