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Pacific Northwest National Laboratory

## DSOM

### AN ADVANCED SUPERVISION AND DIAGNOSTIC TOOL TO REDUCE PLANT OPERATING AND MAINTENANCE COSTS AND EXTEND PLANT LIFE

Operations and maintenance costs can make or break a business—especially with today's rising energy costs. DSOM (Decision Support for Operations and Maintenance) is an expert O&M system that integrates plant operations, fuel management, and maintenance processes. The DSOM package provides operators with the information they need for cost-effective operating decisions creating savings in fuel, personnel, maintenance, and plant life extension.

To reduce plant bottom line costs by as much as 25 to 50 percent, the DSOM information management system

- ▶ improves process efficiency
- ▶ reduces O&M workload
- ▶ reduces maintenance parts and labor
- ▶ reduces energy consumption
- ▶ extends equipment life.



DSOM's point-and-click interface makes it easy to learn and easy to use. At the Marine Corps' Twenty-nine Palms central heating plant, training time for new operators was reduced from two years to six months.

### ADVANCED SCIENCE APPLIED TO EVERYDAY OPERATIONS

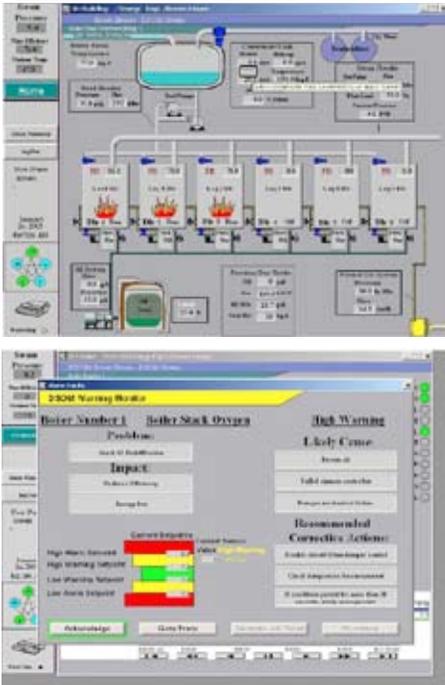
Linking plant operators, maintenance staff, engineers, and administrators in one enterprise-wide system, DSOM combines online condition monitoring and control of equipment with unique diagnostic routines developed in Battelle's leading edge laboratories. Originally created for efficient operation of nuclear power plants, the science at the core of DSOM has been adapted to cost effectively meet the needs of industrial processes, including power plants and continuous industrial processes. Diagnostic routines constantly watch the overall system performance and that of each key component to provide early warning of a degraded process. DSOM allows operators to make informed decisions about how to operate and maintain their plant most efficiently.

### REAL-TIME MONITORING AND PROCESS INTERFACE

A network of sensors constantly feeds information regarding the performance of the facility's components into a computer. Using advanced communication techniques, adapted from industrial process controls, DSOM talks to most monitoring and control systems mitigating the need for expensive instrumentation.

DSOM software collects and verifies operations data, analyzes them in a customized facility database and lets operators know, in real-time, if a system is malfunctioning or running below expectations. Beyond looking for early warning signs of problems, DSOM identifies conditions that could potentially lead to a problem, identifies the root cause and prioritizes recommended solutions.

DSOM is built around the concept of condition-based management. This approach focuses on finding the balance between high-production rates, machine stress and failure.



Operations screens for a Central Energy Plant. Operators can click on various components to get more detailed views, diagnostics and histories.

## CONDITION-BASED MANAGEMENT

DSOM is built around the concept of condition-based management. This approach focuses on finding the balance between high-production rates, machine stress and failure. DSOM's diagnostic capabilities prompt operators to make changes to keep systems operating at peak performance and avoid degradation and failures.

## CUSTOM GRAPHIC VIEWS

DSOM displays information regarding a system's health and potential problems in different ways matched to different needs within an organization. For example, one view is designed for operators while another is more useful to engineers. These intuitive, object-oriented displays along with a point-and-click interface make the system easy to use, requiring little training.



## INTEGRATED OPERATIONS, MAINTENANCE, ENGINEERING, TRAINING AND ADMINISTRATION

A core philosophy of DSOM is that well informed personnel make better decisions. Efficient plant operations require a delicate balance of many interdependent aspects of facility operations. Process systems usually focus on immediate operation issues with occasional accommodations for maintenance and engineering. Rarely do they integrate training needs and the all important administrative functions, including the impact on

the plant budget. DSOM brings all of these together in one platform, linking plant operators maintenance staff, engineers, and administrators in the same enterprise-wide system. With DSOM users can quickly see the budget impact of their decisions. Engineering drawings, calibration charts and manuals are just a click away.

## PUTTING DSOM TO WORK

DSOM has potential applications in nearly any industrial process. Examples might include power plant, central district heating and cooling, steel and aluminum production, pulp and paper plants, and pharmaceutical production.

## ABOUT PNNL

Pacific Northwest National Laboratory, a U.S. Department of Energy Office of Science laboratory, solves complex problems in energy, the environment, and national security by advancing the understanding of science. PNNL employs more than 4000 staff, has a business volume of \$750 million, and has been managed by Ohio-based Battelle since the lab's inception in 1965.

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