Choose the right valves and cut the threat of downtime

David Nemetz, president, Gilmore, a Proserv Company explains the best components are also the most resilient

That familiar business maxim of "time is money" could not resonate any more strongly than it does in the oil and gas industry. After all, the scale and value of an asset is measured in output "per day" and so when that dreaded word – downtime – occurs, the clock starts ticking loudly.

That's because, quite literally, every hour, or day, of inactivity is costing an operator missed revenue in stalled production, while expenses keep on mounting inexorably.

Just look at the mathematics – the daily cost of running a drilling ship is comfortably into six figures, while even a moderate 10,000 barrels per day development would see around US$600,000 in lost production for every 24-hour outage, at current prices. From the Arabian Gulf to the Gulf of Mexico, operational assets, whether on or offshore, typically tend to be found in inaccessible locations. So, getting to them and fixing the problem that has caused the shutdown needs to be done swiftly.

At Gilmore, for example, we maintain a quick response cell that is dedicated to on-demand manufacturing of valve components to reduce rig downtime and hasten emergency repairs. Operators do not want to be waiting days on end for crucial replacement parts, as millions of dollars of lost output and increasing expenditure mount up.

For all switched-on oilfield service providers, running an effective and rapid supply chain is a prerequisite for such a results-driven industry as oil and gas. Now more than ever, as the entire upstream sector moves steadily forwards from the low price environment of a few years ago, corporate strategies are focused on prioritising ever more reliability of equipment, as well as greater efficiencies, so the sudden failure of components needs to be rare and to have minimum impact on operations.

But failures do nevertheless happen. The US Bureau of Transportation Statistics, in its 2017 Annual Report: Blowout Prevention System Safety, examining blowout preventer (BOP) equipment failures on marine drilling rigs in the Gulf of Mexico Outer Continental Shelf, revealed 18 of the 25 operators involved in rig operations reported more than 1,100 equipment component failure events.

In the subsea space, where BOP stacks (a set of BOPs that maintain the pressure control of a well) are more complex than, and constitute almost ten times as many components as, surface BOP stacks, the risk of valve and other equipment failure is that much higher.

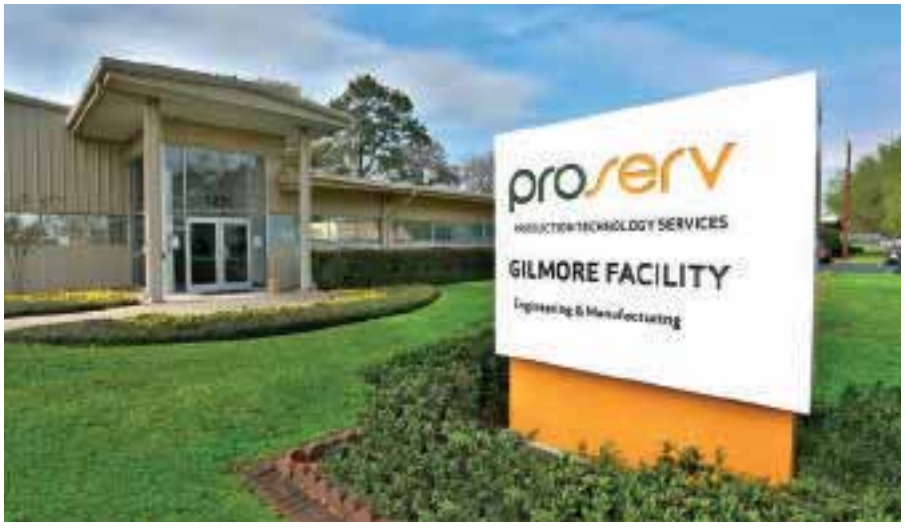
The Bureau of Transportation Statistics report indicated that subsea BOP stacks account for around 90 per cent of failure notices, with choke and kill valves, regulators and subplate mounted valves accounting for a significant number of the documented in-operation failures.

This isn't surprising. Particularly in the subsea and downhole environments, critical service valves are subject to very harsh conditions, requiring them to tolerate extremes of pressure and temperature, while safely and effectively moving corrosive, debris-laden fluids. Drillers want to know that the valves on their BOP stacks are going to have the necessary resilience and reliability to undertake these vital tasks in challenging situations.

Fortunately, blowouts are increasingly rare, reducing risks to both personnel and the environment, and the BOP, a hefty device of several hundred tonnes with a myriad of safety mechanisms built into it, effectively regulates pressure levels in a well, keeping its function under control.

But major, and therefore very costly, setbacks do still arise.

A problem with a key component, such as



Close detail of Mark IV Shuttle Valve
Left: Gilmore Facility in Houston

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David Nemetz
President, Gilmore

Below: Gilmore valve being assembled

a trigger or choke valve, could lead to the BOP stack needing to be pulled, leading to days of unplanned downtime. If the issue isn't diagnosed rapidly, or the replacement parts provided in good time, then the operational delay could ultimately cost several million dollars. When oil prices are subdued, such unbudgeted overheads eat into margins.

The role played by hydraulic control valves represents an integral, core part of an efficient drilling operation: safely directing the flow of fluids, alleviating pressure levels or being able to lock into place quickly, as and when a potential issue arises. So, choosing the best-in-class option is clearly the go-to strategy for drilling firms, as compromising on quality will only lead to future reliability issues with components handling corrosive materials in extreme conditions, many miles away from the nearest supplier.

For us at Gilmore, the priority lies in several directions – from the quality of materials utilised to the industry-leading extent of cycle testing our products undergo. If a drilling firm can see tangible evidence of the genuine durability and reliability of a valve, then that provides an extra layer of reassurance.

In the present landscape where drillers are cautious about expenditure outlays, knowing a critical service valve will be robust enough to do its job for an extended period can guide the investment decision-making process. The present industry standard (API 16D) requires manufacturers to cycle test each valve 1,000 times, but our view is that if the latest product line of valves are subjected to 2,500 cycles of testing, drillers then know this is a component specifically designed to stand the test of time and offers multiple years of maintenance free service.

Equally, when valves are exposed to the corrosive effects of stagnant seawater, if high performance austenitic stainless steel alloys are used that enable valves to be wear resistant and non-corrosive, then, once more, at a time of seeking maximum gain from equipment and assets, drilling companies will calculate a reduced threat of failure, subsequently fewer replacements and therefore less downtime.

Oil and gas is no different to other hazardous industries where research and development, and the pursuit of new technologies, drive future efficiencies and capabilities. We are planning to cycle test our next wave of valves ten times the present standard as we seek to demonstrate ever more durability and robustness.

In the challenging world of drilling for hydrocarbons, there is no such thing as a sure-fire guarantee, but the goal of critical valve manufacturers should be to strive to get as close as possible.