

Enero Solutions™ Comprehensive Process Performance Solutions

Power Industry Applications

In today's market, tight margins, limited budget and increasing fuel costs adversely affect power-generating infrastructure competitiveness. In order to address these issues, it is more important than ever to optimize performance control processes.

Enero Solutions implements advanced engineering technologies that optimize cost efficiency and profitability. We regularly perform online process and control optimization projects without affecting day-to-day operations. Enero Solutions provides specialized expertise in the following:

Addressing Strategic Challenges that Impact Profitability

Dynamic response is a complex subject as many process variables are coupled and have constraints that cannot be violated. These constraints are typically mechanical and thermal and will negatively affect a power station if violated. With existing commonly used process dynamics and control logic, the operation team selects a conservative value for a megawatt ramp rate to ensure the continued operation of a power plant. For example, a power plant might limit its MW ramp to 3MW/min based on the fact that a faster ramp rate would put the station at risk of high drum level trip.

In an Enero Solutions Drum Level Performance Project, optimization consists of implementing advanced model-based control logic allowing the drum level to operate further away from its limits thereby enabling the operators to select faster unit ramp rates and improving power station profitability.



Enero Solutions offers a wide range of engineering expertise and advanced technologies that enable our customers to operate their process units cost effectively, efficiently and profitably.

Enero Solutions Project Benefits

Faster Unit Response helps modulate power output and take advantage of higher rates during peak periods and lower power generation during lower power demand periods

Optimized (System) Dynamic Response to better manage "hard constraints" and maximize the price at which power is sold

Improved Heat Rate during steady state and transient conditions

Full Integration for Superior Performance and Lower Costs

The Heat Rate (HR) of a power plant is defined as the amount of energy needed to produce one kWh of net electrical energy. The evaluation, tracking and reduction of the HR are critical to the profitability of a unit. During steady state conditions, the capability of steam turbines or gas turbines to convert energy into power depends mostly on their efficiency, process operating conditions and variability.

An Enero Solutions Performance Project Helps Reduce Process Variability

Reduce overall process variability by:

- Allowing the operation team to shift process setpoints closer to the equipment constraints. For example, a reduction in steam temperature variability allows an increase in steam temperature setpoint
- Increasing the power throughput of the unit. For example, the heat rate is higher if the main steam header peak-to-peak variation is 20 psi instead of 10 psi
- Improving long-term equipment efficiency. For example, steam turbine efficiency will drop faster if a 20 degree cycle exists in the process

Enero Solutions consultants have the experience to improve power station control through the implementation of Advanced Process and Control technologies to manage the following key variables:

- Furnace Draft
- Excess Air
- NOx Emissions
- Drum Level
- Steam Temperature



Enero Solutions™ - Process Performance Solutions

Enero Solutions is a leading provider of advanced engineering Process & Automation Control solutions that help increase operational control and improve the profitability of Manufacturing, Oil & Gas and Utility companies through the implementation of advanced engineering technologies.

For more information contact:

Ben Janvier

Senior Performance Consultant

bjanvier@enerosolutions.com

T: 514-207-5678

5764 Monkland Avenue, Suite 100, H4A-1E9, Montréal, Qc, Canada

Unauthorized use, duplication, or modification of this document in whole or in part without the written consent of Enero Solutions Inc. is strictly prohibited. By providing this document, Enero Solutions Inc. is not making any representations regarding the correctness or completeness of its contents and reserves the right to alter this document at any time without notice.

All marks referenced herein with the ® or TM symbol are registered trademarks or trademarks of Enero Solutions. All rights reserved. All other marks are trademarks of their respective owners.

© 2009 Enero Solutions Inc. All Rights Reserved Worldwide.