3D-Steering Systems
Advanced Solutions for Submarine 3D-Steering and Diving Control
Submarine 3D-Steering Systems

Submarine 3D-steering control by Raytheon Anschütz is the result of a long lasting experience in customized solutions for safe and complete submarine steering and diving control.

Through the past decades Raytheon Anschütz has, in close cooperation with the Navies and shipyards, developed and manufactured tailor-made submarine steering and diving control solutions. More than 70 systems for safe and reliable operation have been delivered to various navies all around the world.

Each adaption to specific submarine characteristics or operation philosophies is accompanied by a team of specialists, including onboard surveys to identify project-specific requirements. Thanks to our overall system-knowledge and own user level operational expertise Raytheon Anschütz has the intimate capability in submarine steering control with regard to system construction, requirement engineering and standards applied. The man-machine interface may be laid out to the customer’s desires to adapt to specific user habits and conventions. Reliable system architecture and sophisticated control algorithm on steering control and autopilot foster an inherent safe system design.

Depending on the configuration, Raytheon Anschütz submarine 3D-steering control offers three modes of operation, namely

**Automatic mode**
- Positions the rudder and hydroplanes according to the 3D autopilot’s control commands (closed loop)

**Manual/semi-automatic mode**
- Positions the rudder and hydroplanes as determined by the operator and aids the operator by suggesting how to best control the submarine’s dynamic behavior (man-in-the-loop)

**Emergency mode**
- The rudder engines are directly controlled by the operator from the console (open loop)

**BENEFITS AT A GLANCE**
- Explicitly customized solutions
- Superior Raytheon Anschütz 3D autopilot
- Enhances low-noise submarine steering
- Fully automatic, aided and emergency operation modes
3D AUTOPILOT

Raytheon Anschütz designed its own 3D autopilot to offer the perfect match to its steering systems. The 3D autopilot is fully integrated in the steering system including its man-machine interface and therefore offers smooth and consistent operation. The customer benefits from a perfect adaptation to the submarine and a steering behavior only known from well-trained helmsmen. The Raytheon Anschütz autopilot guarantees always the best fit to its variety of steering systems - no matter if for newbuild or retrofit programs.

HELMSMAN TRAINER

Raytheon Anschütz steering control systems can also be used as a hardware-in-the-loop element of an interactive real-time simulator setup, in which the system simulates the submarine’s dynamics using 3D models for both the submarine and the environment. This results in a realistic operator training by familiarizing the operator with the real submarine hardware.

SUITABLE FOR NEWBUILD AND RETROFIT

Submarine steering stands are always tailored to the individual customer. Raytheon Anschütz offers basic solutions in various configurations for 3-man, 2-man or 1-man operation. These solutions cover the customers’ basic needs on steering philosophy and its integration approach due to the submarines’ design. Hence Raytheon Anschütz can offer the best solution for newbuild as well as retrofit purpose. Furthermore Raytheon Anschütz has deep expertise in rebuild obsolete steering consoles featuring newest technology but maintaining the former look and feel and operating philosophy. Common to all versions is the use of latest technology including the fully integrated 3D autopilot designed by Raytheon Anschütz.
SOLUTIONS AND SUPPORT

Raytheon Anschütz has years of experience in implementing 3D-steering and autopilot systems, having proofed its system’s accuracy and reliability on more than 70 submarines worldwide. We understand naval customer’s requirements and guide you from project outline and specification through realization to setting in operation with our experienced engineers.

Independent on your needs for a newbuild or retrofit solution, Raytheon Anschütz’ submarine 3D-steering and autopilot solution is the choice to fulfill your requirements of a flexible, reliable and future orientated system coming with sustainable logistics.

Raytheon Anschütz offers a wide variety of services throughout the whole program, from early customer consulting and customized designs up to obsolescence management and worldwide maintenance during operation. For all solutions, our large worldwide service network is available for maintenance, repair and spare part logistics.

Raytheon Anschütz Office Portsmouth
Langstone Technology Park, Bldg 4000
Langstone Road, Havant, PO9 1SA, United Kingdom

Raytheon Anschütz Singapore Pte. Ltd.
51 Bukit Batok Crescent
#07 - 08 Unity Centre, Singapore 658077

Raytheon Anschütz do Brasil
Sistemas Marítimos Ltda, Avenida das Américas 7899, Sala 508
Barra da Tijuca, CEP 22793-081, Rio de Janeiro, Brasil

Raytheon Anschütz Panama, S. de R.L.
City of Knowledge, Clayton, Building 225
Panama City, Rep of Panama

Raytheon Anschütz USA LLC
8650 Balboa Ave., San Diego, CA
92123-1502, United States of America

More than 200 service stations all around the world.