

UNLOCKING THE OPERATIONAL TRILEMMA

Stuart Harvey, VP, Digital Innovation, Proserv explains how RTO solutions could empower asset owners and support life extension strategies.

Real-time condition monitoring of infrastructure has its limitations. Many companies do it, some better than others. If done well, it can be a valuable solution enabling asset owners to identify potential issues before they become problems, providing time for a response or avoiding unplanned shutdowns. But the value stops there, because owners still have an issue they need to spend their hard-earned cash on to fix.

Proserv looks at the digital technology space through a different lens. We believe real-time condition monitoring, on its own, doesn't deliver enough value to those owners and operators who want to be leaders. That is why our focus has shifted. We do not assess the short-term condition of equipment but rather the real-time performance and life expectancy of an asset relative to its intended design life and operational strategy.

Delaying decom

If you look at the history of the energy industry, most assets have had their intended operational life extended. There is an entire supply chain dedicated to it for oil and gas. Offshore wind will be no different. Turbines that are functioning today will be running for at least five years beyond intended design life. In fact, because decommissioning costs have been greatly underestimated, a race to be last could unfold. A whole new supply chain needs to develop before the costs of offshore wind decom reach what experts consider realistic.

But that's not all. The UK government is grappling with the biggest energy challenge it has faced in history, known as the Energy Trilemma. The UK can take huge credit as a world leader in offshore wind. However, within the UK and Europe, it is estimated 600 offshore wind turbines will be due for decommissioning by the end of 2030. This poses a challenge: is the strategy to decommission and replace current assets as they reach intended design life or is the UK going to lead the way with advanced life extension technologies?

If the UK is to meet carbon emission objectives, removing green energy capacity is counter intuitive. In addition, the capital investment for these assets is already sunk



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and rising interest rates and geopolitical inflationary pressures are rapidly increasing the cost of new turbines. So, a perfect storm is brewing around offshore wind life extension. Those who adopt technologies targeting this problem earliest will be the ones who prosper.

Operational Trilemma

Offshore wind operators have a Trilemma of their own. Power, availability and life of a wind farm are the three factors they must manage. To do so effectively, good decisions have to be made using data. It is for this reason that Proserv has shifted focus from the limitations of straight condition monitoring to visualising the remaining life of turbines in real-time.

Can you imagine a world where owner operators can see, in real-time, how much life each turbine has left? Immediately, they would be empowered to make data driven strategic decisions to maximise return on investment. This is a vast contrast to what they experience today where owners hope they are making the right decisions based on the limited information they have accessible, or they turn to an expensive consultancy charging top dollar. In the past, oil and gas operators had no alternative, because the data and technology wasn't available, but the maturity of new technologies means offshore wind can choose a different path.

Knowing where you are on your asset life trajectory is one thing, being able to actively and dynamically change it is quite another. The key to that is the control system set points and here is where this fits into our strategy at Proserv, as independent, agnostic controls specialists.

Optimisation methodologies have been around for years in the industry but they have three main flaws. Firstly, they require large numerical models involving heavy engineer resource: this is slow, costly and, worse still, the behaviours of the turbines change over time, meaning this is a constantly iterative process if it is to be effective. Secondly, because of their numerical model nature, they're not easily scaled in a wind farm application due to site specific conditions. Thirdly, these solutions are "OEM closed" meaning only that specific OEM can perform any task.

Self-learning and dynamic

Proserv, with our controls technology expertise and collaborative approach to innovation, is changing this. Our tie-up with Ortomation is just one example where the real-time optimisation (RTO) solution is self-learning and dynamic in determining the appropriate set points in a control system, relative to strategic objectives at any given time. Maximising power vs maximising availability vs maximising life has never been visible or possible in this way. All thanks to the application of digital technology to a very old energy industry problem.

These are the real digital technologies of the future. Innovation to address one of the sector's biggest and oldest challenges – cost-effective asset optimisation and life extension.

While this technology is disruptive, those that have the courage to adopt early will be rewarded by gaining a competitive advantage over other owner operators. Proserv is seeing this first-hand right now with our ECG™ holistic cable monitoring technology. We are solving the Operational Trilemma through strategically driven disruptive technologies delivering practical results.

