CRISP Technologies

Gas Emissions Monitoring System®

GEMS® is a software program that has been developed to calculate, monitor, and track energy and their associated Greenhouse (**GHG**) emissions. At the core of **GEMS®** is a systematic approach to analyzing the energy used by your facilities and operations in order to report energy used per unit of product produced, and the **GHG** emissions associated with this energy usage. This program was developed to help Canadian companies meet the requirements of the Federal Government's Climate Change Voluntary Challenge and Registry (VCR).

GEMS® is a client-server application that is capable of importing data from a variety of sources, data bases and file types. It integrates this data into meaningful information which can be used for tracking and reporting emissions and energy costs in any sized organization.

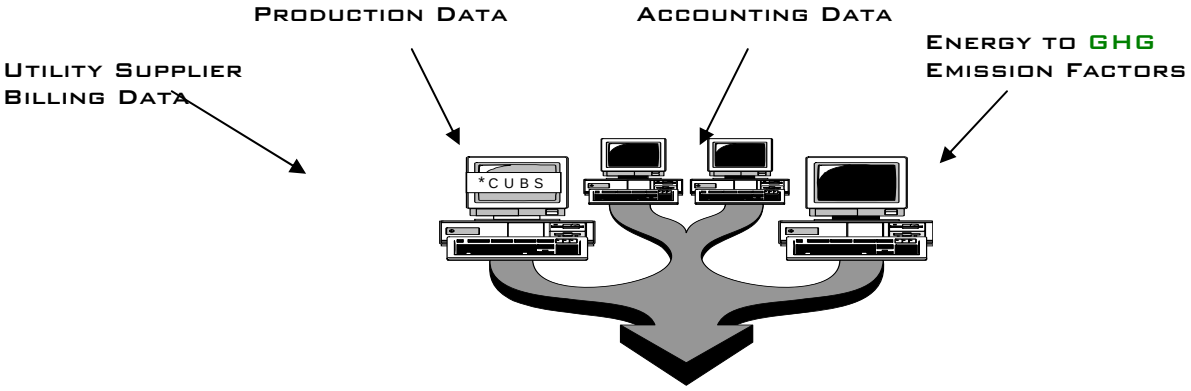
The functionality of **GEMS®** is to generate a report of **GHG** emissions, namely CO_2, CH_4, and N_2O. With this dynamic information you will be able to deliver the following:

- Automation of the emission reporting process providing **GHG** emissions reports for any period of time, whenever needed.
- Corporate **GHG** Inventory Report, which can be used to monitor **GHG** emissions on a corporate or regional level. A region can be dynamically built by associating/dissociating facilities within the specified region. This will help isolate the region(s) with the highest **GHG** level(s).
- Cumulative **GHG** Inventory Report for each individual facility in an area for a selected time period (includes deliveries, fuel, flare, electricity, **GHG** emissions, PEI – Production Energy Index, and PCI Production Carbon Index).
- Monthly **GHG** Inventory Report for a facility for a selected time period (includes deliveries, fuel, flare, electricity, **GHG** emissions, PEI, and PCI).
- Flare Gas Report: cumulative and monthly for each facility in an area for a selected time period.
- Calculation of the PEII (Production Energy Intensity Index) for an area over a specified time period for the Corporate **GHG** Inventory Report. The PEII normalizes the PEI value.
- Capability to update emission and energy use factors using the proper access password.
- Ability to assign a product type to each of the facilities (i.e. assign a battery as being either a Light Oil, Conventional Heavy Oil, or Thermal Recovery Heavy Oil Battery).
- Apply fugitive emission factor that corresponds to the product type of the facility.
- Vented CO_2 from sour gas processing (using CO_2 mole fraction in acid gas) included in the GHG Inventory Reports.
- Automatically track deliveries between facilities through delivery codes (i.e batteries to gas gathering systems, gas gathering systems to gas plants) and eliminate double counting of delivery volumes.
- Natural Gas Liquid volumes (i.e. propane, butane, pentanes plus) and sulphur volumes from S21 reports included in **GHG** Inventory Reports and PEII calculation.

Automated Interface of GEMS®

We interface to production and accounting systems, either PC, LAN or Mainframe based, and import electric utility billing data.

INPUTS:



GEMS® Reporting Software Output

- Emission status reports by company, facility, region, area. Included in reports is the production energy index (PEI) & production carbon index (PCI).
- Facility status reports, monthly, yearly, or "on-demand".
- Flare gas emission reports, trends, time lines, volumes.

System Requirements

Hardware

- 100% compatible PC based on a Pentium 75 MHZ processor or higher.
- The PC is connected to a network and corporate database.
- 16MB RAM recommended minimum.
- At least 5 MB of Disk space to accommodate **GEMS®** (Database tables not included. Tables are integrated with the corporate database).

Software

- Windows 98/2000/XP, Windows NT workstation version 4.0 or higher
- Appropriate network transport protocol software.

Since Databases differ among corporations, **GEMS®** has to be customized to connect and extract data to populate its built in database.

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