

The dangers of false economy in a low oil price environment

The Spanish have a phrase: *lo barato sale caro*. Roughly translated, it means *that which is bought cheap, often turns out expensive*. It may sound obvious, but they're words to live by when making procurement decisions for safety and operation-critical components in oil and gas projects.

One such area is in pipeline corrosion control. Whereas once upon a time manual, after-the-fact inspection was the only way to assess the problem, now there are a variety of sensors available to monitor corrosion rate and send back the data to a central location. Based on this data, anti-corrosion chemicals are injected into the oil flow, allowing for before-the-fact action.

It seems like a relatively simple set-up when described in plain terms, but the pressure to reduce capex when designing and installing a corrosion control system can lead to sub-standard solutions being implemented, which result in much higher opex in the end – or even worse – potential loss of containment.

Procurement: I can resist anything but temptation to reduce capex

The prolonged low-oil price environment has put margins under sustained pressure throughout the industry. Where operators are investing in new projects, they are keeping a tighter rein on their spending. This means engineering, procurement and construction (EPC) contractors are becoming more competitive than ever, squeezing costs wherever possible to put in the leanest possible tender.

For aspects of a project like corrosion monitoring, which make up a relatively small proportion of the total project capex cost, the temptation to underspend is especially strong, as it's less likely to attract attention than with a big-ticket item.

It's understandable, but not condonable. Often, the operator has created specifications in consultation with experts, and includes a specific type of system. Often, a solution is then included in the tender which meets the specifications in a narrow technical sense but not in the way requested by the operator – meeting the letter of the 'law' but violating the spirit.

The risks of false economy

The risks of this approach are twofold. On the one hand, there's the risk of increased ongoing costs. On the other, a substandard system might increase corrosion risk.

An example: an operator specifies for a corrosion monitoring system, including corrosion data management. They want a completely online solution, automatically feeding sensor data back into the system for analysis. What they get instead is a cheaper solution that relies on data loggers – sending someone out into the field a few times per month to take manual readings. The data is less granular, and the ongoing cost is much greater and an unnecessary element of personnel risk is introduced.

Or, consider a situation where a customer needs a corrosion system to operate in a high H₂S environment. Traditional electrical resistance (ER) probes have struggled in these conditions, however the box is ticked to say they're up to the task and the buyer, lacking technical expertise in this specific niche, takes it at face value. Over the coming months and years, the data collected is so noisy as to be nearly unusable, and the probes are gradually replaced with more expensive ones designed for the conditions. The EPC may have submitted the lowest tender, but the operator has ended up paying the price twice.

So, there are the obvious costs directly associated with maintaining and replacing the data collection technology, but there are also the less obvious but potentially bigger costs that result from the poor-quality data. As with all things, decisions based on bad data are probably bad decisions. When it comes to corrosion monitoring, this data is used to assess how much (if any) corrosion inhibitor to inject into the gas or oil flow. Typically, poor data and uncertainty lead operators to err on the side of overdosing, rather than under-dosing, thereby spending countless millions on expensive and unnecessary volumes of inhibitor chemical.

However, more worrying than the extra cost associated with bad data, is the risk of increased corrosion. Surprisingly, corrosion inhibitor chemicals can themselves be quite corrosive if used in too great a concentration or where they aren't needed. It's a delicate balancing act – too much or too little can be ruinous. Top quality data is therefore crucial.

Loss of containment – the worst-case scenario

Risking downtime and reduced return on investment by replacing parts that wear out more quickly is one thing, but loss of containment is obviously the biggest risk of unchecked corrosion.

Fatalities and injuries, environmental hazards, damage to reputation, legal expenses, downtime, the cost of asset repair or replacement and the cost of the spilled product – it's a risk-list that makes for grim reading.

As such, when it comes to corrosion monitoring, the old doctors' adage applies: prevention is always better than cure, and effective corrosion monitoring is essential for prevention.

What's an operator to do?

It's tricky for operators to fix the problem of false economy when it comes to corrosion monitoring. Unlike a scenario where, say, a pump is handed over by a contractor and it stops working within a few months, corrosion stays invisible for a long time. By the time – months or years later – the problem comes to light and the false economy becomes clear, it's often too late.

So how to avoid cheap becoming expensive? Though the problems often stem from the supplier, there are some steps the buyer can take to avoid false economy.

The first step is to ensure specifications are as up to date as possible. One operator I've seen wanted a system including full data communication capabilities, but was unable to purchase one, because the company's standards – written in the 1980s – specified the use

of data loggers. The employee involved knew what they needed, but was hamstrung by old specifications.

Then, it's important not to take a ticked box at face value on a tender. If a system needs to stand up to a high H₂S environment for example, the contractor should be able to provide data to prove its assertion that the suggested system can do so – the burden of proof should be put squarely on the contractor.

In a low-oil price world it's essential to get product flowing as quickly and cheaply as possible to start generating a return on investment. In that context, it's tempting to eschew spending the upfront time and effort to get it spot on in a part of the project which, to be honest, constitutes a small part of the total expenditure. However, false economy is one of the biggest, most insidious risks of a low-margin landscape. If ever in doubt, remember what the Spanish say: *lo barato sale caro*.