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## Abstract Format

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# Operation Big Data based Failure Probability Assessment for Risk Based Maintenance of Fossil Power Boiler Tube

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### Abstract

RBI(Risk Based Inspection) or RBM started in petro-chemical industry as a solution to prevent critical failures and then its successful application has spread out to various plant industry including fossil power generation. Due to the complexity of risk assessment that composes of failure probability and consequence evaluation API and ASME issued the guidelines to facilitate field application but didn't deal with important damage mechanisms of fossil power plant. Therefore, only few engineering companies specialized in inspection and diagnosis have carried out risk assessment of fossil power plant while the most power generation companies hardly apply RBM to field by themselves.

General risk assessment result mainly depends on the experience and knowledge of the engineer who has specialty in damage assessment, because the engineer fulfills whole risk assessment procedure from data collection to the evaluation of the failure probability and consequence. In order to easily apply RBM to the field and guarantee the objectivity and quality of the risk assessment, it is necessary to develop the clear algorithm of the data processing and math form for the evaluation of the failure probability and consequence instead of personal specialty. This presentation shows the failure probability assessment algorithm and equations for the high temperature tube of the fossil power boiler which is easily implemented as a software. The characteristics of the failure probability algorithm is to use operational big data for the evaluation of the generic failure probability which is compensated by inspection result and well-known damage assessment equations from international boiler design and reverse engineering codes. This new algorithm will be useful for field maintenance engineers who want to apply RBM and give the information for fossil power plant managers who want to construct RBM system.

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