Ships on Condition Data Driven Maintenance Management

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ABSTRACT: On condition maintenance management is gaining general acceptance both in ships as in other domains. This is a natural result given evolution of low cost sensors, statistical methodology, telecommunications, software and superabundance of observational data. In this paper we analyze the effects of digital revolution on the usual maintenance policies and anticipate its consequences on ships maintenance management. Specifically, we try to show that on condition maintenance is, intrinsically, a data driven maintenance policy and the natural solution that results from the convergence of those economic and technological realities.

The existence of low cost, high quality sensors, means that sensor networks can be and are being installed in new and existing machinery projects. This means that high quality monitoring data is or can be continuously generated (thousand variables), at acceptable costs, covering all aspects considered relevant– from the point of view of risks (consequences of failures), costs, nature and operational importance of equipment. This means the generation, transmission and storage of colossal volumes of data (big data) that must be analyzed in real time and transformed in decisions and policies. The development of statistical methodology capable of transforming, in real time, those data mountains in useful knowledge is, nowadays, accomplished routinely using almost free software or, at least, easily accessible resources.

The real problems are, frequently, related with human resources and knowledge management, The paper identifies and illustrates with real data examples some of the main consequences and issues associated to this new reality and its effects on main maintenance policies and management organizations.

Key words: Big data, On Condition Maintenance, Management, Sensors Networks, Statistics