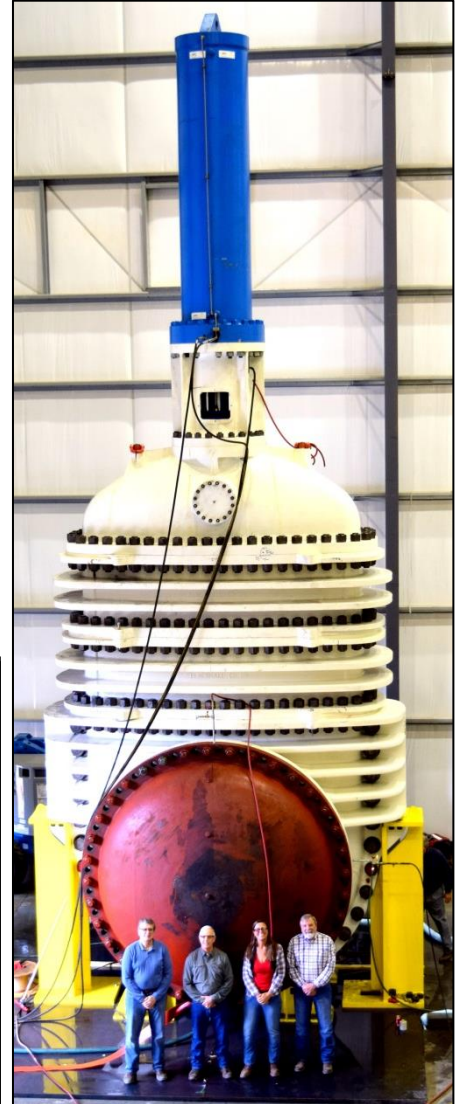
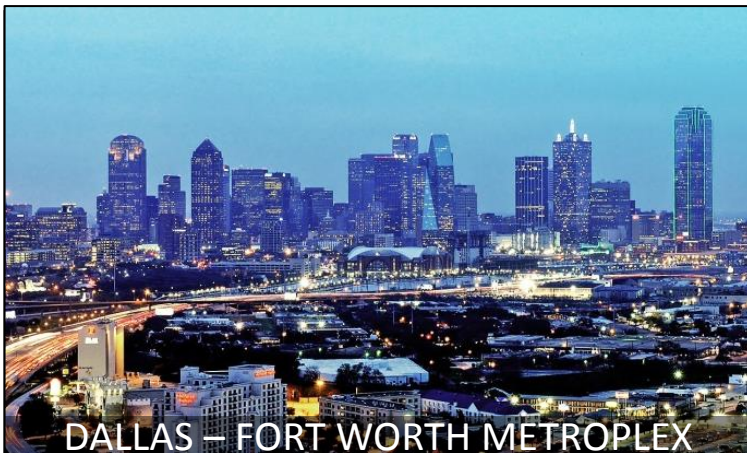


World's Largest Gate Valve (DN2800) Made for Texas, USA



John Lewthwaite, Technical Director

“When the world’s most impressive pipeline scheme asks for 100 year asset life valves, you listen. Blackhall Engineering Limited has a proven track record of making 100 year asset life valves, and we’ve recently designed and manufactured the World’s Largest Gate Valves ever for Texas, USA. My name is John Lewthwaite, the Technical Director at Blackhall, and it gives me great pleasure to introduce the below case study that shows how we overcame one of our biggest challenges to date with our technical expertise and innovative philosophy.”



Texas, the second largest state in the USA both in area and population faces enormous demand for drinking water. Within Texas lies America’s largest inland metropolitan area, Dallas – Fort Worth Metroplex (DFW) province which is the economic and cultural hub of North & Central Texas.

The water in DFW is both sourced and managed by two major Texas water authorities, Tarrant Regional Water District (TRWD) & Dallas Water utilities (DWU). With the rapidly growing population in this area it is expected that more than 13 million residents will need water by 2060 which is more than double the population served by the authorities today. As a result they have partnered to execute the 2 billion dollar Integrated Pipeline Project (IPL) which will enable them to increase the water supply by 350 million gallons per day (1.59 billion litres per day) meeting the ever increasing demand in the long term.



The Project involves the construction of 150 miles of pipeline extending and integrating from multiple lakes. In addition it involves the construction of 3 Lake Pump Stations and 3 Booster Pump Stations.

Blackhall Valves are playing an essential role on this mega project by regulating the water in the largest and longest segments of the pipeline. This involved the design and manufacture of High Pressure DN2800 / 108 inch Parallel Faced Metal Seated Gate Valves, considered to be the World's Largest Gate Valves weighing in at over 100 tons and standing a majestic 40 feet (477 inches) tall.



The specifications of these magnificent valves were stated by some of the USA's top consulting engineering firms like AECOM, CDM Smith, Black & Veatch and Freese & Nichols.

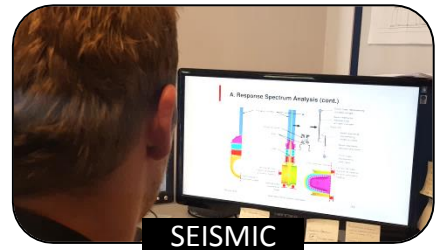
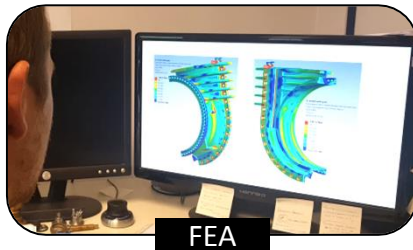
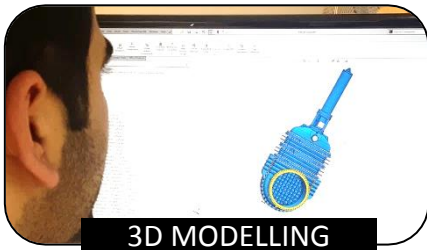
TRWD placed the order after evaluating Blackhall's award winning design expertise, capability, utilisation of manufacturing technology & exceptional project management skills. Furthermore, Blackhall's proven track record of manufacturing 100 year asset life valves matched perfectly with TRWD's 100 year sustainability promise on the IPL project.



Design and Manufacturing

Blackhall Engineering has always been at the forefront of embracing advancements in computational technology for the development of their products, thus delivering improved performance & efficiencies for their customers.

These Parallel Faced Metal Seated Gate Valves are an excellent example of a world class product that has been designed with these advancements in technology fused with the experience of the Blackhall Design Team.



Along with the theoretical knowledge and empirical data, Finite Element Analysis (FEA) has been comprehensively used to simulate and to predict both the structural behaviour of the valve during its operation, and its capability of sealing under various flow and pressure conditions. The geometry of the components have been optimized for enhanced stress distribution. The FEA results were validated by performing Strain Gauge testing on the valve. The design of the valve also incorporated external loading factors, for example Computational Seismic (Modal) Analysis that was performed to ensure the sustainability and robustness of the valve during earthquakes & such events.

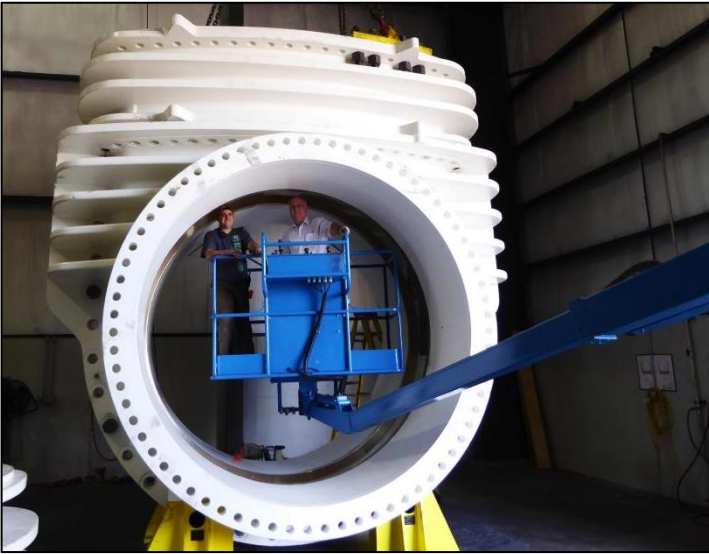


The success of any highly engineered product depends not only on the design, but equally on the manufacturing and assembly processes involved. Advanced Casting Simulation Programme was employed to optimise the casting process to ensure the castings manufactured were free from any residual stresses that could potentially develop during the solidification of metal.



This prevents any over stressing of the components during operation and helps in ensuring the prolonged life of the valve. Extensive NDE and inspection techniques are also used to guarantee that the valves are manufactured to the highest quality standards. By employing all of the methods above Blackhall provides our customers with the ultimate peace of mind over the life cycle of their assets.

Highly reputed and technologically advanced machining facilities were sourced for machining of the valve components to achieve dimensional and geometric accuracy which are critical for the functioning of the valve. The complete valve was assembled with the utmost care and diligence by employing Blackhall's trained & highly experienced personnel to ensure the exceptional reliability of the valve build.



The first valve to be installed on the pipeline successfully passed all hydraulic tests; Shell Strength at 375psig and Seating Capability tested at 250 psig.

Five further valves are currently in production for this impressive pipeline scheme, designed in the UK and manufactured in the USA with delivery running On-Time & In-Full.

Installation



Dave Richmond (Service Director) and John Lewthwaite (Technical Director) standing inside the installed valve which opens into the mega pipeline that promises the most sustainable water supply for people of Texas.

James Blackhall the Managing Director of Blackhall Engineering commented "It has been a joy working with TRWD, both engineering teams worked exceptionally closely with a true sense of purpose to deliver this legacy project".

Blackhall Valvologists take great pride in delivering the Ultimate Valve Solution.

Buy your critical assets once for Ultimate Peace of Mind.