Multi-skilled Workforce and Maintenance Job Scheduling in Turnaround Maintenance.

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Virtual - Researchers Catch-up

In any industry with asset-intensive, maintenance activities are undeniable and costly; exploring more effective ways to schedule maintenance activities is essential. During the maintenance activities, entire or some parts of industrial plants cannot operate; this is known as turnaround or shutdown maintenance.

Shutdown maintenance generally causes a loss in productivity and profits, and resource expenditures. Therefore, an optimal schedule of maintenance activities is essential as it can decrease shutdown time and all necessary costs during the event. Several factors are involved during the shutdowns, such as resource limitations, precedence constraints, and other business requirements. Optimising maintenance schedules to determine the highest usage of resources and minimise the maintenance shutdown timing is extremely difficult. Moreover, in practice, human resources have multiple skills, and some jobs may require more than one skill to execute.

In this presentation Ponpot presented a mathematical model for determining team assignments with a multi-skilled workforce and maintenance job schedule. The processing time of each job is assumed to depend on the team size, and the larger the team's size, the shorter the processing time of jobs is. The model's objective is to obtain the most appropriate team formulations such that the timings of a turnaround event are minimised. The results of this research will give powerful tools and support shutdown planners to decide on optimal shutdown schedules, which will bring massive benefits to industries.