Abstract

When monitoring underwater noise, the recording of in-situ environmental parameters is a vital supplement to the recording of ambient noise and offshore anthropogenic activities. Although there are some software packages available that have the capability of recording sound at different sample rates using a variety of tools, the setup configuration and all important environmental conditions recording still manually input by the operator. SOFAR, a new sound acquisition software package, was designed and created to provide an intuitive and streamlined process of recording data along with all necessary metrics, which play a vital role in the data analysis and assessment.

SOFAR Operation

For SOFAR to be a suitable tool for acquiring underwater noise recording it had to be capable of recording all acoustic signals whilst collecting all metadata quickly and where possible, automatically. The flow chart (Figure 1) visualizes the applications processing of data.

Sound Acquisition and Visualization

It is important when conducting acoustic recordings that there is the flexibility to record an adequate sample rate, the signal range and that any interference is easily identified. For this reason SOFAR is capable of recording up to a sample rate of 500kHz, has easy to read meters (Fig. 2) to ensure the operator has the correct range selected and a flexible scrolling spectrogram (Fig. 3) to identify any unwanted noise.

Equipment Configuration

As underwater noise monitoring requires the use of a calibrated system, it is important that information relating to what equipment is used is logged. For this reason the schematic diagram (Fig. 4) must be populated with the serial numbers of the equipment used each day prior to the start of any data acquisition.

Conclusion

SOFAR was designed to produce a tool specifically for acquiring underwater noise measurements and all associated metadata. We anticipate it’s future development, however currently it has become a valuable tool. Field trials have been conducted for SOFAR, recording both underwater ambient and operational noise during the construction of an offshore wind farm with no loss of data. The automatic collection of metadata and data logging capability of the application has proven to be far faster, and more reliable, than the use of deck forms and subsequent transcribing.