Cement, a Surplus of Data

In Canada, there is generally only one data source on energy use for industry groups as defined under the North American Industry Classification System (NAICS). That said, some industry associations gather their own data and so have two sources for their particular industry. But the cement industry in Canada actually has four data sets on energy use. Furthermore, each of these can be used to generate GHG emissions data. In addition, each Canadian cement facility must report GHG emissions by site to Environment Canada. You can see that, for this industry, there’s a real surplus of data!

All cement facilities report to Statistics Canada (STC) on the Industrial Consumption of Energy survey. Data are available from STC’s CANSIM online database. The data are used to inform the Report on Energy Supply and Demand, also available online from CANSIM. Each cement facility also reports to both the Portland Cement Association (a US / Canada association) and the Cement Association of Canada. In principle, the data from each source should be the same but, as you can imagine, the resulting assemblage of data actually generates different energy and emissions pictures of the industry.

While we don’t have room here to display and discuss all the variations in the data sets, Figures 1 and 2 (next page) illustrate the variance in the energy data and consequent intensity differences that result from the use of each of these data sets –see CIEEDAC’s report on the industry available from our website (www.cieedac.sfu.ca). What we can do here is point out why the data may be different and recommend a path to resolution. In fact, because cement is not alone in terms of numbers of data sets (e.g., the electricity supply industry also has a lot of data), these recommendations can be applied more broadly.

Four areas of concern

Variation in energy and GHG emission data in the cement industry can be the result of quite a number of reasons, reasons that we can group into 4 categories:

1) Data definitions and respondent issues:

How are the data defined on each of the surveys? Is “Fuel Oil” on one survey the same as “Ultra Heavy Fuel Oil” on the other or Residual Oil on the third? Is the list of fuels on each survey the same (or similar enough to avoid confusion)? Does the survey cover the same set of plants (i.e., the same universe)? Are there multiple products from a plant and are the physical units of these products additive? And what are the qualifications of the person assigned to respond to the survey?

2) Internal correspondence:

Do the respondents to the surveys know of the other surveys and who in their company is responding to them? Do they reconcile their data before submission? Do the recipients of the data realise the various forms in which the data gathered...
3) Energy and production data:

Are the energy data captured in physical units (e.g., tonnes or tons or m³) or energy units (e.g., GJ)? Is the conversion from physical to energy units done using lower or higher heating values (LHV or HHV)? Are some data confidential?

4) GHG emissions estimation

Are there variations in the GHG conversion coefficients for the different fuels? Which GHG gases are included in the calculation? What are the process emissions and how are they determined?

Recommendations

Once potential sources of variation have been defined, the solution / recommendations become rather straightforward – communication is key:

- define the fuels (and the list) including LVH, HHV and carbon content, release the fuel data in physical units
- coordinate submissions so that data are uniform to all surveys, have those who provide data coordinate with others who provide data of the same type
- ensure the uniformity of universe

It is to the advantage of all stakeholders that the data released on a particular industry be consistent and coordinated. The data need not be the same (i.e., use of LHV or HHV in a study) but the differences between them should be explainable. Doing so would reduce inappropriate comparison or analysis. As noted earlier, CIEEDAC provides the detail in its report on the cement industry available on line (www.cieedac.sfu.ca).

What's Going On?

Pet Ref Data in

CIEEDAC has received data from all refineries and has completed its review of their quality. As per usual, some updates were made to last year’s data as well.

All reports on line

Each year, CIEEDAC completes over 20 reports and newsletters on energy and emissions related data. Nine of these reports focus on specific industries, two review intensity indicators for energy and GHGs in all industry, one looks at the electricity sector and one provides detailed data on BC energy and emissions. CIEEDAC houses two databases (renewable energy and cogeneration), each of which is also summarized in a report. These reports and newsletters are available at www.cieedac.sfu.ca.

Nyboer presents Cement energy data.

John Nyboer presented data to representatives of most of the cement companies in Canada at a meeting sponsored by the Cement Association of Canada in Vancouver in early April, 2013. He spoke on the variety of data and the issues that result. He also provided some recommendations for resolution. See feature article, this newsletter.

Advisory Committee Update

Since its inception, CIEEDAC has had an advisory committee (AC) that reviews tasks completed, provides guidelines on process and makes recommendations on activities CIEEDAC wishes to undertake. The committee has varied in size and constituents over time but, generally speaking, the 5 member Advisory Committee (AC) includes representatives from the major supporting agencies (Environment Canada and Natural Resources Canada, Industry) and representatives of the provinces.

With the 2011 change in NRCan’s funding of CIEEDAC, the structure of the AC was reviewed. A discussion at the 2012 meeting of the AC resulted in some recommendations that included changes in membership. A recent retirement and a recommendation to expand the committee resulted in 3 new members on the committee. The members are:

- Environment Canada: Frank Neitzert, Roy McArthur
- Natural Resources Canada: Yanick Clement- Godbout (new)
- Industry: Sue Olynyk, ArcelorMittal, Dofasco
- Energy Industry: Paul Cheliak, Canadian Gas Association
- Provinces: Dr. Lawrence Pitt, Pacific Institute for Climate Solutions, BC (new)
- Lorissa Ho, Ontario Min of Energy, replacing Than Nguyen (retired)

CIEEDAC would like to thank Ms Than Nguyen for her many years of service on this committee. Ms Nguyen began her work on the committee in 2005 and has been an advocate for CIEEDAC’s role and its activities since that time. Her presence on the AC will be missed.