

## VALVE review

## VALVTECHNOLOGIES

o address oil and gas industry customer demands and strict safety standards, ValvTechnologies custom-designed and built a test bunker that enables the testing of valves under extreme conditions for pipeline applications. A test bunker is a safety cell designed to absorb energy in the event of a sudden depressurisation of a valve, and the subsequent containment of projectiles. Its purpose is to ensure the safety of people and property in the event of such an incident.

Located at the manufacturing facility in Houston, Texas, the structure is made from 0.5 in. thick steel, with the inside walls covered with timber beams intended to absorb impact energy and rebound any projectiles, reducing the chance of piercing through the robust outer skin of the test bunker. Top-venting allows for the rapid dissipation of air, outside the building via an exhaust fan, away from people. Expanded metal is constructed as framed units which are bolted together with braces to form a roof system, which completely covers the opening between the angled shield plates. Capable of blast containment equivalent to 0.5 lb (225 g) of TNT explosives, the bunker's gusset supports strengthen the entire length of each wall section and door. The 288 ft<sup>2</sup> (27 m<sup>2</sup>) facility can be used for testing at elevated temperatures, loads, forces, torque, pressure, cycling and fugitive emissions.

The bunker's testing capabilities include: hightemperature testing, load/force testing, torque testing, pressure testing, cycle testing, fugitive emissions testing, data acquisition, high-pressure hydrotesting, methane testing, and cryogenic testing. Fabricating test fixtures is also needed to run the tests.

The bunker plays a critical role in the qualification of API 6A and 6D valves for oil and gas applications. It enables tests to extremely high pressures seen in wellhead and Christmas tree applications, which require careful planning with safe operating behaviours and practices. Typical testing in the bunker involves elevated temperature, combined with high-pressure hydro or gas testing and possible valve cycling. It is used to perform API 641 fugitive emission testing and is outfitted with methane and oxygen monitoring equipment, to ensure the interior atmosphere is both breathable and remains an order of magnitude below combustible levels, to ensure the safety of those inside and outside the test bunker. Given the increasingly stringent requirements for critical testing prior to installation, it is becoming the industry standard that manufacturers prove they can provide the safest solutions. As a result, ValvTechnologies leverages the test bunker to test equipment under simulated loads that mimic actual field conditions, to ensure the equipment exceeds the most rigorous oil and gas applications' demands.



ValvTechnologies' blast-proof bunker for high-pressure/high-temperature testing.



Medium bore valve undergoing elevated temperature pressure testing.