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Green House Effects Environment Impact on Building

S. Arjun*
V. Balakarthik **
K. Balamurugan ***
M.Sujith****

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Abstract

A greenhouse effect is an inspection, survey and analysis of carbon emits in a building, processor system to reduce the amount of energy input into the system without negatively affecting the outputs. In commercial and industrial real estate, a greenhouse effect is the first step in identifying opportunities to reduce energy expense and carbon footprints. There is a continued increase in demand for energy to cater the rapid industrial and commercial needs. Energy conservation and exploration of new energy avenues are the well accepted solution to fulfill the growing industrial demand in future.
The total cost of energy plays a vital role in determining the product cost of a commodity. This greenhouse effect provides a pathway to minimize the energy consumption with the recommendation provided as the result of analyses on various loads. Thus a inspection of greenhouse effect is performed in IFET College of Engineering to analyze the performance of the energy consumption and ensure the optimization of the total energy consumption of the buildings by the measurement of Energy Use intensity (EUI).

Author correspondence:

M.Sujith,
Associate Professor, Department of EEE,
Ifet College of Engineering, Villupuram, Tamilnadu, India
Corresponding Author Email Id: msujitheee@yahoo.co.in

1. Introduction (12pt)

A greenhouse gas is a gas in an atmosphere that absorbs and emits radiant energy within the thermal infrared range. This process is the fundamental cause of the greenhouse effect. The primary greenhouse gases in Earth's atmosphere are water vapor, carbon dioxide, methane, nitrous oxide, and ozone. Without greenhouse gases, the average temperature of Earth's surface would be about −18 °C (0 °F), rather than the present average of 15 °C (59 °F). In the Solar System, the atmospheres of Venus, Mars and Titan also contain gases that cause a greenhouse effect. Greenhouse gases are those that absorb and emit infrared radiation in the wavelength range emitted by Earth. In order, the most abundant greenhouse gases in Earth's atmosphere are:

- Water vapor (H_2O)
- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)

2. Carbon Footprint

*U.G Student, Department of EEE,IFET College of Engineering, Villupuram, Tamilnadu, India
**U.G Student, Department of EEE,IFET College of Engineering, Villupuram, Tamilnadu, India
***U.G Student, Department of EEE,IFET College of Engineering, Villupuram, Tamilnadu, India
****Associate Professor, Department of EEE,IFET College of Engineering, Villupuram, Tamilnadu, India

The total amount of greenhouse gases produced to directly and indirectly support human activities, usually expressed in equivalent tons of carbon dioxide (CO2).
A carbon footprint is historically defined as the total set of greenhouse gas emissions caused by an individual, event, or ation, or product, expressed as carbon dioxide equivalent.
In other words: When you drive a car, the engine burns fuel which creates a certain amount of CO2, depending on its fuel consumption and the driving distance. (CO2 is the chemical symbol for carbon dioxide). When you heat your house with oil, gas or coal, then you also generate CO2. Even if you heat your house with electricity, the generation of the electrical power may also have emitted a certain amount of CO2. When you buy food and goods, the production of the food and goods also emitted some quantities of CO2.
Your carbon footprint is the sum of all emissions of CO2 (carbon dioxide), which were induced by your activities in a given time frame. Usually a carbon footprint is calculated for the time period of a year.
The best way is to calculate the carbon dioxide emissions based on the fuel consumption. In the next step you can add the CO2 emission to your carbon footprint. Below is a table for the most common used fuels:
Examples:

- For each (UK-) gallon of petrol fuel consumed, 10.4 kg carbon dioxide (CO2) is emitted.
- For each (US-) gallon of gasoline fuel consumed, 8.7 kg carbon dioxide (CO2) is emitted.
- If your car consumes 7.5 liter diesel per 100 km, then a drive of 300 km distance consumes 3 x 7.5 = 22.5 liter diesel, which adds 22.5 x 2.7 kg = 60.75 kg CO2 to your personal carbon footprint.

Each of the following activities add 1 kg of CO2 to your personal carbon footprint:

- Travel by public transportation (train or bus) a distance of 10 to 12 km (6.5 to 7 miles)
- Drive with your car a distance of 6 km or 3.75 miles (assuming 7.3 litres petrol per 100 km or 39 mpg)
- Fly with a plane a distance of 2.2 km or 1.375 miles.
- Operate your computer for 32 hours (60 Watt consumption assumed)
- Production of 5 plastic bags
- Production of 2 plastic bottles
- Production of 1/3 of an American cheeseburger

Table 1.The summary of the co_2 emission

Fuel type	**Unit**	**CO_2 Emitted Per Unit**
Petrol	1 gallon (UK)	10.4 kg
Petrol	1 liter	2.3 kg
Gasoline	1 gallon (USA)	8.7 kg
Gasoline	1 liter	2.3 kg
Diesel	1 gallon (UK)	12.2 kg
Diesel	1 gallon (USA)	9.95 kg
Diesel	1 liter	2.7 kg
Oil (heating)	1 gallon (UK)	13.6 kg
Oil (heating)	1 liter	3 kg

3. Ways to reduce carbon Footprint

The most common way to reduce the carbon footprint of humans is to Reduce, Reuse, Recycle, Refuse. In manufacturing this can be done by recycling the packing materials, by selling the obsolete inventory of one industry to the industry who is looking to buy unused items at lesser price to become competitive. Nothing should be disposed off into the soil, all the ferrous materials which are prone to degrade or oxidize with time should be sold as early as possible at reduced price.

This can also be done by using reusable items such as thermoses for daily coffee or plastic containers for water and other cold beverages rather than disposable ones. If that option isn't available, it is best to properly recycle the disposable items after use. When one household recycles at least half of their household waste, they can save 1.2 tons of carbon dioxide annually.

Another easy option is to drive less. By walking or biking to the destination rather than driving, not only is a person going to save money on gas, but they will be burning less fuel and releasing fewer emissions into the atmosphere. However, if walking is not an option, one can look into carpooling or mass transportation options in their area

Carbon dioxide is a so called greenhouse gas causing global warming . Other greenhouse gases which might be emitted as a result of your activities are e.g. methane and ozone. These greenhouse gases are normally also taken into account for the carbon footprint. They are converted into the amount of CO_2 that would cause the same effects on global warming (this is called equivalent CO_2 amount).

Few people express their carbon footprint in kg carbon rather than kg carbon dioxide. You can always convert kg carbon dioxide in kg carbon by multiplying with a factor 0.27 (1'000 kg CO_2 equals 270 kg carbon). See my comment to the article about personal responsibility for global warming .

The carbon footprint is a very powerful tool to understand the impact of personal behaviour on global warming. If you personally want to contribute to stop global warming, the calculation and constant monitoring of your personal carbon footprint is essential.

This can also be done by using reusable items such as thermoses for daily coffee or plastic containers for water and other cold beverages rather than disposable ones. If that option isn't available, it is best to properly recycle the disposable items after use. When one household recycles at least half of their household waste, they can save 1.2 tons of carbon dioxide annually.

4. System Overview

Modern building automation systems are distributed systems where the control functionality is spread across a network. Due to the differing requirements of these systems, there is no single technology that can be used to satisfy all needs. As a result, building automation systems are extremely heterogeneous where many different network technologies and communication standards are used.

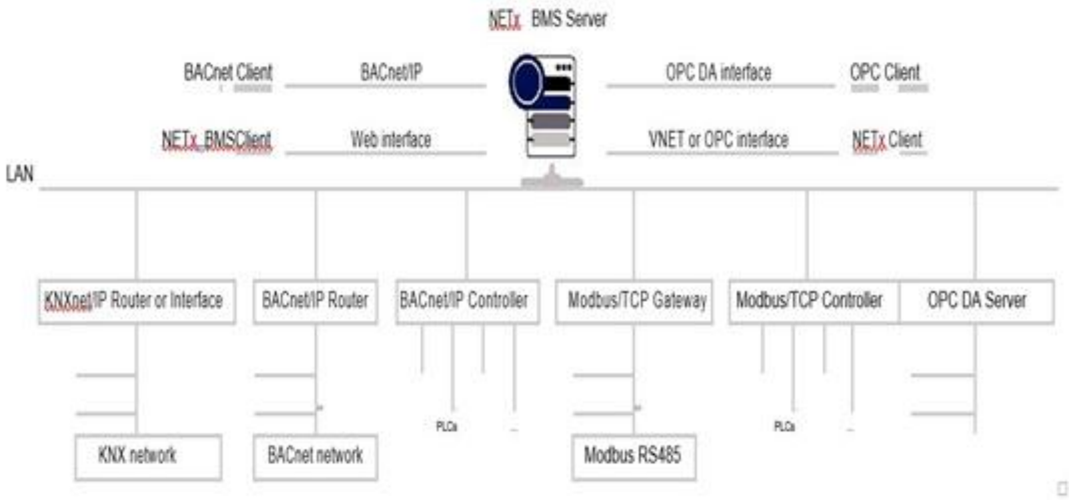

Figure 1. System structure NETx BMS Server 2.0

XLogic Editor

The first step in the development of new command is to define its command flow. The command flow defines the overall behavior of the command and can be defined in the work sheet that is opened after the command is created. Starting from the “CMD HEADER” block located at the left of the work sheet a continuous flow to the “CMD END” block has to be specified.

CMD

To define the logic of the “CMD” block, the first field within the block has to be selected using a double click. Within the object catalog at the left hand side of the work sheet, the different blocks that can be used to implement the control logic are listed. These blocks are divided into four categories: “Values”, “Commands”, “Functions”, and “Tools”.

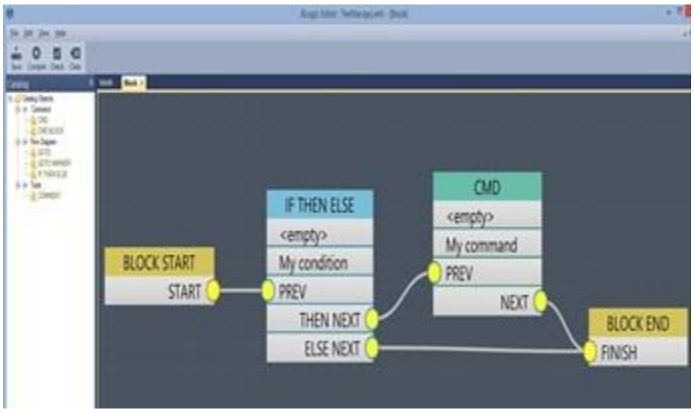

Figure 2.CMD Block

Command flow

The next step to define the command is to add different blocks to define the command flow. In this example the structure can be grouped into three different steps that have to be taken to fulfill all the requirements of the task. First the input value has to be validated, if the numeric input value is “GOOD”. This means that the input item was assigned with a valid item

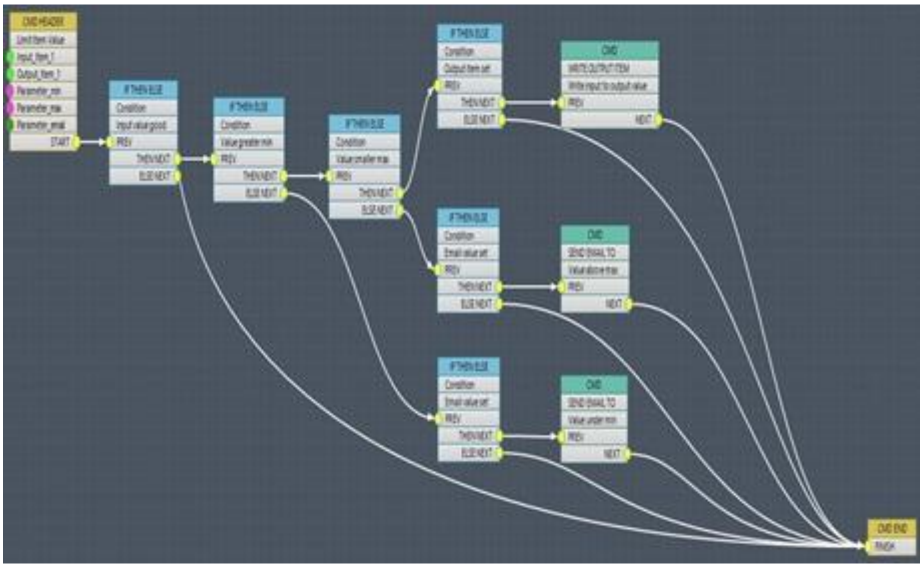

Figure 3.Definingthecommandflow

Writing the output

After the parameter was checked if it is set and is not optional, the current value can be written to the defined output item. For this purpose the “CMD” block after the fourth “IF THEN ELSE” block has to be used. Click on the “<comment>” field of the “CMD” block and add a comment (e.g. Write input to output value). Double click on the “<empty>” field of the “CMD” block to open the window to define the new condition. Drag a “INPUT ITEM VALUE” and a “WRITE OUTPUT VALUE” block to the window and connect the “VALUE” connectors of both blocks with each other. Double click on the “INPUT ITEM VALUE” block and select “Input_Item_1”. Additionally click on the “WRITE OUTPUT VALUE” block and select “Output_Item_1”. Now the value can be written to the output if it is inside the defined value range.

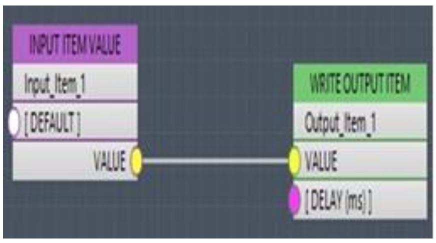

Figure4.WritetoOutputitem

5. Greenhouse Gas Equivalencies Calculator

Passenger vehicles are defined as 2-axle 4-tire vehicles, including passenger cars, vans, pickup trucks, and sport/utility vehicles.

In 2015, the weighted average combined fuel economy of cars and light trucks combined was 22.0 miles per gallon (FHWA 2017). The average vehicle miles traveled in 2015 was 11,443 miles per year (FHWA 2017).

In 2015, the ratio of carbon dioxide emissions to total greenhouse gas emissions (including carbon dioxide, methane, and nitrous oxide, all expressed as carbon dioxide equivalents) for passenger vehicles was 0.989 (EPA 2017).

The amount of carbon dioxide emitted per gallon of motor gasoline burned is 8.89×10^{-3} metric tons, as calculated in the "Gallons of gasoline consumed" section above.

To determine annual greenhouse gas emissions per passenger vehicle, the following methodology was used: vehicle miles traveled (VMT) was divided by average gas mileage to determine gallons of gasoline consumed per vehicle per year. A gallon of gasoline consumed was multiplied by carbon dioxide per gallon of gasoline to determine carbon dioxide emitted per vehicle per year. Carbon dioxide emissions were then divided by the ratio of carbon dioxide emissions to total vehicle greenhouse gas emissions to account for vehicle methane and nitrous oxide emissions.

Calculation

Note: Due to rounding, performing the calculations given in the equations below may not return the exact results shown.

8.89×10^{-3} metric tons CO_2/gallon gasoline × 11,443 VMT $_{car/truck\ average}$ × 1/22.0 miles per gallon $_{car/truck\ average}$ × 1 CO_2, CH_4, and N_2O/0.989 CO_2 = **4.67 metric tons CO_2E/vehicle /year**

6. Conclusion (10pt)

The Conclusion confirms that global warming is the major challenge for our global society. There is very little doubt that global warming will change our climate in the next century. So what are the solutions to global warming? First, there must be an international political solution. Second, funding for developing cheap and clean energy production must be increased, as all economic development is based on increasing energy usage. We must not pin all our hopes on global politics and clean energy technology, so we must prepare for the worst and adapt. If implemented now, a lot of the costs and damage that could be caused by changing climate can be mitigated

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