

Virtual Masterclass Series on  
**Industry4.0**  
for the Enterprise

**Enter the world of Asset Management**

📅 4<sup>th</sup> November, 2020 ⌚ 4:00 PM - 5:00 PM (IST)

Questions Asked	Answers Given
<p>Do we consider for analysis the assets which have high probability of failure and high consequence? What about the assets where the consequence of failure can be disastrous, but the probability is low? How will this be treated?</p>	<p>Organization can have different weightage for each parameter. For instance, if the consequence is disastrous though probability is low, organization can put higher weight to consequence like 70% and probability as 30%. With this, the risk score will be higher even though probability is low. Each organization has different rules for calculating the risk score.</p>
<p>Can we suggest the customer needs by adding a small component to accelerate the speed for example a normal bicycle to racing bike with safety and security of customer?</p>	<p>Yes, those can be defined as redesign recommendation task.</p>
<p>Can we track the asset say via IoT and monitor using an Augmented Reality app - especially to help maintenance?</p>	<p>Use cases for augmented reality are fast evolving. For example, a maintenance planner can use Augmented Reality during his visit to the equipment to diagnose the problem. He can use Augmented Reality to find the sub-ordinate equipment, instantly call the drawings, manuals, asset history that aid him to come up with an effective plan.</p>

<p>How easy is to make a Cost Benefit analysis on how many Sensors to fit on which Equipment - is it purely cost of equipment?</p>	<p>Adding sensors to collect might be easiest thing to do. However, in the cost-benefit analysis, one has to take into account various other costs:</p> <ol style="list-style-type: none"> <li>1. Cost of collecting data</li> <li>2. Cost of processing and analyzing the data</li> <li>3. Cost of the storing the data. More granular data, better the insights, but also results in increasing cost of processing and storage of the data</li> <li>4. Cost of maintaining the sensors itself</li> <li>5. Cost of utilities like power et al.,</li> </ol> <p>Finally, we have to evaluate the costs associated with the resulting savings by lesser downtimes, avoiding non-essential preventive maintenance activities etc.</p>
<p>What is the percentage of Random failures Vs Systemic or Aged failures of system? Is there any generic study and data available?</p>	<p>Random failures can occur at any point of time and are probabilistic in nature. However, Systematic failure generally occurs due to manufacturer's faulty design of the equipment or not following proper MOC practices. Aged failures are due to the wear and tear of the equipment. If we look into the classic bath tub model, systematic failures often surface in the initial stages of the usage of the equipment and are often reproducible. If you are a manufacturer, you would receive large number of service requests / complaints within the initial days of the product launch. In such situations, Systematic failures are more than the random failures. However, as the product matures, the number of Systematic failures are low and you would see lot of random failures and aged failures.</p>

<p>How the change management aspects handled in asset management?</p>	<p>Management of Change greatly varies from industry to industry. An asset management system can aid the process but may not dictate a template for the process. However, an asset management can offer a framework a kind of guide rails to enforce the business process. The framework for MOC will generally define the various roles in the business process (Enginerring, Safety et al.), allow you to specify the various stages of the MOC (foe example, assessment of change, risk evaluation, owners for each risk mitigation, identifying the mitigation steps, approve the mitigation, communicate to relevant stakeholders, implementation, check the implementation, approval to startup, documenting the changes, close-out approvals, closure) and specify guard rails of the stages, monitor each stage and raise alerts whenever there is a deviation.</p> <p>The maintenance planner while planning a maintenance activity has to qualiy whether a maintenance activity that he planned requires a MOC. In most of the cases, you dont need a MOC process for your regular maintenance activities.</p>
<p>How much improvement IT/OT integration can result? Any data point?</p>	<p>With IoT ofcourse they is a huge improvement. Many recommendation are baded on indicator/sensor values which helps in resolving the issue faster. With machine learning you can predict which FM will cause the most damage and give appropriate solution.</p>
<p>How mature the Predictive and Prescriptive Models in over all Asset management?</p>	<p>Predictive and prescriptive models are evolving. The challenge lies in mathematical modelling and developing appropriate algorithms that take into consideration the operating context of the asset to predict the future failures. An off-the shelf consumer algorithm may not necessarily yield a good result unless it is tweaked to your operating context.</p>

<p>How with using the methodology you explained, convert CAPEX costs to OPEX costs?</p>	<p>Instead of making a big investment in completely throwing off a equipment, you can able to maintain the equipment for longer run and more effectively able to manage the costs. Also, instead of spending too much on maintenance with RCM/FMEA and other strategies you can effectively decide which asset should be maintained at higher priority. With simple changes like oiling a asset twice a day instead of once day can help in increasing the life of teh asset. Withe this stratgies, you can determine the changes more effectively</p>
<p>Is there a big Retrofit Opportunity then?</p>	<p>During RCM study, underperformance factors can be traced to the sub-systems or sub-equipments. This underperformance can be due to aging or poor installation or operating conditions. An outcome of this is study can be a recommendation for retro-fitting the equipment to increase the performace of the system and prolonging the life of the asset.</p>

