



Fabrication & Onsite Specialist Services

Removal of flanged expansion bellows

THE STRENGTH TO PROTECT

Background

At the start of 2020, Fortress Energy delivered a pipework project on a new turbine for a waste power station in Bolton.

As part of the scope of work, a requirement arose to further support the client with the removal of an existing flanged expansion bellow which weighed approximately 5829kg as well as installing a replacement expansion bellow also weighing approximately 5829kg.

Scope

Both the fabrication and onsite specialist teams were required to deliver this extensive additional scope of work which included a range of services including project management, fabrication, pre work, pipework removal, machining, rigging, bellow modifications, machine facing as well as transportation and installation.

Solution

Firstly, Fortress Energy fabricated a temporary frame the same size as the existing bellow design for a trial lift using the turbine hall overhead crane to ensure the old and new expansion bellows could be removed safely.

This was followed by the design and fabrication of a 1700kg lifting frame at our Ellesmere Port workshop to meet the manufacturers drawings to ensure the frame could support the old bellows for safe transportation from the turbine hall into storage. On completion, the lifting frame was transported onsite to support the removal of the expansion bellows.



Local and skilled. Global and strong

Solution

Prep work was also required onsite before the expansion bellows were de-bolted. Removed pipework also had to be gagged, acoustic panelling removed as well as steelwork and pipework being cut to allow for safe removal. This included our specialist onsite services team de-bolting and machining the flange connection to the condenser of the bellow.

Supported by Bryn Thomas Cranes, our rigging team expertly manoeuvred the 5829kg expansion bellow along the length of the newly installed turbine and exited an extremely tight doorway to the newly fabricated storage frame.

The new 5829kg expansion bellow bars required a few modifications which were carried out by our mechanical fitters, supported by EagleBurgmann prior to installation. At this stage, our onsite specialist services team delivered machine facing as well as removal of a raised face to allow a compatible joint face for the new expansion bellow.

The new expansion bellows were then transported to the turbine hall and craned into position on the new gasket and flange to be temporarily bolted in place. Support steelwork was also installed, and springs re-fitted.

Finally, we re-bolted the new expansion bellows to complete the scope.

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Results

The entire scope was carefully planned and managed throughout. Despite enclosed spaces, access restrictions and extreme pressure due to the scale of the expansion bellows, the work was safely executed to the highest standards.