

Coal-Fired Power Plant Monorail and Support System for Deaerator Replacement

Description

Industry: Energy & Power (Coal-Fired) | **Service:** Lift Planning & Rigging Engineering, Structural & Mechanical Engineering

The Challenge

A coal-fired power plant needed to remove and replace a deaerator tank. A monorail support structure was required to execute the lift, but the available support conditions presented multiple constraints: the only overhead steel available was designed for roof loads only, not the tank's lifted weight; and extremely limited headroom existed between the roof beams and the top of the tank, ruling out conventional reinforcement approaches.

The Solution

DSE selected the shallowest available monorail beam appropriate for the load and specified low-headroom rigging equipment to work within the tight clearance. This combination narrowly achieved the minimum required headroom but left no room to reinforce the roof beams from below their bottom flange, which is the typical approach.

Rather than attempting to reinforce the roof beams to carry the full lifted load, DSE designed load-sharing posts to straddle the tank and transfer a portion of the monorail load to the floor beams below. The load was divided between roof beams and floor beams in proportion to their respective moments of inertia. This arrangement achieved acceptable stress ratios in both members without requiring any modification to the overhead structure.

Result

The old deaerator was successfully removed and the new unit installed. The engineering approach resolved an apparently constrained problem through structural load sharing, avoiding costly modifications to the existing building steel.

Contact DSE to discuss monorail and lift engineering for constrained plant spaces.

Category

1. Blog
2. Energy & Power
3. Lift Planning & Rigging Engineering

Date Created

April 20, 2026

Author

marcdossantos

default watermark