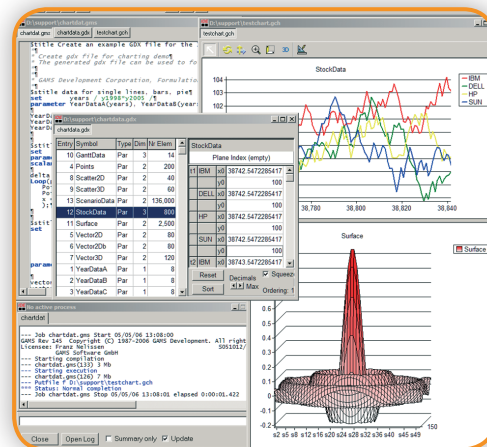# GAMS

High-Level Modeling

The General Algebraic Modeling System (GAMS) is a high-level modeling system for mathematical programming problems. GAMS is tailored for complex, large-scale modeling applications, and allows you to build large maintainable models that can be adapted quickly to new situations. Models are fully portable from one computer platform to another.

State-of-the-Art Solvers

GAMS incorporates all major commercial and academic state-of-the-art solution technologies for a broad range of problem types.

GAMS Integrated Developer Environment for editing, debugging, solving models, and viewing data.

INTEGRATION by CanmetENERGY

The INTEGRATION software is developed by Natural Resources Canada's CanmetENERGY research center in Varennes (Quebec) in collaboration with other key federal and provincial partners. It is a process integration software created to help engineers (industry, consultants) quickly identify, evaluate and select energy efficiency projects in complex industrial facilities.

In particular, the retrofit of heat exchanger networks is a complex task with numerous options for possible structural changes. The optimization module in INTEGRATION has been implemented in GAMS using CBC as the MILP solver and CONOPT as the NLP solver. The software can handle complex network configurations and various constraints (see http://dx.doi.org/10.1016/j.applthermaleng.2012.10.045).

It calculates the minimum energy targets for either new or retrofit design, and allows various retrofit projects to increase heat recovery including:
- Load shifting
- Re-piping
- Addition of new heat exchanger
- Stream splitting

The optimization algorithms are supported by an interactive interface allowing the user to easily interact with the software.

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Integration
Integration 2.0
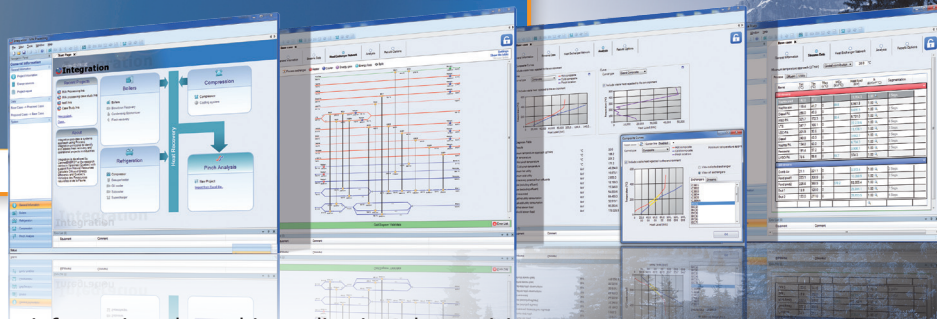
For more information about this application please visit http://canmetenergy.nrcan.gc.ca/integration-software or contact integration@nrcan-rncan.gc.ca.