



Dynamics in Control

With decades of experience in delivering marine solutions and services to national procurement agencies, shipbuilders and systems integrators – Stirling Dynamics has the knowledge, skills and capability to help solve our customer's most complex underwater problems.

From early concept, to first of class and batch development; Stirling has built an enviable reputation in submarine autopilots within platform management systems (PMS). Our advanced steering, diving and hover solutions are active across a diverse range of platforms from diesel-electric patrol to the nuclear-powered fleet submarines of the Royal Navy's Astute class.

Our advanced modelling and simulation capability allows us to evolve our understanding of naval architecture into synthetic vessel and environment models that underpin our safety assured software control solutions. Once deployed, Stirling Dynamics provide a full range of support services, including system commissioning, at-sea trials support and post-trial performance tuning.

Innovation drives our solutions; Stirling Dynamics is actively collaborating with our partners in exploring the future marine environment to offer further augmentation of existing systems and systems of greater autonomy.

Naval Architecture

Our submarine naval architecture expertise is highly sought after with regard to hydrodynamic, hydrostatic, floatation, and stability analysis. We can assist in the pre-design analysis and performance assessment of underwater bodies, through to the development of control systems, operator advice and training.

Platforms

- Astute Class - Autopilot and Hover
- Trafalgar Class - Slow Speed Control
- Swiftsure Class - Slow Speed Control
- U209 - Autopilot
- U212A - Autopilot
- U214 - Autopilot
- Dolphin AIP - Autopilot
- Jangbogo III - Concept Studies

Capabilities

- Initial feasibility and concept studies of marine platforms and submerged bodies
- Functional, performance and safety requirements capture of marine systems
- Hydrodynamic, hydrostatic, floatation and stability analysis (surface and submerged)
- Vessel dynamics and environmental modelling and simulation
- Model-based algorithm solution development of marine control systems
- Development of real-time safety-critical software to EN61508 and Do-178B/C
- System integration and commissioning, including sea trials support and algorithm tuning at sea



Submarine Autopilot and Control

The stability, control and safety of the Astute class submarine during steering, diving and hover operations has been Stirling's responsibility since first of class and continues to this day. In delivering an EN61508 compliant system for Astute, Stirling has demonstrated its capability to offer high-integrity and safe systems to the marine market.

Legacy System Evolution

We are adept at assessing platform performance of legacy systems to offer replacement solutions during mid-life upgrades or as part of technology insertion and obsolescence programmes.

Stirling offers on-platform data capture of key dynamic characteristics, shore-based data analysis and synthetic replication of the legacy system. This permits the establishment of a performance baseline prior to Stirling Dynamics offering a system evolution solution.

Support to In-Service and Training

We support our customers in maintaining and enhancing our products; offering our analytical services at any stage of the equipment life and supporting the operators in getting the best performance from our (and others) equipment.

Our synthetic dynamic simulators of the plant and environment are used in several reference platforms and training systems – bringing a real-time response to a real-time command. In addition, our training solutions can simulate supporting electrical, mechanical, hydraulic and communication protocols.

Keeping Pace with Change

Changing threats and the shift from augmentation to autonomy presents both opportunity and challenge to existing solutions. Stirling is at the forefront of this change; actively working on solutions to reduce operator load, increase autonomy and enhance dynamic performance.

Our work on slow speed control, seamless mode transition (sailing, diving, steering, hovering), signature reduction and full authority systems enhances not only our work but also meets our customer's needs.

Operators Worldwide

- Royal Navy
- Portuguese Navy
- German Navy
- Hellenic Navy
- Turkish Navy
- Israeli Navy
- Indian Navy
- South Korean Navy

"I have done things in this submarine I have never done in any other submarine - the autopilot is fantastic...and the hover system enables manoeuvres you can't do in any other UK sub."

Astute Commanding Officer

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