

## **Facilitating Construction with added 'D'imension –4D simulation**

Time bound construction is essential for any project to optimise the cost and for quicker reverse cash flows. Construction simulation using 4D model enables effective planning of construction activities, identify the problems during construction and helps planners to troubleshoot. The sequences of construction activities can be optimally planned through simulation , interferences can be identified in advance during the planning stage. The construction schedules could be improved while being realistic. 4D modelling is a powerful tool for visualization and helps in constructability reviews, enables better understanding of project constraints and milestones, construction & resource plans, etc. We can visualise the construction activities at planning stage itself.

It is possible to plan and track various stages in the project lifecycle, from concept to completion of construction. Identify peak time in construction and get a clear image of the work progress. Activities can be rescheduled and Resources can be planned. As-built drawings can also be created easily.

Importantly, 3D simulation is pre-requisite to the 4D modelling. Use of 3D modelling is now an industry prevalent standard practice for clash-free and efficient detailed engineering. The 4D brings further value for the project by extending the usage of this already available 3D modelling through better scheduling and control.

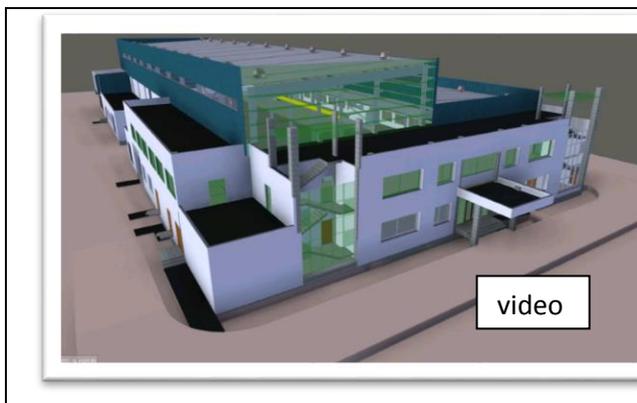
### **BIM 4D can be used to:**

- To minimise construction downtime with effective constructability reviews and planning for interferences and sequencing. The hurdles can be identified and planned for in advance particularly for brown field projects or sites with restricted space and access. This helps in minimising unpleasant surprises on site, idling of resources thereby reduce cost overruns.
- Better inventory management by procuring right quantum of material at right time on site.
- Impact of delay in construction can be assessed easily & it assists in taking corrective actions to minimize the cost impact.
- Multiple possibilities in construction sequencing can be analysed to choose the optimal option.
- Assess and manage project risks during construction.
- Enable planners to crash construction schedule.
- Act as a guide to the construction engineers for following the proper sequence of construction.
- Capitalize on learning curve effects by practicing the project virtually

- Train construction engineers in offline simulation training.

**TCE's expertise in Construction Simulation:**

TCE has all the necessary expertise in developing the 4D construction simulation model for any type of projects including industrial buildings and plants. Being in business for over 50 years, TCE has rich experience and knowledge of executing numerous infrastructural and industrial projects and leverages 4D tool for effective execution. TCE offers its services for 4D simulation on projects for better control on execution at site. A few examples of such work are given below:



Industrial building 4D simulated for constructability review and optimisation of construction sequence.



4D model of Turbine building for a Thermal Power Plant (View video)