Profit Optimizer
Multi-Unit and Plant-Wide Dynamic Optimization

Benefits
Profit® Optimizer is a multi-unit and plant-wide dynamic optimization solution that delivers significant, sustainable real-time optimization benefits without the need for large-scale rigorous process models. Benefits include:

- Improved plant-wide performance and profitability
- Reduced engineering effort for design and maintenance.
- Cost-effective implementation leverages existing advanced control applications.

Profit Optimizer spans multiple process units to achieve true plant-wide optimization.

Dynamic Plant-Wide Optimization
Profit Optimizer is part of Honeywell’s Profit Suite™ solution set for advanced control and optimization. Profit Optimizer represents Honeywell's patented technology that delivers dynamic plant-wide optimization benefits in a sustainable and maintainable manner. Profit Optimizer is unique in its ability to span multiple process units or entire process plants to deliver improved plant profitability and overall plant control.

By accounting for constraints and economics between operating units, Profit Optimizer can implement optimal operating conditions without violating global plant constraints. In addition, Profit Optimizer dynamically coordinates the introduction of optimal setpoints for a smooth transition to optimal operation.

Integration with Existing Applications
Profit Optimizer software integrates with Honeywell Profit Controller applications to deliver cost-effective and user-friendly solutions to real-time optimization (RTO) problems. By solving multi-unit and plant-wide optimization on a minute-by-minute basis, Profit Optimizer represents an innovative technology that redefines RTO methodology in the process industries.

Instead of relying on steady-state, first principles-based modeling systems, Profit Optimizer relies on measured process relationships and fully leverages dynamic process information that resides in the underlying Profit Controller applications. Using this approach, Profit Optimizer is able to deliver the economic benefits of traditional RTO with a dramatic reduction of engineering effort.

Robust Global Optimization
Profit Optimizer is constructed as a dynamic optimization layer that resides above Honeywell’s Profit Controller technology for multivariable control.

Profit Optimizer’s key to success is its patented cooperative control and optimization algorithm based on dynamic quadratic programming (DQP) techniques. This cooperative optimization approach coordinates the global optimization solution across multiple Profit Controller applications to dynamically compensate for the complex disturbance relationships between the controllers.
At the same time, it combines control-level models, global and local constraints, and inter-application dynamics to determine not only the optimal operating point, but also the optimal and feasible path to that point.

Profit Optimizer is part of Honeywell’s layered approach to process optimization.

There is no comparable product available that delivers real-time execution, dynamic solution coordination and determination of the optimal feasible path to the point of maximum profit.

By updating the models in Profit Optimizer and Profit Controller with non-linear gain information obtained from a separate process model, Profit Optimizer can be easily integrated with Profit Bridge to improve optimization and control. Profit Optimizer combined with Profit Bridge delivers non-linear unconstrained plant-wide optimization and control capability.

Profit Optimizer offers the following unique benefits:

**Robust Operation** — Patented technology, based on distributed quadratic programming, ensures that both control and optimization are handled effectively.

**Improved ROI** — Profit Optimizer achieves comparable optimization benefits as traditional steady-state RTO solutions but with lower implementation and subsequent maintenance costs.

**Plant-wide Scope** — Profit Optimizer is used to dynamically optimize entire process plants.

**Scalable Solution** — Profit Optimizer applications are easily scaled up as subsequent Profit Controller applications are developed and integrated into the overall optimization scope.

**No Steady-State Requirements** — Unlike traditional RTO solutions that require steady-state plant operation to determine a new optimum, Profit Optimizer executes at a 1-2 minute frequency and ensures dynamic feasibility of its solution, even when the plant is not at steady-state.

**Prior APC Investments are Leveraged** — Profit Optimizer enhances the value of installed Profit Controllers by using the dynamic model information in the global optimization solution.

**Minimal Training** — The design, implementation, operation and maintenance of Profit Optimizer applications is very similar to the methodology for other Profit Suite products, resulting in reduced operator and engineer training to support the application.

**Profit Optimizer Applications**

Profit Optimizer is appropriate for most process optimization applications and spans multiple process units including:

**Refining Applications**

Profit Optimizer has been used to optimize numerous refining units. For example, Profit Optimizer was used to maximize overall crude throughput through a system composed of parallel crude and hydrotreater units while maintaining a tight product specification in the downstream distillate blend pool.
Petrochemical Applications
Profit Optimizer has been applied to more than 15 ethylene plants with typical overall ethylene production increases of 4 percent. Ethylene plant applications are perfect examples of plant-wide optimization scopes that incorporate Profit Bridge technology to deliver significant non-linear control and optimization benefits. In these instances, Profit Bridge is used to update highly non-linear furnace yield information based on the optimizer’s selection of feedstocks.

Oil and Gas Application
Profit Optimizer has been applied to a liquefied natural gas facility to optimize plant throughput by coordinating feed distribution between three parallel processing trains.

Pulp and Paper Applications
Profit Optimizer has been applied to a thermo-mechanical pulp line to control the final pulp quality and coordinate multiple lines feeding a common latency chest. The results included reduced power consumption and improved pulp quality.

System Requirements
Profit Optimizer’s off-line design software (Profit Design Studio) runs under Windows XP Professional and Windows 7 Operating Systems. A Pentium V equivalent or higher microprocessor is recommended due to the computational requirements of this application.

Profit Optimizer on-line software components run on the Experion® Application Server, Honeywell TPS APP Nodes, and open platform operating systems with Windows XP Professional, Windows 2003 Server, and Windows 2008 Server operating systems. An Intel Xeon X5560 equivalent or higher microprocessor is recommended and 4.0 GB of RAM due to the computation requirements of the application. Open implementation of Profit SensorPro on non-Honeywell distributed control systems through direct OPC connections or Honeywell’s PHD software.

Training Services
Training courses addressing Profit Optimizer theory, concepts and implementation are available through Honeywell’s Automation College (www.automationcollege.com). On-site courses are also offered upon request.

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