PCI GenTrader®

Leading the Pack.

Asset & Portfolio Optimization and Planning
It enables power generation companies to more effectively compete in today’s volatile energy market environment by providing near real-time decision support, long-range planning and post-analysis calculations. PCI offers on-premise or hosted deployment options of GenTrader® to meet your enterprise requirements.

Comprehensive and Versatile
PCI GenTrader® is used for numerous applications both inside and outside ISO markets and incorporates an advanced optimization algorithm for robust unit commitment and economic optimization for modeling an entire portfolio including:

- Thermal generation including complex combined-cycle assets
- Hydro generation including cascaded and pumped storage assets
- Renewable generation
- Market prices: power, fuel, ancillary services, emissions
- Complex option and forward contracts
- Fuel constraints and energy-limited options

PCI GenTrader® is an ideal model to support applications as diverse as daily operational planning, fuel burn forecasting, asset acquisition, post-analytics, transaction structuring, assessing emissions (and emissions compliance) impacts as well as the impact of potential plant upgrades.

- Traders use GenTrader® to produce a near real-time pricing grid for making off-system purchases and sales
- Portfolio managers can run post-analytics to assess operational efficiency as well as transaction and outage costing
- Planners can run hourly simulations for any time period
- Risk analysts perform stochastic simulation with GenTrader® to show the impact of market price volatilities, unit forced outages and load uncertainties

Short and Long Term Optimization
PCI GenTrader® can be used across multiple time horizons to optimize portfolio positions from 5 minutes out to 30 years into the future, ensuring consistency across your entire enterprise. GenTrader® encompasses numerous breakthroughs in optimization and simulation technology that make it the premier generation management system. GenTrader® encompasses:

- Simultaneous local/global NOx emission constraint optimization
- Multi-tier fuel constraint optimization
- Multi-area and multi-commodity capabilities for arbitrage decisions and operations
- Unified modeling for both short- and long- term studies with recursive outage adaptation
- Full co-optimization for all customer resources and obligations considering all commodities (energy, reserves, regulation, fuel and emissions)
- Integrated platform for deterministic/stochastic simulation and production costing runs, which can be used to simulate the impact of load uncertainty, forced outages and fuel cost uncertainties on revenues, production costs, and profits and losses
- Grid computing to perform parallel processing significantly reduces the time to run multi-year studies
- Market price analysis to assess how a portfolio’s profit and loss would behave under varying market conditions
PCI GenTrader® offers rich features that allow you to perform a variety of studies, including:

- **Ancillary Service Co-Optimization**
  Simultaneously co-optimize energy and ancillary service positions and opportunities

- **Case Comparison**
  Display detailed differences between two designated studies

- **Purchase/Sale Market Structure**
  Input “bid” and “ask” prices to define a commodity market

- **Stochastic Analysis**
  - Simulate the value and risk of a position or a portfolio
  - Generate a probabilistic distribution of profit and loss for each position as well as the entire portfolio
  - Construct a tornado diagram showing the contribution of each risk driver to the overall portfolio risk
  - Value generation assets as options based on a user-defined price model

- **Stress Testing**
  Easily generate market price scenarios to analyze how a portfolio’s profit and loss would behave under varying market conditions

- **Transaction Pricing**
  Calculate the break-even cost for proposed purchases or sales. Can also be configured to create “block prices” for a stack of generic purchases or sales.

**Innovations in Modeling**

PCI GenTrader® incorporates capabilities that distinguish it as the most all-encompassing modeling solution available to ISO market participants and non-participants alike. GenTrader® offers modeling applications for:

- **Asset-Based Commodity Arbitrage** — Optimize generation asset schedules to take advantage of arbitrage opportunities that exist among commodity markets (e.g., energy, spinning reserve, gas, coal, oil, etc.).

- **Constrained Fuel Coordination** — GenTrader® models multiple limited fuel resource constraints

- **Emissions** — GenTrader® models multiple emissions and their allowances while imposing emission constraints for multiple, overlapping air quality districts

- **Fossil Generation Assets** — Model complex operating characteristics of generation assets such as:
  - Minimum up and down times
  - Heat rate curves
  - Multiple fuel sources
  - O&M costs
  - Many others (ramp rates, emission rates and allowances, dispatch limits, must-run and maintenance constraints, etc.)

PCI GenTrader® can also model an extended set of ancillary service capabilities including spinning and non-spinning reserves, regulation up and down reserves as well as supplemental/replacement reserves.

- **Hydroelectric Generation Assets** — Optimize the operations of hydroelectric generating and pumping units along a cascading system of rivers and reservoirs. PCI GenTrader® allows the hydroelectric system operator to extract the maximum value from the electricity generated while meeting water flow and other environmental constraints and regulations.

- **Long-Term Monte Carlo Analysis** — Perform detailed resource allocation (e.g., fuel budgeting, maintenance) and production costing studies considering the effects of forced unit outages

- **Multi-Market Transmission Analysis** — Define multiple commodity markets where assets and contractual positions are located. Specify transmission/transport costs as well as transfer capabilities between interconnected markets.

- **Multi-Stage Units** — Users can model combined cycle units and define each operating stage to have its own set of operating characteristics similar to a simple cycle unit. In addition, transition time, costs, fuel and profiles can be defined between any stages.

- **Trading Positions**
  GenTrader® models physical long or short positions of forward or option commodity contracts. Trading positions and asset positions are optimized as a single portfolio.