

ADVANCING ACOUSTIC TECHNOLOGY

Sonardyne

Sonardyne International has long been a familiar name to anyone involved in sub-sea positioning technology, whether in offshore oil exploration, construction, drilling or any of the countless oceanographic applications for which Sonardyne products are used. Now in its thirty-third year of business, the company is today recognised as one of the leading manufacturers in the industry, frequently setting new benchmarks for technological performance.

Sonardyne is now able to boast comprehensive knowledge and understanding of the scientific principles governing sound transmission through water. This knowledge has been applied to the practical demands of the offshore and oceanographic industries in order to achieve a product-range respected for performance, reliability and practicality.

History

As with many other high-technology companies, Sonardyne started from small beginnings. In 1971 John Partridge, company founder and present chairman, developed the Rangemeter, a hand-held device for diver navigation and seabed mapping. Sonardyne became firmly established two years later when it received a commission from BP to develop simple 48kHz transponders for use in the North Sea Forties Field. At this stage the company's products were largely being assembled from components supplied by subcontractors but in 1975 Sonardyne opened its first manufacturing facility in the small town of Fleet in southern England. The range of products expanded rapidly to include LF and MF transponders and in 1977 Sonardyne's first acoustic release transponder opened the door to export sales.

It became apparent very early in the company's evolution that the industries it was serving would not respond to having products thrust upon them. This resulted in a policy, maintained ever since, of always being led by the market in design and innovation work; close consultation with existing and potential customers ensures that all of the company's products are manufactured in response to an expressed need. Sonardyne personnel take great pride in understanding the requirements and expectations of their customers and have built this into processes that in 2001 earned them ISO 9001 accreditation.

Corporate Strategy

When a customer expresses a 'wish list' of features or qualities he wants from a particular type of product, Sonardyne policy is to listen very carefully. If the wish requires technology not yet available, the outcome may not be seen for some years. On the other hand, simple modifications might appear on the market immediately. It was through working closely with BP that Sonardyne developed its first integrated navigation systems for deployment on the Ninian field in 1979. At the same time, other special projects included the application of acoustic technology to the task of operating sub-sea valves by remote control. The nature of the company's business demands a continuous programme of research and innovation. In 1996 the company moved to its present headquarters in Yateley in southern England, where it has extensive facilities including laboratories, a machine shop and large acoustic-test tanks. In addition, it has a facility in Plymouth, together with boats used for both sea trials and providing comprehensive customer training in the use of Sonardyne equipment. Experience and technical knowledge have been confirmed as valuable commodities and the Sonardyne workforce includes some of the country's leading authorities in acoustic technology.

Construction Projects

Involvement with the construction survey sector of the offshore industry began to assume its present prominence in 1990 and was marked by the company supporting installation of the Shell Auger tension-leg platform and templates in 3,000ft depth of water. In 1993 the Swire Pacific Constructor became the first vessel to be equipped with a Sonardyne USBL (Ultra Short BaseLine) positioning system. Since then, its Long BaseLine (LBL) and USBL technologies have grown to be recognised as the standard tools for construction and survey operations, providing time and cost savings when installing sub-sea structures. The tasks required for a construction project range from the relatively simple process of tracking an ROV (Remotely Operated Vehicle), a cable plough or a towfish to the complex positioning of multiple seabed structures with several surface vessels working in close proximity to each other. The core component for most of these activities is the Compatt (COMPUTing And Telemetry Transponder) acoustic transponder, which has grown significantly in sophistication and capabilities since it was first introduced in 1980. The development of Compatt has now reached Compatt 5, incorporating Sonardyne's new, wideband acoustic signal processing technology. This offers hundreds of reply codes, impressive noise immunity, high-speed data telemetry and fast-array calibration, making it the optimum technology for use in complex offshore acoustic environments.

Dynamic Positioning

The increasing volume of offshore industry activity in deep water has created an additional demand for the support of

Dynamically Positioned (DP) vessels. These can include drilling ships and platforms working in water depths far beyond the practical use of anchors. Because drill strings and risers are vulnerable to unpredictable vessel movement off-station, operators are understandably nervous of relying exclusively upon differential GPS for their positioning data. In addition to occasional service failures through solar or atmospheric disturbance, GPS has the added drawback of being beyond the user's control. By integrating LBL with USBL, highly accurate positioning data can be fed continuously into the vessel's DP control system. Acoustic positioning is therefore being increasingly welcomed as the primary position reference system for many DP vessels. Sonardyne's success on the DP market is largely due to its understanding of the acoustic problems particular to this application. DP thrusters can create an extremely hostile acoustic environment and much research has been devoted to understanding and overcoming the problems they cause. The result has been the development of systems that enable vessels to reliably maintain their position to within very close tolerances, even when operating in water deeper than 3,000 metres. The confidence that this performance has generated within the industry resulted in a Sonardyne USBL being chosen to position the world's first floating production system to operate without moorings, which entered service offshore Brazil.

Seismic Surveys

Attention to the difficulties posed by acoustic pollution has also helped Sonardyne achieve market dominance in the challenging seismic survey sector. Small and rugged transponders form part of the company's SIPS technology now widely used for positioning seismic streamers. In addition to rough handling, these are subjected to noise from the ship's wake and from its seismic air guns, yet they have demonstrated performance that made SIPS the market leader within three years of its launch. A new version, SIPS 2, has since been developed to provide full streamer acoustic positioning across the largest of spreads. A similar challenge was presented by the demands of ocean-bottom seismic surveys requiring positioning for hundreds of survey points on hydrophone cables deployed on the seabed. Working closely with its customers, Sonardyne has made it possible to achieve accurate results, even in water less than a metre deep, yet at a cost that makes it a practical and affordable solution.

It is the dependability of acoustic technology that has also led the Sonardyne product-range to include instruments for telemetry and control. Specialised units use acoustic links to provide control and data communications for sub-sea wellheads and provide cost effective applications for deep water. The solutions are invariably based on proven hardware, with features to ensure error-free operation in high-noise environments. The company's range of acoustic release transponders is also widely used in numerous defence and scientific applications, where dependability of performance is paramount.

View of the Future

Sonardyne acknowledges the need for continual technical development to retain its lead over the competition and to satisfy the expectations of its customers. Breakthroughs tend to be infrequent and hard-won but when they occur they can change industry standards overnight. Most recently this was seen with the launch of Fusion, heralded as an integration of acoustic positioning hardware to give operators a highly configurable, one-box solution adaptable to any given sub-sea positioning task. Industry uptake has been steadily growing since launch and it looks more and more likely that Fusion will keep Sonardyne at the forefront of technology for some time to come.