# FICO™

Xpress-Optimizer

decision management tools

A suite of optimization software used to solve optimization problems

Xpress-Optimizer is used in three different ways:

» As a component by OEMs to embed optimization functionality within their own products

» By consultants to offer optimization solutions to their clients

» By business analysts and other end-users within large organizations to solve their own optimization problems directly
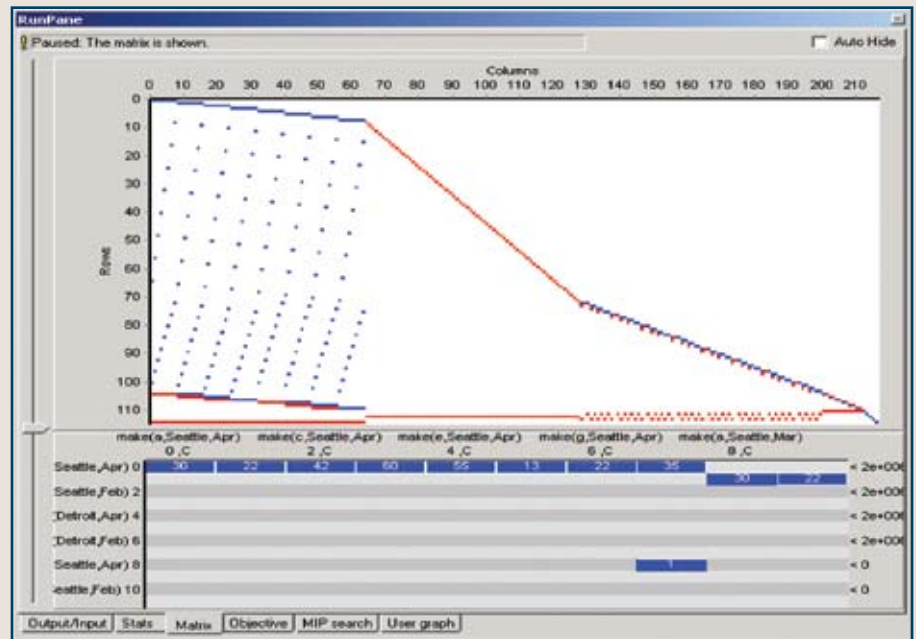
Matrix visualization

Xpress-Optimizer is used by thousands of companies worldwide to solve all sorts of problems, ranging from supply chain planning to portfolio management, from the process industry to financial services.

The Xpress-Optimizer products include:

- **A range of optimization algorithms** for solving different problem types
- **Different capacities** for solving problems of various sizes
- **Different modeling interfaces** that allow users to define their problems in different ways
- **Software products and components**, suitable for using Xpress-MP in an embedded system or as a stand-alone application

The Xpress-Optimizer is the clear market leader in the process industries.

- **Versions** for all common computer platforms

The Xpress-Optimizer features a wide range of optimization algorithms. These solve linear programming problems (LP), quadratic programming problems (QP) and mixed integer linear and quadratic programming problems (MILP & MIQP).

The simplex optimizer, which includes primal and dual methods, solves LP problems, and is also used within a branchand-bound framework to solve MIP and MIQP problems. The Newton barrier optimizer is an interior point method for solving LP and QP problems.

Xpress-MP uses ultra-efficient sparse matrix handling to allow it to solve the largest problems in record time. A presolve procedure reduces the size of the problem before it is solved, sometimes by an order of magnitude.

The Xpress-Optimizer is also noted for its ability to solve numerically hard or unstable problems, which is one of the reasons why it is the clear market leader in the process industries.

The MIP/MIQP optimizer uses a sophisticated branch-and-bound algorithm to solve mixed integer problems, and is particularly known for its ability to find high-quality solutions fast. Some of the more sophisticated techniques include various classes of cutting planes, which are generated automatically during the optimization to reduce the size of the search and increase the speed of the solution.

Xpress-Optimizer is available in a range of sizes, including unlimited for the largest problems. A parallel implementation of the MIP is also available for ultra-fast execution time.

Make every decision count™

FICO

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