THE NEW STANDARD IN SURVEILLANCE

VTS AND COASTAL SURVEILLANCE RADAR SENSORS
A Kelvin Hughes radar is the primary tool for long range threat detection. On land and at sea we provide solutions for users who demand “real time” situational awareness. Kelvin Hughes offers coherent SharpEye™ and non-coherent radar sensors, capable of detecting the smallest targets in the most challenging environmental conditions.
Kelvin Hughes radar solutions for shore based applications have been specifically developed to meet the needs of port, harbour and river traffic operators and government agencies charged with the protection of the coastal and littoral zones.

**KELVIN HUGHES SHORE BASED SENSORS**

The Shore Based Sensors (SBS) range incorporates SharpEye™ the world’s first affordable, high grade, fully coherent solid state radar sensor, which outperforms other sensor technologies, especially in severe weather conditions and high sea states.

The SBS SharpEye™ modular and scalable design brings state-of-the-art radar processing technology to almost all surveillance applications meeting fully your requirements for situational awareness. The SBS family of radars are specifically designed and configured to comply with and exceed the IALA recommendations for a Vessel Traffic Service (VTS) radar sensor.

- Designed specifically for VTS and coastal surveillance applications.
- Complies with and exceeds IALA V-128 recommendations.
- Ultra-high reliability and availability.
- Modular LRU design.
- Multi-frequency configurations (X and/or S band) according to the environment.

- Remote control.
- Asterix interface.
- Three sets of radar data to external systems.
- Local control (RDU or Service Display).

The IALA V-128 Edition 3 recommendation has become the standard for port authorities to develop their requirements from. In many cases the end user has much more challenging conditions and threats to consider and therefore needs a solution that can exceed the requirements of a standard VTS radar system.

The solid state radar sub-system with patented SharpEye™ technology is a radar that is range unambiguous and utilises a coherent receiver, pulse compression and Doppler processing techniques to provide sub-clutter visibility of targets.

A core element of our proposition focuses on the capability delivery to the end user and the support and partnership with systems integrators. We provide dedicated programme teams, ensuring lead times, costs and risks are managed. Our through life services include a dedicated spares and support team and ILS packages designed to help remove the burden of through life management, obsolescence management and also enable incremental capability acquisition at a later stage in the life of the system.
# The Littoral Environment

## Sensor System Technology Configuration

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**Service Display**

Enables operator and maintainer to monitor all aspects of radar performance at or close to the radar site.

Multiple antennas available to meet application requirements.

Standard and advanced 3.7m (12ft) to 6.4m (21ft)

Polarisation: Horizontal or Circular
A SharpEye™ solution provides a low maintenance, high reliability and availability surveillance capability, with many unique features such as low radiated power, customisable pulse frequencies, frequency diversity, return filter processing and pulse compression.

SharpEye™ achieves its superior detection performance by carrying out a large proportion of the processing within the sensor itself and through unique Doppler processing enabling more information to be extracted from radar returns including target velocities.

Enhanced pulse compression and Doppler is standard in all SharpEye™ SBS sensor systems.

Each of the SBS radar systems including the RDU (Radar Distribution Unit) is designed to maximise the re-use of line replaceable units wherever possible. This provides the system integrator or owner with a common approach to spares.
ENGINEERED CAPABILITIES
The high technology low cost approach to the design of the SBS range has ensured the radar sensor family is specifically matched for all three capabilities as defined by IALA V-128 recommendation.

Our product family is grouped by system configuration which in turn aligns to the IALA capability classification of Basic, Standard and Advanced.

Our technology is continually being adopted in VTS and coastal surveillance applications, safety, search and rescue and security missions where the detection of very small targets is of paramount importance.

Kelvin Hughes will, for every application, perform a site survey in order to provide guidance to the system integrator and end user on the system detailed specification covering general radar parameters, target characteristics, radar range performance, effects of noise and clutter, range discrimination and accuracy.

The individual SBS product family’s align to the requirements and guidance of IALA V-128 recommendation and do not just match the parameters but exceed. Key areas of differentiation are in target range accuracy and discrimination ensuring a high degree of situational awareness and safety.

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<td>X-BAND ONLY</td>
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**SBS-700**

- **Non-coherent Radar Transceiver**
- Available in Single or Dual Redundant Transceiver Configurations
- New Receiver Design Meets the Stringent Requirements of the VTS Market
- Each Dual Redundant System is Provided with a Radar Distribution Unit (RDU)

**SBS-800**

- **Sharpeye™ Solid State Technology**
- Optimised for VTS Applications (Range Discrimination at Close Range)
- Single Transceiver Configuration Integrated in the UPMast Turning Unit
- UPMast Integrated Solution Removes the Need to Route Waveguide
- Single Channel or Frequency Diversity
- Each System Provided with a Radar Distribution Unit (RDU)
- Flexible Processing Architecture Through the RDU Allows Further Future Expansion
- Multi-Core Fibre Optic LAN
SBS SYSTEM CONFIGURATION

SBS-900

- Sharpeye™ Solid State Technology
- Available in single or dual redundant transceiver configurations
- Mast mounted separate transceiver housed in a stainless steel enclosure
- Enclosure does not require an air conditioning unit
- Mast mounted enclosure significantly reduces integration costs
- 3rd party antenna compatibility
- Single channel or frequency diversity
- Each system provided with a radar distribution unit (RDU)
- Flexible processing architecture through the RDU allows further future expansion
- Multi-core fibre optic LAN

Service Display Software

- Radar monitoring at the radar site
- Can be used as a local control display
- Configurable as a single or dual radar display or base component for hosting a 3rd party PC
- RS232 connectivity and control between RDU
- Conventional radar screen to display the raw video from the transceiver
- Map underlay and raster image can be switched on
- Record and store received radar pictures for later display and analysis

Situational Intelligence, the World Over
The Kelvin Hughes installed base covers the globe with applications in every continent and operating around the world’s oceans and waterways, we are a proven and trusted global radar supplier.
The Kelvin Hughes team provides outstanding service throughout the life of our products, and organises the business to recognise the varying service requirements needed at the different stages of a radar system acquisition.

**PROJECT MANAGEMENT**

All customers benefit from our project management process. This ensures a central overview of customer requirements is maintained from an early stage of the relationship through to contract award, and then throughout the life of the programme. This comes as standard and is key to ensuring smooth, on-time, and to budget programme delivery.

**RADAR TRIALS DELIVERY**

Validating that the system performance meets and exceeds the operational specification is a key element in implementing new systems, whether at sea, onshore or on land. Kelvin Hughes recognises the need for a comprehensive trials regime and has a dedicated Trials Team that work closely with the customer in planning and executing an appropriate trials programme to support the application.

**INTEGRATED LOGISTICS SUPPORT (ILS)**

ILS forms a key component of any radar supply programme whether the application is for defence, government or industry. Kelvin Hughes recognises the importance of considering these requirements at the outset and invites customers to explore the options we offer; from standard support contracts to tailored support services.

**SPARES & SUPPORT**

In addition to ILS services we have a dedicated customer services team, out-of-hours contact facilities, and a global support network providing full life cycle assistance and support for Kelvin Hughes equipment.

**TRAINING**

Kelvin Hughes navigation and surveillance system training is available for all products. We offer dedicated training programmes at our training school based in our HQ and also at a venue of the customer’s choice should this be required, and depending on the training requirements.

**INCREMENTAL CAPABILITY**

This concept is made possible only by SharpEye™. Due to the unique nature of the Solid State processing that takes place within the sensor itself and the continual development of unique target clutter algorithms, Kelvin Hughes Surveillance is able to provide capability enhancements, post integration of the system, to meet new emerging capability requirements.

**UPGRADING TO THE SHARPEYE™ SYSTEM**

The benefits of a SharpEye™ solution are abundant, not least the immediate cost saving achieved by not replacing a magnetron frequently. Upon request, Kelvin Hughes Surveillance will conduct an appraisal of a legacy or magnetron based radar system and present a SharpEye™ upgrade benefits case. We can then assist the customer in completing a feasibility study for the implementation of a SharpEye™ technology based system. By working with the customer at an early stage, Kelvin Hughes ensures maximum benefits are realised at the outset and brings world class radar design expertise to the application.