



Welcome, to EMT Electric Motor, Drives & Engineering Newsletter

PLEASE PASS ALONG TO YOUR:

PURCHASING

MAINTENANCE

ENGINEERING

PROCUREMENT

Calculating Greenhouse Emissions

1. Introduction

Once you have determined the energy consumption at a client's site by metering or the use of billing information, calculating greenhouse gas (GHG) emissions for energy related activities is relatively straightforward. Simply multiply the energy consumption figure by the greenhouse coefficient that is relevant for the state.

GHG = [Energy consumption (kWh, GJ)] x [GHG coefficient]

Greenhouse gas emissions from electricity generation vary from state to state because different fuels are used to generate it.

For example, in Victoria, 1.31 kg CO₂ – equivalent is produced for every kilowatt-hour (kWh) of electricity produced. Victoria has the highest figure as most of its electricity comes from burning brown coal, a greenhouse intensive energy type.

Tasmania has the lowest greenhouse coefficient because an extremely large proportion of its electricity is generated by hydroelectric generators, that is, very little power is produced from burning fossil fuels.

Green power (from renewable energy sources) produces no greenhouse gas emissions

Hydroelectric power (from dammed water) produces no greenhouse gas emissions.

2. Green house gas coefficients

The table below lists the greenhouse gas coefficients for each state from highest to lowest.

State	GHG coefficient (kg CO ₂ -e /kWh)
Victoria	1.31
New South Wales/ACT	1.06
Queensland	1.04
South Australia	0.98
Western Australia	0.98
Northern Territory	0.79
Tasmania	0.13

Published by the Australian Government, www.climatechange.gov.au

The following examples show the annual greenhouse emissions calculations for two commercial properties.

Example: Calculation 1

A factory in Victoria has ten (10) water pumps fully loaded at 20 kW each. The pumps continuously operate for eight hours per day, 300 days per year.

Question: What are the annual greenhouse emissions?

Working out:

Total load = 10 pumps x 20kW per pump = 200kW (per hour)

Annual Operating Hours = 8 hours/day x 300 days/ year = 2400 hours per year

Annual GHG = (200kW/hr x 2400 hours) x 1.31 kg CO₂-e/kWh

= 628,800 kg CO₂-e per year

= 628.8 t CO₂-e per year

Answer:

The Victorian factory emits 628.8 tonnes of greenhouse gases in one year of operation.

Example: Calculation 2

Using the data from the contestable electricity bill shown earlier in this section, calculate the greenhouse gas emissions:

Working out

Total energy consumption: 323,795kWh

Monthly GHG emission = 323,795kWh x 1.31 kg CO₂-e/kWh

= 424,171 kg CO₂-e

= 424 t CO₂-e

The previous calculations took you through calculations for a commercial sector electricity bill. Now you should try a few calculations for yourself. In the following activity you will take a look at two billing situations: residential and commercial sector bills.

3. Conducting an audit

An ideal way of identifying energy saving opportunities is to conduct an energy assessment.

The energy assessment can:

- help determine:
 - where energy is consumed
 - in what form
 - in what quantities and
 - at what cost.
 - determine which areas of the site are contributing most to the operating costs
 - highlight areas of significant energy use and identify areas of efficient and inefficient use
 - provide estimates of potential energy savings
 - implement costs and payback periods for each recommended action.

(Next month: Calculating Energy Use across).

Newsletter written by Bill Jankovic

Did You Know ?

- EMT will be at Orange Field Day 18-20 OCT on D Street Stand 6. Call us on (02) 9838 8181 or come and visit us at the show.

ISSUE 17, October,



Visit our website at: www.emtmotor.com.au

The Man Who Electrified The World

Today is Part 9 of a story about one of the world's greatest geniuses—Nikola Tesla.

Tesla financier John Jacob Astor was drowned on the Titanic!!

Tesla stayed at the Waldorf Astoria hotel and commuted to his laboratory in downtown Manhattan. The hotel was owned by millionaire John Jacob Astor IV who was a close friend and financier of Tesla:

"Col. John Jacob Astor, owner of the Waldorf-Astoria, held his famous dining-room guest in the highest esteem as a personal friend, and kept in close touch with the progress of his investigations. When he heard that his researches were being halted through lack of funds, he made available to Tesla the \$30,000 he needed in order to take advantage of Curtis' offer and build a temporary plant at Colorado Springs. Tesla arrived in Colorado in May, 1899, bringing with him some of his laboratory workers, and accompanied by an engineering associate, Fritz Lowenstein."



John Jacob Astor and his young wife Madeleine.



Col. John Jacob Astor IV was a close friend and financier of Tesla. He was lured aboard the Titanic and perished on her maiden voyage. Tesla was now at the mercy of Morgan and his wireless system

The White State line was owned by J.P. Morgan. At the last moment, Morgan decided not to sail on his ship. Madeleine survived, and according to John Jacob Astor's will, Madeleine would have received income from a \$5,000,000 trust fund as long as she did not remarry.

Tesla, Einstein, and the luminiferous ether!!

Up to the year 1900, most scientists believed in what was called the luminiferous ether or simply the ether. This was simply space or the invisible medium that carries electromagnetic waves. Here is the dictionary definition of that term:

5. Physics. An all-pervading, infinitely elastic, massless medium FORMERLY postulated as the medium of propagation of electromagnetic waves. (*Webster's Dictionary*).

(This story continues in our November Newsletter.)

The famous Michelson-Morley Experiment of 1887 showed no movement of the earth through the ether. So what did the "scientists" do? They simply got rid of the ether and stated that it did not exist and that was the reason for the NULL results in the experiments. This necessitated the invention of Albert Einstein and his BIZZARE theories of the universe without an ether. Einstein invented NOTHING that was of any benefit to the human race.

Our People

WAYNE SULLIVAN

Wayne joins EMT as a New Motors Sales Representative. Wayne brings with him over 20 years of Data Communications, Lighting and Specialist Electrical Cables experience having worked as Specialist Cables Representative and State Sales Manager with TLE and APEC Cables respectively. We welcome Wayne to our team and wish him the very best in the future.



WOULD YOU LIKE MORE INFORMATION ?

- Please send me a Product Catalogue CD Rom
- Please send me a Single Phase Motor Catalogue
- Please send me a Three Phase Motor Catalogue
- Please send me a VSD Catalogue

Have you relocated? Please help us keep our records up to date by including your new details.

NEW DETAILS:

Name: _____

Position: _____

Company: _____

Address: _____

Suburb: _____ State: _____ Post Code: _____

Tel: _____ Fax: _____

Email: _____

Photocopy this form and mail or fax to:

EMT Pty. Ltd. 1/114 Station Road, Seven Hills NSW 2147

Tel: (02) 9838 8181 Fax: (02) 9838 8421

OR

EMT Pty. Ltd. 40 Sydenham Road, Brookvale NSW 2100

Tel: (02) 9905 2755 Fax: (02) 9905 7399