MAINTENANCE MANAGEMENT AND AVAILABILITY ASSESSMENT DURING THE LAST DECADE

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One of the most important developments in the area of maintenance management and availability assessment during the last ten years is undoubtedly the increasing interest in industry for a scientific approach of these management areas. Apart from economic reasons also the shifting attention in the scientific world towards more realistic and applicable models contributed to this development to a large extent. In this lecture the major achievements of the last ten years will be reviewed.

First we present an overview of the new mathematical models on multi-component maintenance, which are strongly related with queueing models. Most multi-component models are based on the possibility to acquire economies of scale by grouping maintenance activities together. However, also situations where simultaneous maintenance on similar units should be avoided as much as possible are considered.

Two other directions in which maintenance modelling has been developed during the last few years are opportunity maintenance, and the integration of maintenance within production. In opportunity maintenance models the limited availability of maintenance possibilities is explicitly taken into account. Integration of maintenance and production into one model is based on the idea that by fine-tuning of maintenance and production considerable improvements of overall performance can be achieved.

As far as the techniques of mathematical analysis of maintenance problems is concerned attention will be given to new or revived techniques, like marginal cost analysis, delay time analysis, aggregation and disaggregation and the so-called method of stages.

Finally we will mention some software tools, developed either to support managerial decision making in practice or to compare different approaches (in particular simulation versus approximative analysis).