



CLIENT: AIR PRODUCTS

Gasifier Vessel Stiffening Skirt



Francis Brown Ltd

Project Overview

Francis Brown Limited was contracted to provide procurement of all materials, manufacture, installation, project management and engineering services to Air Products. To ensure safe completion of the project both in our extensive fabrication facility and also full site installation at the clients Seal Sands location.

Due to the unusual project requirement to provide a complete skirt to enable the vessel to be lifted by twenty millimetres, the skirt had to be fabricated completely in one ring. This was then split into nine segments, each weighing in excess of 4te each. To prevent any distortion of the segments, a full system of blocks and keep plates were fitted to each section to retain alignment prior to splitting.

These were utilised again during the site erection phase. To add to the complications the skirt needed to be situated around the vessel at a height of 30metres above ground level. The skirt was then attached to the vessel by 19 rods, each 100mm diameter threaded at both ends.

The bolts were then tensioned by nineteen separate jacking units to lift the vessel clear of its original supports. Throughout the lifting process each rod was attached to a system of strain gauges to ensure equal rod loadings. The vessel was also monitored from four angles with a digital laser alignment and recording system throughout to ensure a vertical lift. The project was completed safely within time and budget.



Statistics:



Location:
Seal Sands, Teesside



Accident/incident free throughout



Size: 12 metre diameter x 4.5 metre high



Delivery time in workshop: 10 weeks



12 colleagues involved



Total weight: 39,670kg



Delivery time on site: 6 weeks



7250 hours in total



Materials:
1. Carbon Steel S355J2



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Francis Brown Scope of Work

- Provision of all materials and consumables
- Full fabrication/machining of all items
- Splitting of completed Skirt to allow transportation and site erection around vessel
- Full inspection of all items throughout fabrication using our FARO Laser System
- Surface treatment and painting
- Co-ordination of equipment transportation and offloading at the Seal Sands site
- Installation and full assembly of the Skirt on site
- Co-ordination of all lifting processes, including inspection and data collection
- Co-ordination of third party alignment inspection throughout the installation
- Project management throughout the scheme both work shop and on site
- Supply of full documentation pack in a timely manner.

Project Outcome

Francis Brown provided several project specific solutions for this very unusual project to enable a safe efficient equipment fabrication, delivery, and installation to the complete approval of the client.