Lifetime Prediction for Systems with heterogeneous Components



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Theme 2
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Virtual - Researchers Catch-up

In this presentation Tim demonstrated an approach to reliably predict equipment lifetime for load-sharing systems with heterogeneous components. Generators which produce a certain power output together or wash tanks which filter a polluted substance are examples of such systems.

The model of 'Sequential Order Statistics' allows for a dependence structure between components. The main idea is that upon failure of one component, the lifetime expectancy of the remaining components can change. The model further considers either all components to be heterogeneous or heterogeneous groups of homogeneous components. This assumption is feasible if not all generators are of the same type or if wash tanks operate in series for instance.

In his presentation Tim firstly demonstrated the main result of his research so far; maximum likelihood estimation of the underpinning model parameters, which can prove as a powerful tool to better understand component as well as system behaviour.

Additionally, Tim shared some of the roadblocks encountered in the estimation process and focus on a solution for one particular case.