Proserv: a Paradigm Shift in Cable Health Monitoring

with guest authors



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Renewable energy generation is increasingly front and centre of governmental policy across much of the world, and while offshore wind will play a substantial role in the years to come, the sector is also now beginning to mature with many European offshore fields, for instance, comfortably over ten years old.

Future production targets for offshore wind will be met, not only by the rollout of major new farms, but also by the effective monitoring and maintenance of those existing assets already hard at work in the ocean, so that they continue to deliver a critical proportion of those objectives without issue.

This is where a strategic alliance announced last autumn by leading controls technology company Proserv and power system monitoring leader Synaptec comes into play, as we look to combine our knowhow to build a disruptive, integrated holistic cable health monitoring system. Together, we have forged an innovative team with cable specialists BPP Cable Solutions to bring a tangible difference to what is available in the market.

Limited visibility

Typically, windfarms have been constructed without much regard for future data capture and with little ability to monitor what is happening where in real-time conditions.

A key ongoing problem is that control systems are not intuitive enough, and the quality of any data generated is limited as it tends not to be time-stamped. If sensors are in different places across an asset, and the information received from them is not synchronous, then interpretation is challenging.

Without those statistics also being correlated with further core cable sensing parameters, it just isn't possible to obtain a clear view of the integrity and condition of cable assets. This leads to faults and failures not being identified.

Benefits of machine learning

Once ML has become fully engaged, our product will have the ability to detect very slight abnormalities in performance, even while that particular cable is, to all intents and purposes, still operating normally.

Our truly holistic solution can be integrated into the wider control system, offering much greater visibility on the asset, while an intuitive dashboard will allow easy interpretation of information. The future in offshore wind revolves around smarter, real-time decision-making, and so having access to far more data will significantly enhance operations and maintenance (O&M) activities. Operators will be able to pre-empt possible failures, giving them an opportunity for considered remedial action.

Our technology will be able to be retrofitted to existing windfarm control systems, including any historical operational data into our solution, so that maturing assets can receive the necessary scrutiny when cables might begin to develop issues. But it is equally vital that new sites assimilate such condition monitoring technology at the outset of operations.

If operators have increased visibility over the condition of their cables, and their anticipated life expectancy, then they can direct on-going operational expenditure (OPEX) exactly where it is needed, optimising O&M procedures and maximising the asset's value.

Our team has now entered the core development phase of this exciting technology, and so we are keen to talk with parties seeking to improve the uptime and safety of critical cable infrastructure, while reducing future OPEX across their asset.

Synchronous monitoring

Our solution employs a unique non-intrusive passive monitoring technology, enabling multiple sensors to be deployed throughout the windfarm, thus creating a multiparameter sensing network, and with measurements provided at a central location.

One of the key features of the technology we are building is that it will have the capability to measure synchronously, so we can meaningfully compare the impact of multiple parameters (such as electrical harmonics) at multiple locations, and gain a much more accurate picture.

We are incorporating machine learning (ML) into our solution to ultimately offer a paradigm shift in automated condition monitoring. For ML to really make an impact, measuring assets synchronously over time is crucial, so that our system can build up a detailed understanding of what represents the normal parameters of how a cable might function.

Proserv technician surveys an offshore field