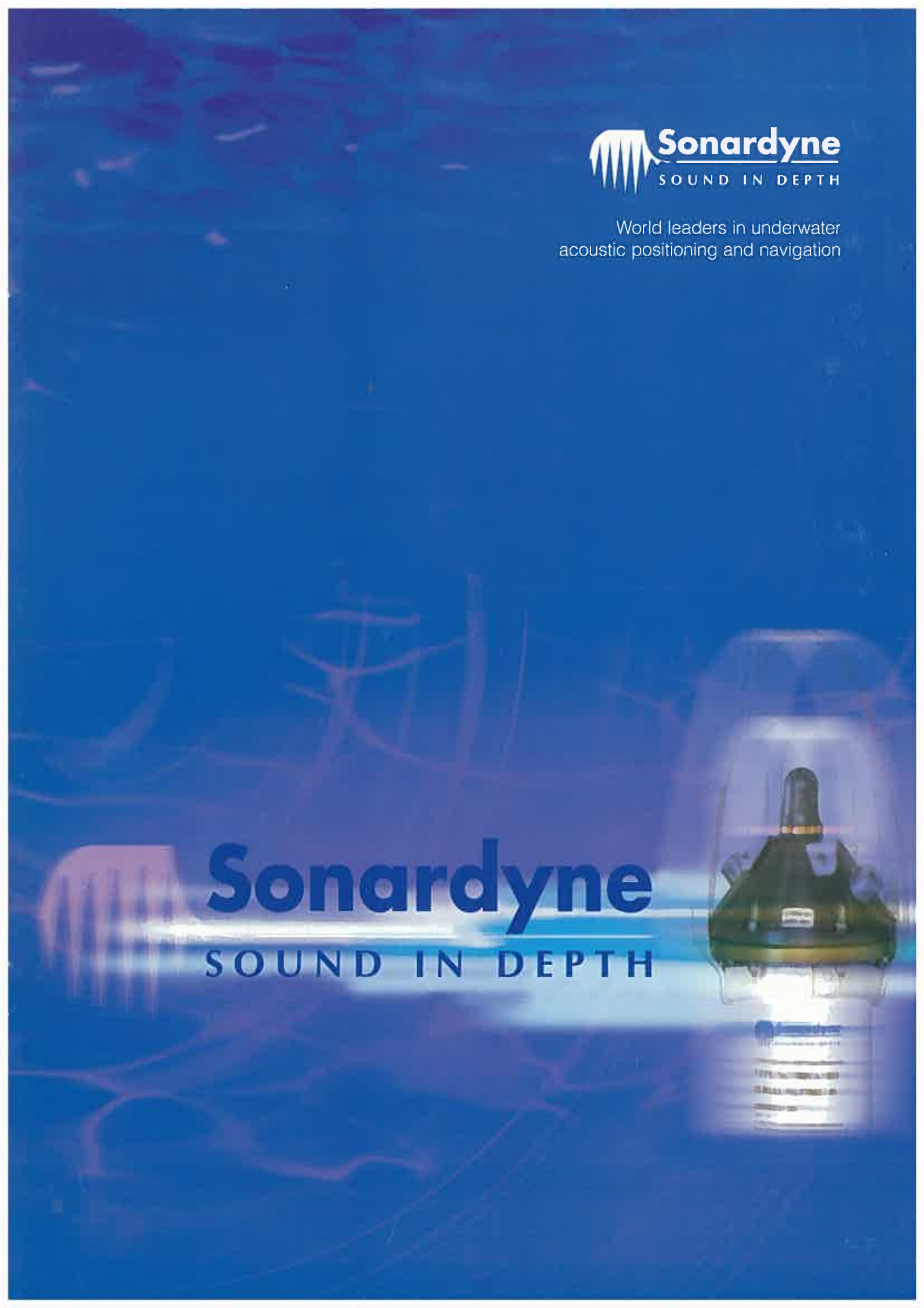
Sonardyne
SOUND IN DEPTH

World leaders in underwater
acoustic positioning and navigation



Sonardyne

Sound solutions
In depth experience

Established in 1971, Sonardyne is an international group of companies manufacturing subsea instrumentation. We specialise in the use of sound for underwater navigation, positioning, data communication and control.

Applications for our technology are found within the offshore oil exploration, construction, drilling and oceanographic industries. In many of these areas, the products we have developed and the techniques we have pioneered have become the de facto standard.

Sonardyne's manufacturing facility is in the UK with regional companies strategically located around the world.

We provide customers with the highest levels of service that are required to support field operations in remote and often hostile locations.

This investment, together with our excellence in product engineering and a dedication to customer support, has led to sustained company growth.

1970
Sonardyne's founder, John Partridge, develops the Rangemeter for diver navigation and inshore seabed mapping

1972
Sonardyne begins trading

1973
BP selects Sonardyne to develop simple 48kHz transponders for the North Sea's Forties field

1975
Sonardyne opens first manufacturing facility in Fleet, England

Pioneering Technology

Guaranteed performance
and operational capability

Over the last three decades, innovation and performance have maintained Sonardyne's reputation for technical leadership and today the company's products are recognised for their dependability and advanced design.

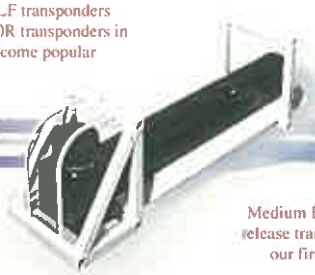
With all projects, our approach is to work with customers to ensure we have a thorough understanding of their exact requirements and project deadlines. In many cases, vessels, subsea systems and operating environments are unique.

Where standard off-the-shelf equipment is not suitable, we can propose 'low-risk' solutions that encompass customised acoustics, electronics, software and mechanical hardware.

This is backed up by a full programme of factory acceptance testing, installation and commissioning with a company-wide commitment to "make it work".

Certified by DNV to ISO 9001, quality is an inherent goal of Sonardyne. It is the company's policy to design and manufacture products and provide services which are fit for purpose in all respects, including reliability and through-life costs and support.

1976
Demand increases for LF transponders and low profile Type 310R transponders in anti-trawl frames become popular



1977
Medium Frequency (MF) acoustic release transponders introduced and our first export sales follow

1979
Mk1 PAN and COMPATT transponders are deployed in the Ninian field

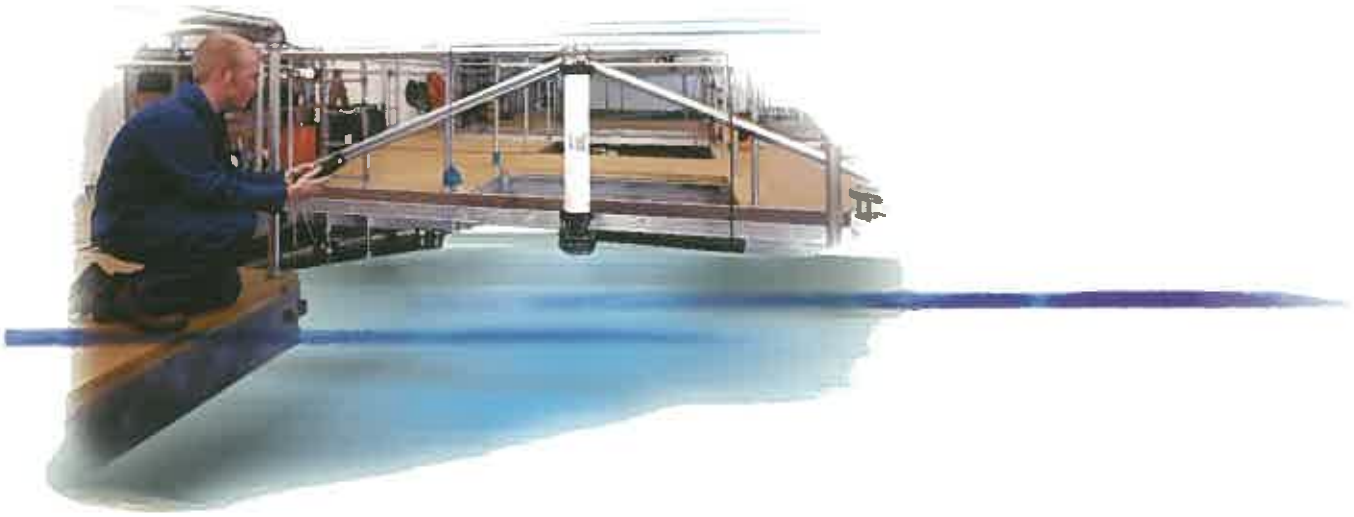
Special projects included an acoustic system for the remote control of subsea valves

1980
First complex COMPATT and PAN system integrated with USBL on Saipem "Rangno Due" and manned submersible. Emergency marker transponders introduced on diving bells

Research and Innovation

A commitment to applied research and ***product development***

Sonardyne's principal strength is the experience of our personnel. A fundamental understanding of the theory and practise of underwater acoustics and navigation mathematics allows us to solve a wide variety of client's problems using our proven technology and pioneering methods.



Sonardyne's active research programme continually seeks to develop the next generation of acoustic technologies for use in ever deeper water using new signal modulation and coding techniques from which generic families of products can be evolved.

This work is supported through continuous investment to ensure we maintain our technical leadership, manufacturing independence and ability to undertake special engineering requests.

Resources at our UK headquarters, for example, include laboratories, machine shop and large acoustic test tanks, where different acoustic conditions can be simulated. Research and testing in a marine environment takes place at our Sea Trials Centre in the South West of England.

1981
Pre installation work on the world's first TLP, Conoco's *Hutton*, using MICRONAV for precise template positioning

1982
Mk2 COMPATT launched

Dundee Kingsnorth - drilling vessel positioning system begins 6 year fault-free life using a Short BaseLine system

Customer Support and Training

Around the world, ***around the clock***

To support the global markets in which we operate, Sonardyne has established a network of regional offices in Aberdeen, Houston, Singapore, Brasil and Norway.

These offer project consultancy, equipment servicing and field engineering. A world-wide, 24hr helpline provides emergency telephone assistance in the event that clients do have a technical problem offshore.

Six worldwide ***fully*** ***equipped***
Service & Support Centres

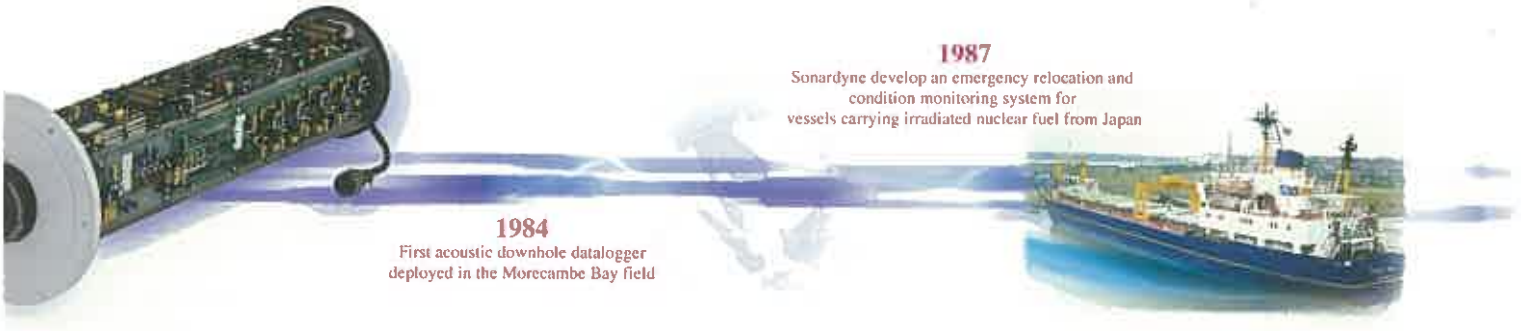
24 hour emergency helpline
plus website and email support

Comprehensive
product training

Product training is an essential part of our customer support programme.

Properly trained personnel have the knowledge to maximise the performance of a system and reduce downtime by avoiding the common mistakes made when using acoustic equipment for the first time.

Courses can be held either at a client's premises, offshore or in one of Sonardyne's own training facilities around the world. Our trials facility in Plymouth, England, where residential in-water courses can be held, allows us to put classroom theory into real-life practise on-board a dedicated training vessel.



1984
First acoustic downhole datalogger deployed in the Morecambe Bay field

1987
Sonardyne develop an emergency relocation and condition monitoring system for vessels carrying irradiated nuclear fuel from Japan

Solutions for

Construction Survey

Centimetre accuracy maintainable in all water depths

Sonardyne's Long BaseLine (LBL) and Ultra Short BaseLine (USBL) technology has become recognised as the standard tool for offshore construction and survey.

These systems enable substantial savings to be made on the cost of installing subsea structures and the time in which it takes to complete a project.

Applications range from the relatively simple task of tracking a Remotely Operated Vehicle (ROV), cable plough or towfish, through to the complex positioning of multiple seabed structures with multiple surface vessels working in close proximity to each other.

The core component in many of our construction survey systems is 'COMPATT', a versatile transponder that can be used to create a seabed navigation network in which targets can be positioned.

Crucially, these networks can offer accuracies of better than 5 cm independent of water depth.

One of our latest product developments is 'Pharos', an intuitive and user friendly acoustic navigation software package that is compatible with all of our present and future hardware systems.

1988
SIPS 1 launched enabling faster and more accurate seismic streamer and source positioning

In the years following, SIPS was installed on 80% of the world's 3D fleet

1990
Preparations begin for the installation of Shell's *Auger* TLP and templates in 3,000 ft water depth

1991
First LSBL system supplied as an acoustic DP reference for the deep sea drilling vessel *SONAT D534*

1992
Regional Sonardyne offices in Houston and Aberdeen open

1993
Mk4 COMPATT introduced

Swire Pacific Constructor becomes the first vessel to be fitted with a Sonardyne USBL system

Solutions for

Acoustic Reference for DP

Water depths over 1,000 m, where acoustic positioning ***replaces anchors***

The offshore industry's evolution into deeper waters has created a huge increase in demand for Dynamically Positioned (DP) vessels capable of working in depths beyond 3,000 metres (10,000 ft).

Sonardyne has met this demand by the versatile performance of our USBL technology, now proven on over 200 installations world-wide. On Dynamically Positioned (DP) drilling vessels, USBL integrates with seabed LBL arrays to provide a highly accurate position for the DP system.

Despite the difficult acoustic environment beneath large DP vessels, with thruster activity generating high levels of noise, positioning accuracy is still maintained. Our systems are often accepted by the DP system as the prime position reference, equalling or surpassing the performance of alternative satellite based positioning systems.

Illustration: Alstom

Sonardyne acoustic reference systems are compatible with all makes of DP system

Our track record includes new build vessels and conversions, mobile drilling units and FPSOs, construction support vessels and cable layers.

One particular success story can be found offshore Brasil where a Sonardyne LUSBL system has been used to position the world's first floating production vessel to operate without moorings.

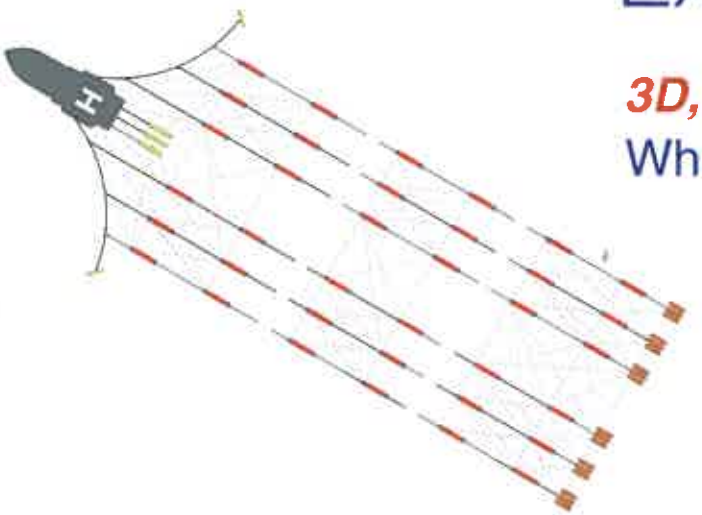
1994
USBL sales increase and include the flexible pipelay vessel *Stena Apache*

1994
Sonardyne gains The Queen's Award for Technological Achievement for SIPS 1

1995
MF/LF COMPATTs used for the first time to monitor the 2.7 km Alba pipe bundle during its North Sea tow out

Solutions for

Marine Seismic Exploration



3D, 4D or OBC

Whatever the technique, Sonardyne has a solution

Modern 3D seismic operations involve large vessels towing long, wide hydrophone arrays.

The challenge this presents is to maintain positioning accuracy in the acoustically hostile conditions created by the ship's wake and deafening noise from the seismic airguns and for the acoustic equipment to survive in the high-shock environments.

SIPS from Sonardyne was the first system to reliably meet these challenges. Within 3 years of the system's launch, a lead market position was achieved along with a prestigious technology award.

SIPS 2, the latest system, optimises tone and digital ranging techniques to provide full streamer acoustic positioning on the largest of spreads.

Ocean Bottom Seismic surveys presented a challenge to position hundreds of survey points on hydrophone cables, using acoustics in water sometimes only knee deep, all within tight cost constraints.

The solution we developed uses a network of low-cost, rugged transponders that can withstand fast deployment through mechanical "squirters". Transponder acoustic identities are tracked by the novel application of passive radio tag technology.

The end result provides users with a more efficient method of collecting the positions of thousands of seabed hydrophones in real-time and in water depths from 1 to 500 metres.

1996

Ocean House, Sonardyne's new corporate and manufacturing headquarters, opened at Blackbushe 50 km SW of London

First LUSBL system for a drillship delivered

1997

The accuracy of positioning TZ and OBC seismic cables is significantly improved with a Sonardyne system that uses low-cost transponders

www.sonardyne.co.uk goes on-line

Solutions for

Telemetry and Control

High security acoustic links for critical applications

Sonardyne's seabed instruments use through-water acoustic data telemetry for command and control of their navigation and position operations

Thousands of our units around the world telemeter data reliably every day. Specialised models provide control and data communications for subsea well-heads.

Cable-less data acquisition is a core Sonardyne technology that offers guaranteed performance and reliability.

Our systems have been designed to meet the challenges of complex offshore projects which are increasingly using subsea completions to provide a cost effective solution to operating in deep and marginal fields.

All solutions are based on proven subsea hardware with features to ensure error-free operation in high noise environments, long battery life, ease of operation and long term dependability even in the harshest of subsea environments.

1998
Growth of business in SE Asia means new premises for Sonardyne in Singapore offering sales, support and customer training facilities

1999
To support the growing activity in the region, Sonardyne opens an office in Macaé, Brasil

Sonardyne is honoured with a second Queen's Award: this time for Export Achievement

Transponders deployed in 1978 are recovered in the North Sea and found to be in working order

Solutions for

Defence and Oceanography

Leading edge technologies

for search and salvage, tracking and ocean science

As well as providing solutions for the offshore oil and gas industries, Sonardyne's products can be found at work with many of the world's leading oceanographic institutes and defence agencies.

Standard requirements vary from tracking Autonomous Underwater Vehicles (AUVs), navigating divers, through to conducting underhull inspections and re-locating targets of special interest.

In these areas, superior performance, ease of use and equipment dependability are critical requirements that can effect the success of a project.

Sonardyne acoustic release transponders, for example, have become an important component in the inventory of many scientific organisations. The units are relied upon for the recovery of valuable data monitoring equipment that in many cases has been deployed for several years.

As many of our products share the same mechanical, electronic and acoustic architecture, we are able to quickly adapt standard equipment to suit one-off applications.

For our clients, this ensures peace of mind in the knowledge that the solution we provide is guaranteed to work without the risk and costs associated with unproven technology.

1999
The *Noble Paul Wolff* sets a new world record for deepwater drilling using Sonardyne acoustics as a prime position reference

1999
Sonardyne's 'Big Head' USBL transceiver is used to assist the recovery of NASA's *Liberty Bell 7* space capsule, lost on splashdown in 1961

2000
Sonardyne wins contract to supply LF and EHF frequency LBL equipment needed for the development of Block 17 in the massive Girassol field offshore Angola

2000
Dual Band Mk4 COMPATT introduced allowing Medium Frequency and Extra High Frequency acoustic positioning at the same time

Sonardyne
SOUND IN DEPTH

Sonardyne

sound us out

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Did you know?

Sonardyne began trading in 1972

The Company derives its name from the words Sonar (Sound Navigation and Ranging) and Dyne (classical Greek for 'force'), meaning a force in acoustic navigation

Our first product was developed for divers and was called the Rangemeter

Noise not depth is our biggest adversary

Sound travels five times faster in water than it does in air, at around 1,500 metres per second

The Company has won prestigious industry awards for its export and technological achievement

Sonardyne is ISO 9001 accredited and is committed to the continuous improvement of its products and service

Do you want to know more?
www.sonardyne.co.uk