

Modeling for the Real World

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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.

Multiple Model Types

GAMS allows the formulation of models in **many different problem classes**, including

- Linear (LP) and Mixed Integer Linear (MIP)
- Nonlinear (NLP) and Mixed Integer Nonlinear (MINLP)
- Mixed Complementary (MCP)
- Programs with Equilibrium Constraints (MPEC)
- Stochastic Linear Problems
- Constrained Nonlinear Systems (CNS)
- Conic Programming Problems

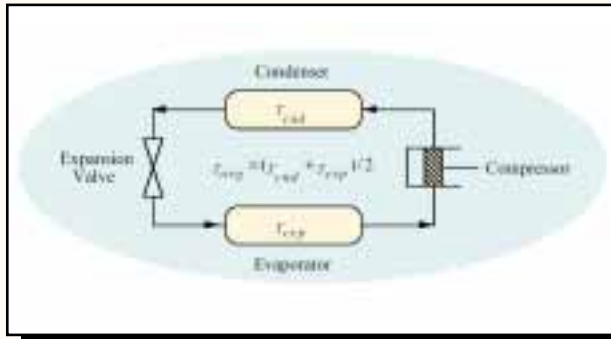


GAMS Integrated Developer Environment for editing, debugging, solving models, and viewing data.

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, including a range of global solvers (nonlinear and mixed integer nonlinear). Our portfolio of global solvers uses diverse approaches, such as

- Convexification and Deterministic Bounds (BARON)
- Lipschitz-Continuous Partition and Search (LGO)
- Multi-Start Using the OptTek Search Technology (OQNLP)



Global optimization used in automotive refrigerant design.

Global Optimization Applications

Many real world applications require global solutions. Such problems may arise in

- Engineering Design
- Molecular Design and Bioinformatics
- Parameter Estimation
- Supply Chain Design and Operation

where global optimality is vital. The GAMS **model library** at <http://www.gams.com/modlib/> includes over 250 sample models of all supported model types, including global optimization applications.



Global optimization in bioinformatics: identification of protein-DNA binding site.

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