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## **Korean Submarine Combat Team Trainer by Rheinmetall: Preparing Submariners for their missions**

In the complex underwater environment that submarines operate in, extensive prior training is a vital prerequisite for successful operational outcomes. As an experienced manufacturer of tactical simulators for conventional submarines, Rheinmetall offers the ideal solution: the Submarine Command Team Trainer (SCTT).

On October 31, 2013 the Submarine Command Team Trainer for U 214 RoKN (SCTT U 214 RoKN) was handed over to the Korean Navy at the Naval Base in Jinhae. Within the project, a complex simulator with an integrated original combat system was delivered, allowing the Navy to train the crews of the 214 class submarines in a highly realistic environment.

The system supplied to the Korean Navy perfectly replicates a state-of-the art U 214 submarine. The SCTT U 214 RoKN consist of a mock-up periscope and Navigation Command Console (NCC), a mock-up Combat Information Centre-hull as well as a complex instructor and debriefing equipment including an auditorium. The original on board equipment (f. e. ISUS 90-61 from ATLAS) has been implemented. Furthermore, the system simulates a realistic submarine sonar environment as well as various targets.

The project was delivered exact within the contractual schedule, including all offset obligations. During the hand-over ceremony, high level Navy representatives expressed their high satisfaction with the performance of Rheinmetall, especially with regard to deadlines and reliability of the commitments made.

### **Key characteristics of the SCTT**

Developed by Rheinmetall's Bremen, Germany-based Simulation and Training business unit, the SCTT is a very flexible simulation system. It is scalable from operator training in individual sensors and systems to command team training for operational units.

Every important component of a submarine Combat Information Centre (CIC), including combat management systems, armament, modern sonar systems and non-acoustic sensors (radar, link, ESM, periscope, etc.) will be simulated with extreme fidelity.

Importantly, the SCTT can be networked with other simulators (e.g. Submarine Control Simulators/SCSs, Anti-Submarine Warfare/ASW simulators and naval tactical

trainers) via open simulation standard protocol interfaces (Distributed Interactive Simulation/DIS, High Level Architecture/HLA). To do so it uses Rheinmetall's Advanced Naval Synthetic Environment (ANSE) for generating scenarios, joint databases and networking. It can simulate, emulate or stimulate sonar, command and control, and effector systems of various makes. The consoles are reconfigurable for assignment of specific tasks.

The SCTT records all relevant data, voice communication and monitor images for subsequent synchronised analysis and debriefing; the exercise is restarted at freely selectable points within and exercise.

### **How customers benefit from the SCTT**

As mentioned above, the SCTT offers a great amount of flexibility. Customer-specific designs of system solutions in a spectrum ranging from generic to fully simulated and stimulated applications. Customers can also expand the database of targets and exercise areas, and/or adapt it to meet their own requirements.

The flexible configuration of simulation allows training at various levels in different on-board systems (full mission, sub-team training or part task). Training sequence and complexity of the simulation are flexible and adaptable.

Rheinmetall can integrate all sensors and effectors completely in the simulation. Depictions of all sonar systems available on the market are possible. The simulation of periscope and optronic masts looks and feels identical to on-board systems.

### **Submarine simulation technology from Rheinmetall**

Rheinmetall has been supplying the market for over 35 years, satisfying and continually supporting its demanding client base with a full array of advanced solutions ranging from complete simulation/stimulation of original sonar, sensor, CMS and effector systems to emulation and low-cost generic replication of on-board systems in the form of a non type specific submarine operating training system.

Rheinmetall has longstanding expertise in the simulation of passive and active sonars, CMS and effector systems such as torpedoes and missiles. Furthermore, Rheinmetall has core competencies in sonar simulation and connection to command and weapon engagement systems for conventional submarines.

Freely configurable scenarios are simulated in multifaceted tactical situations under a variety of operating conditions. In addition, the simulation enables identification, classification and engagement of targets based on realistic characteristics such as sound beam progression, noise simulation and range.

### **Rheinmetall: Bridging the gap between virtual reality and real world**

Rheinmetall has been supplying the world's armed forces with simulation and training systems for ground, air and naval applications for decades, continuously perfecting its state-of-the-art solutions. With over 2,000 systems in operation worldwide, Rheinmetall offers a comprehensive array of products, ranging from inexpensive PC-

supported training systems to highly sophisticated full-mission simulators for surface, subsurface, aerial and land-based platforms, extending to simulation capabilities for fully networked joint and combined operations.

Building on its tremendous experience and expertise, Rheinmetall Defence bridges the gap between virtual reality and the real world, supplying training solutions that prepare personnel for their next mission.

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