Technology Consultancies

Naval Systems &

Maritime Security Solutions

Naval Systems Technologies

Sonar systems (inboard and outboard components), winches, sonar domes, surface or subsurface drones, torpedoes, mines, bottomed sensors and equipments, instrumented buoys, ship protection systems, divers detection, self-noise monitoring systems, acoustic cladding and damping materials, flow noise and structure-borne sound, acoustic and multi-influence ranges, acoustic localisation and tracking, nearfield holography

Our Offer:

At design stage:

Design reviews, design audits

Technical risk management, risk mitigation plans

Assessment of innovative technologies

Assessment of subcontractor's capabilities

Modelling strategies

Components selection criteria

Modernisation and simplification of the design of acoustic elements

At prototype stage:

Acceptance trials facilitation - Trouble-shooting and design optimisation

Through-life support:

Diagnosis and trouble-shooting – Reliability audits – Assistance to litigation resolution

Credentials:

Bernard Garnier is the former Technical Director Operations of Thales Underwater Systems and has also been accredited as Senior Company Expert

Bernard Garnier has authored or co-authored more than 20 technical papers in the domain

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References:

Design for Silence

Naval Platforms: DCNS (SSBN Le Triomphant Class, ASW Frigates), Fincantieri (SSK Sauro Class, S2000 concept), ASC (SSK Collins class), ADI (Minhunters), Navantia (Norwegian Frigates), fishery research vessels (IFREMER)

Naval Systems: winches for mine hunting sonar (Thales/ Abeking & Rasmussen, Lürssen), silent Sonar domes (composites, coatings, damping), acoustic tiles for submarines and surface ships, diver detection sonar, composite piezo-materials, advanced Towed Array concepts (Atlas), self-propelled tethered vehicles (SAAB), torpedo homing systems (DCNS), Very low frequency variable depth sonars (DCNS) etc

Acoustic and multi-influence Ranges

- Acoustic Nearfield Imaging: development and transfer of the technology to Italy (Cetena, Fincantieri Group), Australia (DSTO/MoD), Singapore (DSO/MoD), Pakistan; demos in the US

- deployable acoustic ranges: Singapore, Pakistan, France (COBRA)

- Multi-influence ranges: Sea 1418 (Australia), Lanveoc (France)

Self-Noise Monitoring Systems

- System design, optimisation of sensors lay-out and calibration methods

- evolving from Vibration Monitoring to real-time Acoustic Vulnerability assessment

Coastal Surveillance and Harbour Protection

- SOBCAH European Commission project (FP6/PASR) with deployment in Port of Genoa

- SECMAR (Port de Marseille-Fos)

- SURA (Finnish Navy)

- ARIES (Far East))

Modelling

- Sub-structuring, dynamic synthesis, strong coupling, FEM/BEM modelling, Statistic Energy Analysis

- Non-linear behaviour

- use of scaled models, tank testing

Advanced Materials Applications

Composite piezo-materials - piezo-polymers (cooperation with ISL) - Electro-rheological fluids - giant magnetostrictive materials - shape memory alloys - Anechoics and decoupling coatings

Independent Verification and Validation

Assistance to the Australian DMO for the Hydrographic Ship acceptance (Sonartech Atlas, NQEA, DMO)

Numerous project reviews, technology audits, subcontractor audits, reliability audits etc.

Diagnosis and Trouble-shooting

Trials on board all sorts of Naval vessels. Get-Well plans, problem-solving task forces on a variety of systems (acoustic issues, cables and connectors, rugged electronics, water tightness, corrosion…)

Conditional maintenance from vibro-acoustic information

Pioneer in introducing portable vibration monitoring units onboard Naval vessels for health checks and conditional maintenance (French Navy)

Vibro-acoustic detection and localisation

Airborne and underwater acoustic detection and tracking applications (in particular from transient noises)

Underwater Test ranges