DSI ENGINEERING – GAS FIRED POWER PLANT

ENGINEERING SUPPORT OF HRSG HARP REPLACEMENT [W10222]

CHALLENGE: Design a support system including structural reinforcements and extensions to the existing steel to allow for the lift and removal of six large Heat Recovery Steam Generator (HRSG) harps (up to 251,000 lbs each) through the side of an existing heat recovery steam generator

SOLUTION: Develop a lifting beam and track system. Extend and reinforce the existing lateral cross beams to position the harps for crane removal.

HRSG units are designed to last about 20 years. During this time, the harp tubes are subject to high temperatures and corrosion. This makes them prone to leaking, resulting in losses of efficiency. Timely replacement is essential to successful continued production.

DSI was tasked with designing a system to safely lift each of six harps (individual weights of up to 251,000 pounds) at their current positions while allowing for the installation of two tracks for four machine skates. DSI designed a pair of cantilevered supports for the two tracks on one side of the unit, allowing the harps to travel to a point within reach of a crane outside of the HRSG unit. The cantilevered supports were an extension of existing I-shaped plate girders. Because the tracks eccentrically loaded these girders, reinforcement was necessary to increase the torsional capacity of the beams. This was achieved by adding plate to essentially create a built-up hollow structural section on one half of the I-shaped plate girder. DSI's design was successfully implemented, extending the life of the HRSG unit.

Figure 1: HRSG (Heat Recovery Steam Generator)

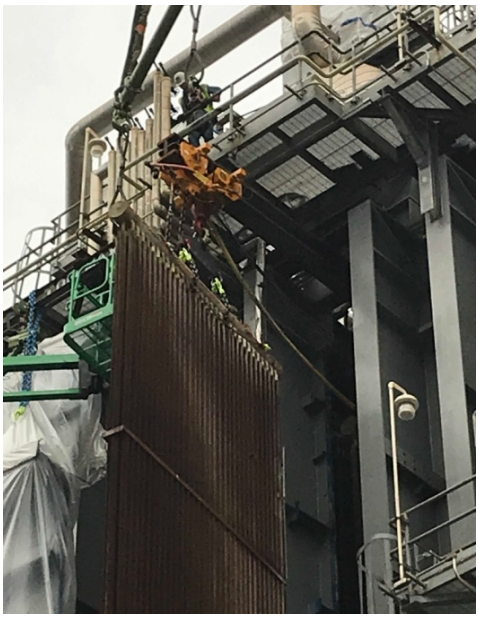

Figure 2: Harp Removal

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