Resilience Modelling of Advanced Water Treatment Plants

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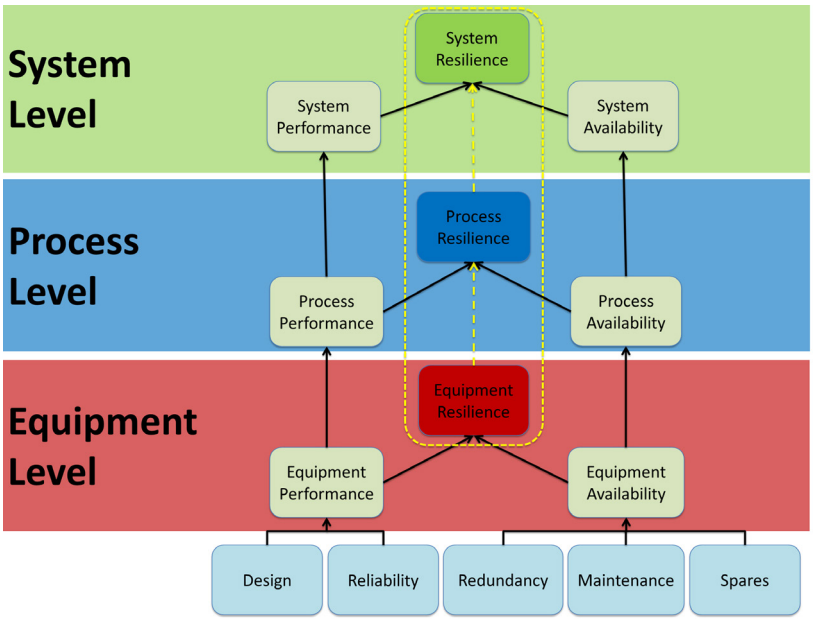
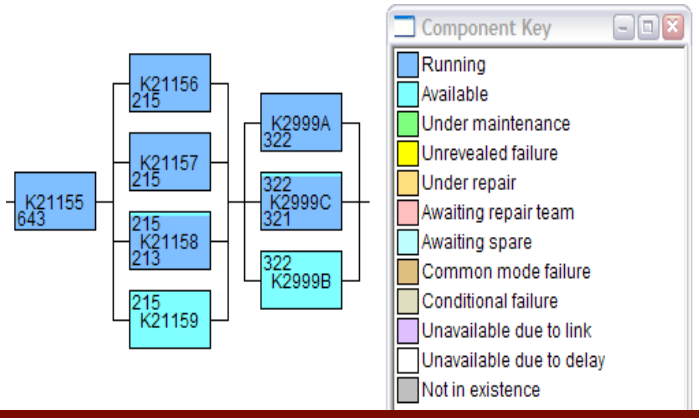
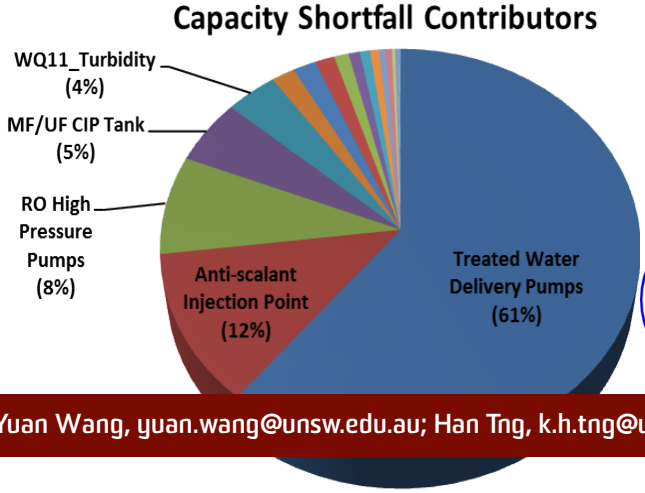
- Water utilities have become more reliant on Advanced Water Treatment Plants (AWTP) to produce climate-independent sources of high quality water for use in industry or augmentation of drinking water supplies.
- Water reclamation utilising alternative, renewable and sustainable sources of water can be used to augment drinking water sources via Indirect Potable Reuse (IPR) and Direct Potable Reuse (DPR) schemes.
- For these reuse purposes, a high emphasis is placed on the resilience of AWTPs as it is critical to upholding reliability of the water supply.
- The resilience of AWTPs is an essential factor in ensuring continuous product water throughput whilst remaining compliant with strict water discharge guidelines.



- Throughout an asset's lifecycle, resilience modelling can be used to yield significant savings on capital and operating costs by implementation of better strategies derived from the simulation results while effectively managing and quantifying the risk of non-compliance by identification of critical equipment and their related failure.
- Resilience models based on real, historical reliability data sourced from large scale plants, are more accurate compared to reliability analyses that only utilise manufacturer's failure rates. The resilience model also encompasses a wide range of operational failure modes that traditional techniques fail to consider.

- Through resilience modelling, an asset's resilience can be accurately quantified and predicted.
- It can also improve project knowledge via comparison of proposed schemes with alternative technologies and help operators with process optimisation via capacity bottlenecks and headroom assessment and identification.
- Proper resilience modelling would do away with the traditional "belt and braces" approach which leads to lower capital/operational expenditure over the asset's lifecycle whilst maintaining process efficiency and compliance.





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