Detecting changes in Crow-AMSAA reliability predictions

In the semiconductor industry it is required that high-tech equipment has a large uptime due to large costs of production losses. As a consequence, it is important to have accurate reliability predictions of parts of such equipment, so that there are sufficient spare parts available. This is not a trivial task since high-tech equipment may consist of thousands of parts.

It is common in the semiconductor industry to use the Crow-AMSAA model (known in the statistical literature as power-law nonhomogeneous Poisson process) for reliability predictions. To ensure that the reliability predictions stay accurate, it is important to timely detect changes in the parameters of this Crow-AMSAA model. We show how to put this monitoring and detection task in the framework of Statistical Process Monitoring and indicate theoretical and practical challenges for the practical implementation.

This research was part of the PrimaVera project which is funded by the Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO) grant number NWA.1160.18.238 and co-funding from the participating consortium members.

Type of presentation

Talk

Classification

Both methodology and application

Keywords

Crow-AMSAA model, reliability prediction, Statistical Process Monitoring

Primary author: Dr DI BUCCHIANICO, Alessandro (Eindhoven University of Technology)

Co-author: SKARUPSKI, Marek (Eindhoven University of Technology)

Presenter: Dr DI BUCCHIANICO, Alessandro (Eindhoven University of Technology)

Track Classification: Reliability and Safety