

Refinery Cooling Water System Calibration Using Datacor Fathom

CHALLENGE

Hydrus Works, LLC needed to recalibrate a large refinery cooling water system containing nearly 600 pipes, 492 junctions, and 127 heat exchangers. Over 700 pressure, flow, and temperature measurements were taken, and the goal was to align the model with current system behavior for operational reliability.

SOLUTION

Hydrus used Fathom with extensive features including Scenario Manager, Global Editing, Goal Seek & Control, and custom Python tools to input metadata and calculate design and field K-factors. A calibration spreadsheet automated comparison of measured and modeled data, allowing iterative refinement.

RESULTS

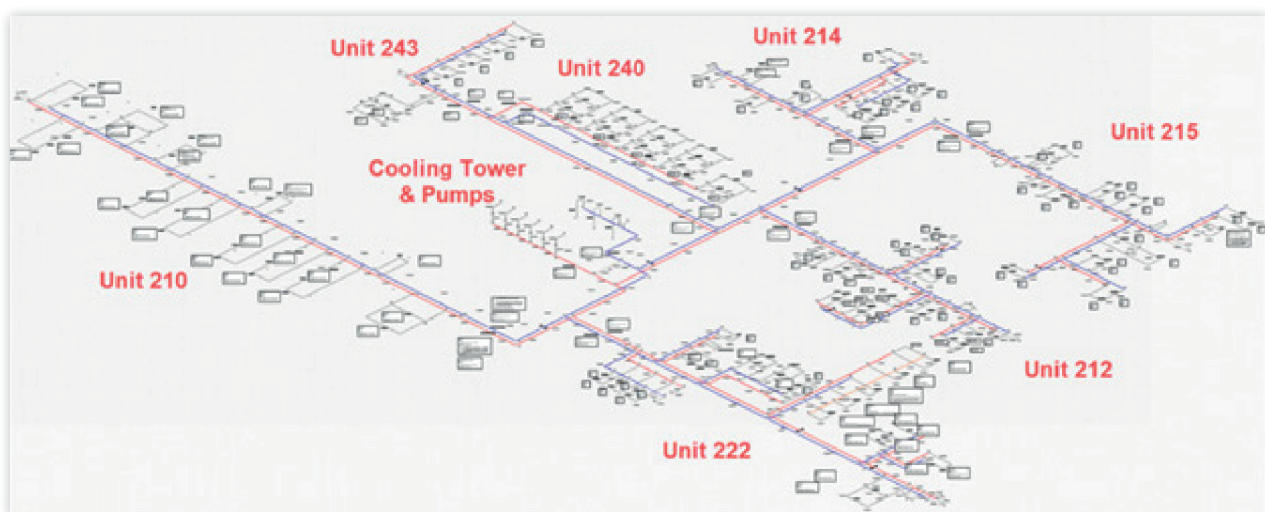
Final calibrated model achieved flow matches within $\pm 4.8\%$ and pressure matches within ± 1.8 psi. The model now serves as an evergreen asset enabling troubleshooting, planning, and system optimization.



- **Industry:** Water & Utilities
- **Region:** US
- **Focus:** Refinery utility system reliability & safety analysis

TANGIBLE BENEFITS ACHIEVED

- Accurate calibration ensures model reflects real system behavior
- Supports operational decisions via evergreen model
- 700+ field measurements yield high-confidence predictions
- Automated tools reduce engineering time significantly
- Enables future expansions, troubleshooting, and reliability improvements



Refinery Cooling Water System that provides cooling water to seven refinery process units that includes 127 heat exchangers.