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Condition-based maintenance for complex systems

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Propositions

accompanying the dissertation

Condition-based maintenance for complex systems

Coordinating maintenance and logistics planning for the process industries

by

Minou C.A. Olde Keizer

1. Condition monitoring information should not solely be used for scheduling maintenance, but also serves as a foundation for the optimal inspection moments and inventory decisions. (*This thesis*)
2. Structural, stochastic, resource, and economic dependence jointly influence the optimal maintenance decisions. Ignoring these can lead to a suboptimal strategy. (*Chapter 2*)
3. Rather than performing inspections with a fixed frequency, inspections should be scheduled more frequently as the system is approaching the end of its life. (*Chapters 3 and 4*)
4. Although condition-based maintenance through defined thresholds often outperforms preventive maintenance strategies (such as time- or age-based maintenance), even larger cost savings can be obtained by allowing more flexible condition-based maintenance strategies. (*Chapters 5 and 6*)
5. Costs can be reduced by postponing maintenance on a failed, redundant component to allow for maintenance clustering at a later point in time, despite the temporary decrease of system reliability. (*Chapters 5 and 6*)
6. A condition-based inventory policy can reduce costs by delaying an order for spares until components have reached a certain level of deterioration. (*Chapter 7*)
7. Big data principles do not yet apply to condition-based maintenance, because in practice the required data is often lacking.
8. The overriding rule of good seamanship should extend beyond naval applications.