



PLANNING AHEAD

Modularising Steel Structures

RR Package, our IOCL Paradeep site, houses 23 structures (9000 MT) that stand at an average height of 45 m. within an area of 11,000 sq.m. The site is highly sequence-driven and requires methodical interdependency between the structural, equipment and piping departments.

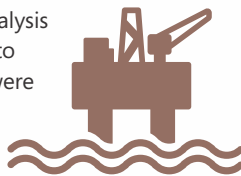
Tight Schedules

Most of the heavy erection is carried out at greater heights, increasing both risk of incidents and the amount of time required for construction. Faced with a stringent deadline, we had to change our approach, all the while ensuring that we stay right on schedule without compromising on our safety and quality standards.



Modularising: Workflow and Structures

After a detailed constructability study and risk analysis exercise, the heavy structures were segmented into 17 different modules. These individual modules were constructed on ground and the entire structure, thereafter, was constructed by assembling each module at its respective height and position.



Nearly 20% of the structural scope was modularised. These 17 modules were installed sequentially, within the available space sufficient only for four modules without affecting the overall schedule.

The Reactor was segmented into five modules. The major challenge here was that the reactor nozzle was interfering with the module assembly. The erection had to be done with the exact orientation and in the proper sequence. The minimum platform members were kept on hold to avoid contact with nozzles, trunnions etc.

Since the modules were constructed on ground, structural members such as platform beams, gratings and handrails could be installed and painted before erection. Handling of these structures at higher elevations was avoided, ensuring not only better safety but better quality as well.

OUTCOME

The achieved productivity in modularisation is more than twice that of the stick-built method. We saved 60 working days on the reactor construction itself.

With stringent inspection at the ground level, quality of work was ensured. Moreover, the assembly and erection of modules was incident-free, which is a major achievement considering the congested and compact nature of the site.