CLOCKWORK SOLUTIONS

PRODUCT DESCRIPTION

Next Outage Analysis (NOA)
For Advanced Preventive maintenance Planning

Why Outage Planning?

Outage Planning is central to profitable performance in the industry. When management considers the effect of outages, a value-based predictive approach answers three questions relative to their economic impact:

1. When to perform outages?
2. What equipment to maintain during each outage?
3. What level of maintenance should be applied to the equipment?

Using SPAR™ To Plan Outages

SPAR™ is a software product for predicting the future life cycle of a system. SPAR™ uses proprietary algorithms to extend Monte Carlo simulation to model real-world phenomena such as aging, componet interactions, maintenance frequency and scope, spare parts, system demands, and its operating procedures. SPAR™ uses these inputs to accurately predict the future performance of the system and the contributing factors that lead to down time and the critical system elements that should be carefully monitored.

SPAR's predictions are accurate because of its unique ability to comprehend such critical factors as :

- Time-dependent phenomena: aging, incipient to catastrophic failure development, and deadlines to respond to an event
- The dynamic behavior of the system: dynamic reconfiguration, induced and cascade failures
- The effect of maintenance and overhaul actions on equipment's ability to perform its function relative to the demand placed on it
- The availability of limited resources such as repair and maintenance teams, specialized equipment and spare parts

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Next Outage Analysis- Clockwork's Approach

NOA planned to support the system plant engineers to decide when to do the next preventive maintenance and what to maintain during that planned inspection. This is done by quantifying the system survival probability over the time, and by estimating the accumulated damage (Age Coefficient) and probability to survive additional period after the planned outage for each part in the system.

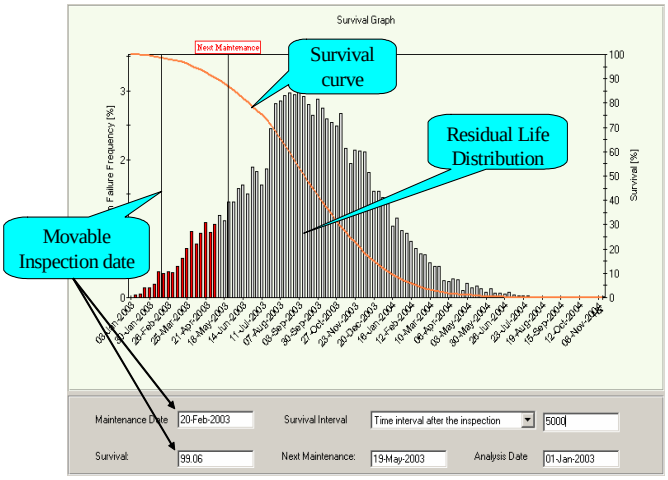
NOA forecast the probabilistic behavior of a given mechanical system over calendar time. The model encompasses the condition states of all critical equipment in the plant such as pumps, valves, boilers, heat exchangers, turbines, and control systems. The modeled system can be extended to include any level of equipment in the plant. The model is capable to describe the entire complex reality in which the system operates.

NOA is data driven and thus the quality of the data has a tremendous impact on the accuracy of the results. The data set contains the structural description of the system (reliability block diagram), the equipment stochastic data such as failure distributions, the operation profiles and much other relevant information about the nature of the system. In order to allow an easy access to such a complex sets of data NOA is based on internal database that can be connected to the customer databases and pull the data from it directly.

NOA allows the user to describe the analyzed system with unlimited indenture levels down to the serial part level. Each of the serialized parts in the system is modeled at the failure modes level.

NOA presents the distribution, which represents system failure over calendar time, thereby allowing the user to set an inspection date according to an acceptable survivability of the system.

The outage plan should be re-evaluated periodically considering changes in the demands on the plant, costs, business priorities, modifications to the plant, and new equipment-specific data. The frequency of this re-evaluation depends on the rate of change in the environment in which the plant operates.



When? - System Survival Graph and Dashboard

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