

CUSTOMER CHALLENGES: Optimizing Control for More Profitable Operation

To Master the Kilowatt Master...

Professionals in the process control world understand that “less” can often mean more. That is especially true when referring to reduced cycling within a given production process. Reducing oscillations and otherwise tightening constraints around the control objective can present a significant challenge. It also presents an opportunity to dramatically improve a plant’s profitability.

Control Station’s LOOP-PRO technologies have made a significant impact on the University of Connecticut’s (UConn’s) 25 MW cogeneration power plant. Commissioned in 2006, the plant is legally constrained to generate sufficient power – and not a KW more – for the university’s exclusive use. With the introduction of LOOP-PRO, loops that had been highly oscillatory were easily analyzed and their performance immediately improved. For the plant’s staff, less oscillation has resulted in a more reliable work environment and the plant’s best performance ratings to-date.

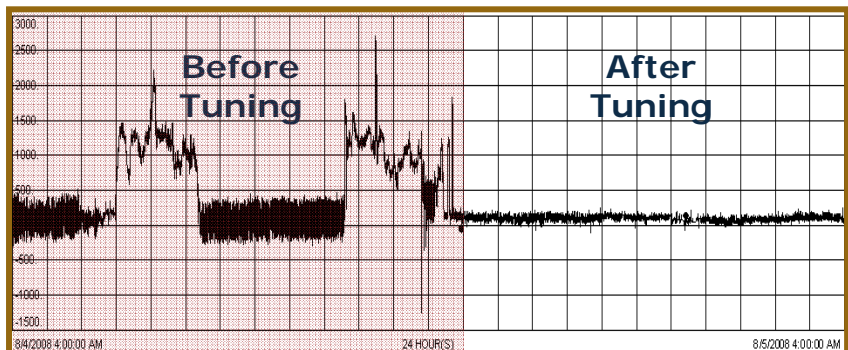
“We re-tuned the Power Plant Kilowatt Master PID loop using LOOP-PRO and the results were excellent. After tuning, we instituted a 1.5 MW Set Point change to ensure that the combustion turbine generators would back down quickly enough for safe operation. The loop response was great - we observed minimal overshoot and made the changes permanent.”

Brian Ouellette, Systems Engineer
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Optimizing Performance by Managing Constraints

At UConn’s cogeneration facility, operations staff must keep watch on the Kilowatt Master loop – the loop that dynamically balances power generation with demand. On one hand, generating too little power results in additional cost for the university as the shortfall must be purchased from other providers. On the other hand, generating too much power results in wasted expense since UConn is restricted from exporting its excess power and recouping the associated production costs. With the challenge of generating “just enough” power, oscillations in the Kilowatt Master loop overworked plant equipment and provided staff with a regular source of frustration.

The image to the right shows process data recently collected from UConn’s Kilowatt Master loop. Variability in performance was clearly significant (shaded region), hampering the plant’s ability to achieve the desired power production target. Plant staff used LOOP-PRO to analyze process data and tighten control.



A clear improvement was achieved with a few minutes of tuning effort. With the implementation of new tuning parameters, variability was reduced to less than 20% of its original value. The improvement contributed to the highest monthly performance rating in the plant’s 3-year history – the kind of improvements that can magnify a plant’s ROI. Who’s the master now?

NOTE: This information bulletin should not be construed as an endorsement of LOOP-PRO by the University of Connecticut or its employees.