

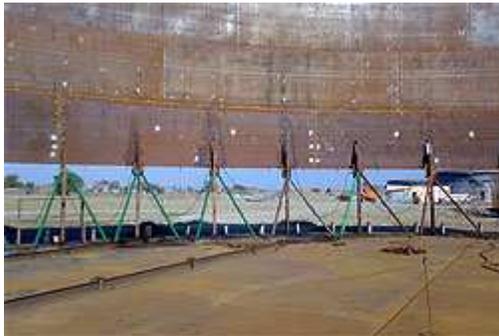
TECHNIQUE USED FOR TANK ERECTION

In the past tank construction was achieved by using conventional derricks or heavy lift cranes. The shell courses were erected in the sequence of bottom course first and by erecting other courses in that order. This method involved working at increasing heights. This method had other constraints like safety, and quality considerations.



However, with greater emphasis on safety at construction sites, and more stringent quality control, the above method of tank erection did not effectively meet present day requirements. This gave rise to an entirely new concept of erecting the tanks whereby the erection work was restricted close to ground level and the part completed tank was pushed up. The bottom course was erected last.

This method of construction is achieved by using a number of hydraulic jacks and a power source and is called the "JACKING-UP" method.



General :-

In the Jacking up method, we co-ordinate a number of jacks through a system of hoses and a single hydraulic pump which acts as the prime source to give the motion to all the jacks.

The planning for this system takes into account the fact that tank parts that are normally required at a later stage in a conventional method must be arranged in the early stages.

These include among other things the curb angles, wind girder, shell stiffeners, top railings / platforms, roof manholes & nozzles, foam / sprinkler support brackets and such other items. In the case of a cone roof tank, the entire roof plate and roof supporting structures must be kept ready as a priority item.

Preliminary :-

To begin with following Tank parts are to be kept ready in the sequence given :

- a. Bottom Annular Plates.
- b. Floor Plates.
- c. Top two shell courses, including nozzles if any.
- d. Curb angle & shell stiffeners.
- e. Wind girder (in case of floating roof tank).
- f. Roof structures and roof plates (in case of cone roof tanks)
- g. Hand railings, platforms etc
- h. Roof manhole and nozzles



- i. Further shell courses.
- j. Shell manholes and nozzles coming at lower levels.

The Procedure :-



Check the tank pad and confirm tolerances. Record the levels.

Place annular plates. Since jacks are to be mounted on annular plates, the level of the tank pad is essential to ensure a good tank.

Align and weld annular plate joints. Erect floor plates. Align the joints and complete the welding of bottom seams.

Erect the top 2 courses. Align and weld. Complete all the works on the two shell courses. Erect the curb angle, wind girder for Floating Roof Tanks (or) roof structure and roof

for Cone Roof Tanks and complete the hand railing.

Place the jacks along the circumference of a circle drawn about 100 mm from the shell plate circle. The maximum arc distance between two Jacks shall not be more than 4M. The number and sizes (capacity) of the jacks is determined by the weight to be lifted and the height of tank, wind speed etc. Jacks are available in 8 T / 12T capacities.

The jacks are interconnected through a system of hydraulic pressure hoses.

The jacks are energised by the action of a hydraulic pump. The jack supporting columns are anchored to the base plate by means of 3 supports.

After lifting the sub-assembly consisting of top 2 courses, roof structure / roof (or wind girder) railing etc., erect plates of the third course from the top, after lifting the entire subassembly to the required height. Align and weld vertical joints. Lower the sub assembly and complete the alignment and welding of the girth seam. After the alignment of the girth seam the jacks can be released and lowered.

Continue this procedure for erecting additional course, till all courses are erected.

Align the shell to bottom joint and check for verticality of the completed tank. Weld the shell to bottom joint.

Complete all balance works like fixing and welding of shell manholes, nozzles etc.

The above procedure outlines the basic steps in the erection system.