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CHEMICAL ENGINEERING

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Optimizing Engineering Resources

The purpose of **optimization** is to achieve the “best” design relative to a set of prioritized criteria or constraints.

Engineering is central to the well-being and economic development of every nation. Creative and dynamic, it evolves continuously to meet the needs of human civilisation. Engineering is pervasive in our modern society, enabling every sector from communication and entertainment to finance and healthcare, as well as its more visible applications in construction, manufacturing and transport. Progress is driven, as it has always been, by human curiosity and experimentation, but resources are finite and the art of engineering is to devise affordable solutions to problems.

Engineering research offers sophisticated tools for the modelling of complex physical phenomena which enables the design of improved products and processes in the future.

The use of resource is also increasing simultaneously. In other words, the technological advancements achieved, resulting in excessive use and extraction of any kind of resources and directly or indirectly has a hand in global warming related issues like ozone depletion, thinning of the ice layers on the poles, flooding etc. Sustainability is affected by such activities which also, puts a question for the availability of resources for the future generations. Therefore, we as engineers should find solutions for the optimum utilization and waste reduction techniques of the resources. The resource planning and management is one of the most important ingredients for competitiveness and profitability in today's construction industry.

Engineering is vital to all the sectors prioritised in the government's industrial strategy, which builds on our existing strengths in aerospace, pharmaceuticals, software and computing. Case studies included in the Technopolis assessment demonstrate genuine advances being made possible through engineering research across the priority sectors including automotive, aerospace, renewable energy and healthcare.

Recommendations

The recommendation is that future actions shall include an overall focus on the different factors that matter. The site of the project must be free from proprietary disputes to avoid legal and other adjudication and settlements and payouts. Since site disputes affect the time of completion, where possible, warrants settlement of disputes before the commencement of construction.

The consideration to the protection of environment may also spell consistently progressive results, as the negative consequences of disregarding environmental and ethical norms can pose time, legal, and other challenges, which elongate project timelines and detract from project success. Environmental concerns may raise legitimate issues on whether the construction project

may push through with meeting regulatory permissions, codes, and other licenses, as opposed to projects lead to delays.

The reason is that the quality of a project may have a direct impact on whether current and future construction projects business and revenue generation.

Finally, the services offered by the project managers must be constant and consistent. The implication is that the project managers should be able to deliver at least the minimum expected of them.

The discoveries of the study may lead to the identification and reduction in the inefficiencies in project management and performance. The findings from the study may contribute to positive social change as project managers and business leaders could use the knowledge to maximize the use of time and budget to provide affordable buildings to the community;

Conduct a qualitative study, which will facilitate future researcher led studies to focus on gaining insight into the experiences and perceptions of the participants as to the impacts and effects of the different factors variables examined.