

steering control systems



Submarine steering control systems

GAUDI: Guidance Automation Unit Distributed Intelligence

Thanks to the experience and know-how achieved, with the supply of the Steering Control System for the Italian Navy's Sauro Class Submarines in the past, and more recently, for the state-of-the-art Italian and German Navies' U212A submarines, AVIO has patented a new generation of submarine Steering Control Systems, named GAUDI (Guidance Automation Unit Distributed Intelligence). This new product gives an effective answer to design requirements not fully satisfied by traditional systems. GAUDI is based on a distributed architecture that breaks the traditional concept of centralisation, and is designed to satisfy Navy and Shipyard requirements in terms of Size, Integrability and Modularity, both for new projects and mid-life retrofit.

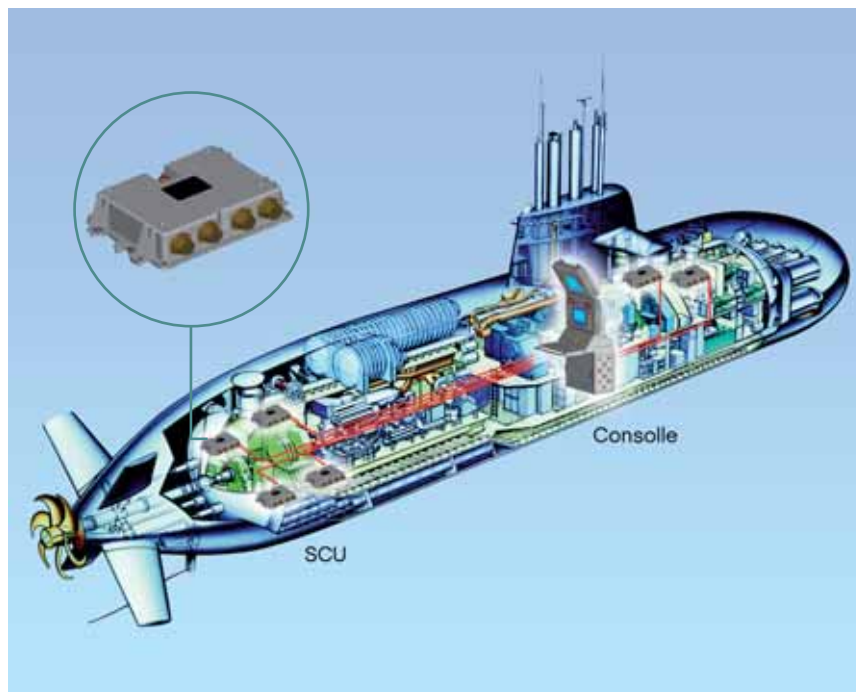
Innovative Architecture (GAUDI)

The system is distributed between a "slim" Central Unit that, thanks to its modular concept, can be split as required, and some (depending on the rudder configuration) Steering Control Units (SCU – 400x300x125 mm), interconnected by simple "serial" lines.

- The "slim" Central Unit located in the Control Room is devoted to the Man-Machine Interface, which can be installed in an ergonomic manner thanks to its modularity.
- Each SCU implements the control functions ("Distributed Intelligence") and the power electronics for submarine rudder control. The SCUs can be easily installed as close as possible to the rudder/hydroplanes without any particular constraint because of their compact dimensions.

Last, but not least, besides the ease of installation and the important reduction of cables, GAUDI provides the End User with a tremendous improvement as far as logistic support is concerned:

- SCU units are easily removable and replaceable in case of failure: this means minimisation of the Mean Time To Repair (MTTR)
- SCU Spares are easy-to-stock inside the submarine due to their very small dimensions.



Applications

- Spanish Navy: S80 Submarines
- Italian and German Navies: U212A Submarines
- Italian Navy: Sauro Class Submarines



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Innovative Functions (3D Absolute Autopilot)

The traditional Automatic Control Modes are improved by new functions:

- The 3D Tracking Mode pursuing Geographical Waypoints provides accurate mission execution.
- The integration of the Autopilot with the ECDIS System based on continuously updated Electronic Chart provides a powerful capability for mission safe planning and monitoring.



High performance Diving Simulators

Avio, in exploiting its capabilities to develop, design and manufacture state-of-the-art Full-scope Steering Control Systems, has fulfilled a significant need for submariners. The U212A Diving Simulators for the Italian and German Navies (two-axes motion system for pitch and roll) supplied by Avio, is one of the most significant example of our expertise. The performances are highly improved by an effective simulation of the sea state which effects are tailored to the specific hull.



Surface steering control Systems

The Steering Control Systems are designed to be highly reliable, redundant, flexible and user-friendly, and to allow safe ship guidance and transfer navigation, also in bad weather conditions and rough seas.

The Avio Surface Steering Control System allows:

- Automatic Ship Guidance in Transfer Navigation (Course Keeping and Track Keeping);
- Navigation Plan and Navigation System interface;
- Mission Recording function and Reporting;
- Monitoring and Alarm Management;

This is a digital computerised system with modular architecture, mainly based on COTS, which ensures independence of functions and control modes.

Applications

LERICI Class Minesweeper: Italian Navy

GAETA Class Minesweeper: Italian Navy

Huon Class Minehunter: Royal Australian Navy

GHARIAL Landing Ship: Indian Navy

GODAVARI Class P16A Frigates: Indian Navy

P1241RE Missile Boats: Indian Navy



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