



OERLIKON MILLENNIUM® GUN

35 MM MULTI-ROLE WEAPON SYSTEM

PASSION FOR **TECHNOLOGY.**



OERLIKON MILLENNIUM® GUN

OERLIKON MILLENNIUM® GUN: ADVANCED 35 MM MULTI-ROLE WEAPON SYSTEM FOR EFFECTIVE DEFENCE AGAINST SURFACE AND AIR THREATS

Today's contemporary and complex operational scenarios demand that ship's short range defence systems are capable of combatting a wide variety of threats—most with unique and difficult characteristics and attack profiles. The Oerlikon Millennium® Gun delivers a true multi-role anti-surface and anti-air defensive capability.



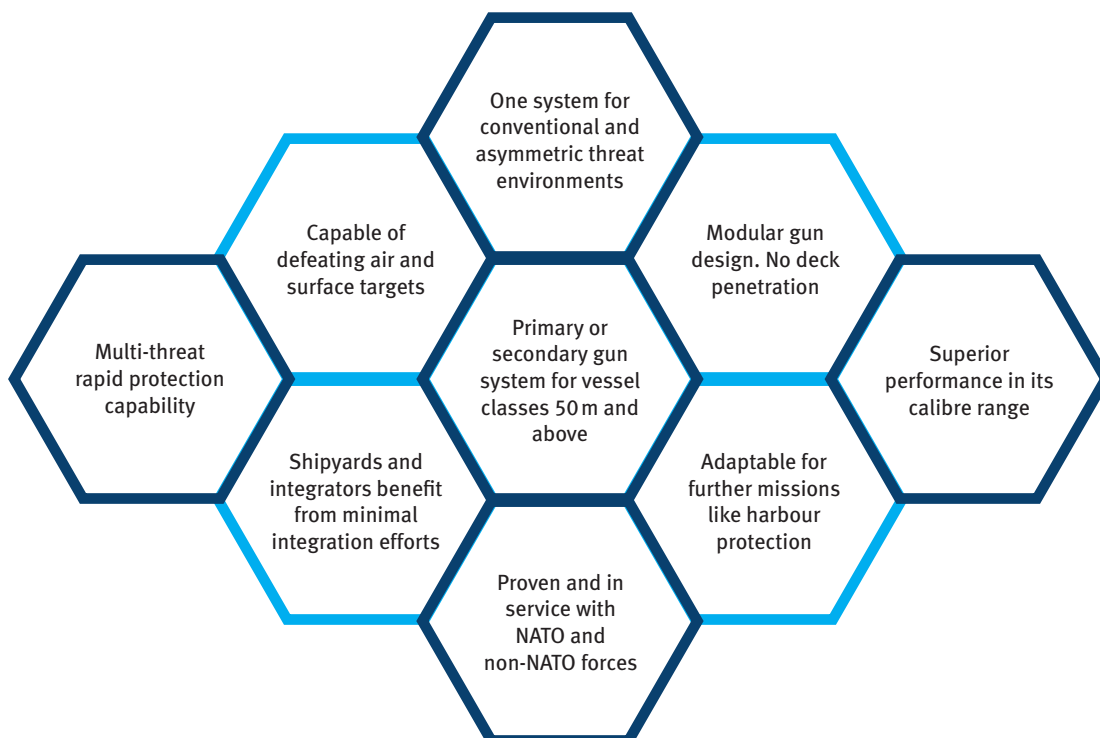
Oerlikon Millennium Gun—proven during international missions

In an anti-surface role, the Millennium Gun is a fast and powerful effector. The gun system is designed to engage multiple high speed asymmetric surface targets (swarming attacks). It exceeds United States Navy (USN) keep-out-range requirements for countering a multi-axis threat from multiple fast-intruder attack craft.

In an anti-air role, the Millennium Gun can engage the entire spectrum of air threats, ranging from low-radar cross section anti-ship missiles to fast-attack aircraft and helicopters.

Additionally, the Millennium Gun can easily defeat challenging low, slow and small air threats posed by unmanned aerial vehicles (UAV).

The Millennium Gun, with its programmable Oerlikon Ahead® ammunition, has also been deployed to provide counter rocket, artillery and mortar (C-RAM) defence for land-based applications.



ONE SYSTEM FOR CONVENTIONAL AND ASYMMETRIC THREAT ENVIRONMENTS

Air Defence Capabilities

- Anti-ship missiles
- Attack aircraft and helicopters
- Unmanned aerial vehicles (UAV)
- Low, slow and small air targets (LSS)

Asymmetric Surface Defence Capabilities

The Oerlikon Millennium® Gun including Oerlikon Ahead® ammunition is the only gun in its calibre range designed to exceed US Navy's defensive limits against littoral threats for countering a multi-axis threat from multiple fast-intruder attack craft (FIAC).

The Millennium Gun guarantees superior dynamics with exceptional pointing accuracy and precision. Excellent gun-pointing performance together with very high rate-of-fire and Ahead ammunition means very high hit probability at extended ranges.

A typical Ahead burst will bring a remarkable payload (>8 kg/s), released in a target-directed cone of high-penetrating, spin-stabilised heavy metal sub-projectiles. Hit probability and target destruction performance are achieved at ranges that significantly exceed those of all competitive systems.

35 MM AMMUNITION TECHNOLOGY

The capability for effective protection against conventional and asymmetric threats in maritime conflict scenarios is based on optimised interaction between the high performance Millennium Gun system together with superior 35 mm ammunition. Rheinmetall provides both while the customer benefits from riskless purchasing from one source.

The Millennium Gun is designed to fire the programmable Oerlikon Ahead® rounds and non-programmable rounds such as HEI-T and TP-T.

OERLIKON AHEAD® AMMUNITION



Oerlikon Ahead® ammunition missile engagement

Each Ahead round is designed to dispense 152 x 3.3 g tungsten alloy heavy metal sub-projectiles that form a spin-stabilized, cone shaped dense cloud, which effectively penetrates and destroys the threat.

On the basis of hit probability and the greatly improved penetration, the Ahead round delivers a more accurate, focused and destructive payload than any other available programmable round.



The tungsten alloy sub-projectile payload of the Oerlikon Ahead® round most effectively destroys the threat

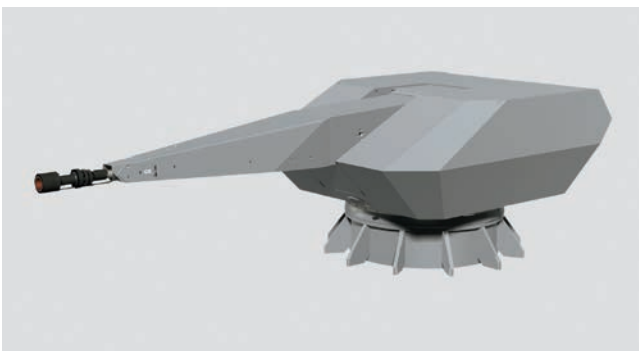
THE MODULAR MILLENNIUM GUN DESIGN ALLOWS CONFIGURATION TO PLATFORM SIZE AND MISSION

Basic Configuration

Magazine containing up to 252 rounds	All rounds are ready to fire. The on-mount capacity is significantly greater than that of other systems in this calibre range, which means the Millennium Gun can engage a greater number of air and surface targets before reloading.
Independent power supply	Uninterruptible power supply. The average load on ship's power distribution is less than 1 kVA. Combat casualty mode if the ship's power supply is lost. Maintenance-free battery pack.
Plinth installation	Direct installation to ship's deck minimising on-deck weight.
Composite cupola	Lightweight cupola using high-tech composite materials at minimal cost.
Standard data interfaces	Ethernet interface for simple integration into any fire control or combat management system.

Options

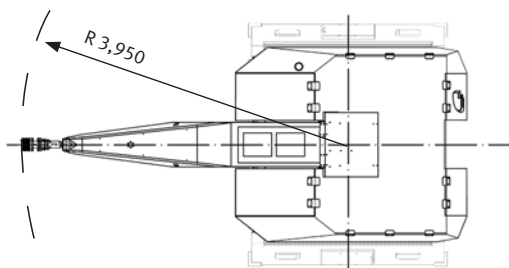
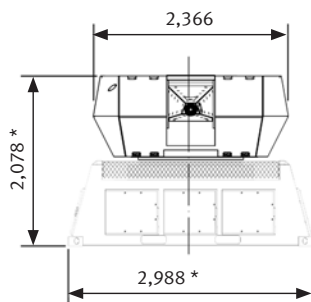
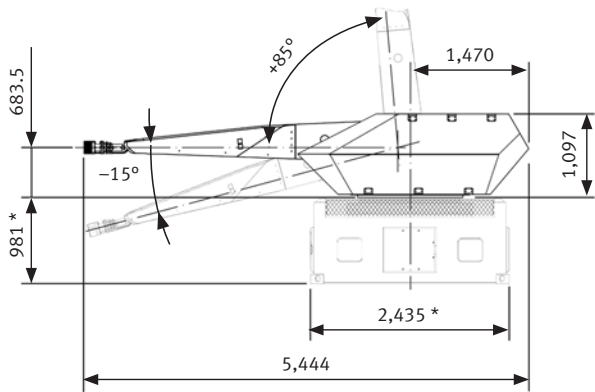
Fire control computer	CMS/FCS integration for C2, processing of target data with lead and ballistic computation, shot management and Ahead computer processing.
ISO-Mount including dry air inlets	ISO 1D container mount. Minimal installation efforts and simplicity for removal and reinstallation e.g. for workshop maintenance. No below-deck equipment. Flexibility for rapid cross-decking between ships or ashore for joint-interoperability.
Extended cupola	Capable of withstanding highest green seas requirements. Allows adaption to ship's design.
Shock ring	Special interface to withstand high demands of mine shocks.
Boresight TV camera	Dual purpose camera for observation of bore sight and alignment functions.



Oerlikon Millennium® Gun with plinth interface for direct and lightweight installation



Oerlikon Millennium® Gun with ISO-Mount offering minimal installation efforts and simplicity for removal or cross-decking



* only applicable with ISO-Mount option

MAIN FEATURES AND TECHNICAL DATA

Gun Mount in Basic Configuration

Weight on deck	2,970 kg
Swept radius (barrel 0°)	3,950 mm
Training arc	n x 360°
Elevation arc	-15° to +85°
Training speed	120°/s
Elevation speed	100°/s

Oerlikon Revolver Cannon®

Calibre	35 mm x 228
Nominal rate of fire (burst)	1,000 rds/min
Rapid single shot	200 rds/min
Mean muzzle velocity depending on ammunition type	1,050 m/s to 1,175 m/s

Ammunition

Programmable (NATO KETF)	Ahead
Standard full-calibre	HEI, HEI-T, TP, TP-T
Rounds ready to fire	up to 252

KEY PERFORMANCE HIGHLIGHTS

- Single shot, rapid single shot (200 rds/min) and very high rate burst fire mode (1,000 rds/min)
- High muzzle velocity and projectile characteristics ensure short times of flight, compared to similar calibres, simplifying fire control and lead computation processing for increased system accuracy
- Asymmetric threat defence capabilities against multi-axis swarms of fast-intruder attack craft (FIAC), swarming UAV or LSS
- Hit and destroy ranges significantly exceed those of similar calibre class guns
- Magazine with 252 rounds of Ahead airburst ammunition for multiple air and surface engagements without reloading
- Fires various types of qualified 35 mm ammunition for total mission and training flexibility
- Short reaction time and very high system accuracy

INTEGRATION APPROACH INTO FIRE CONTROL AND COMBAT MANAGEMENT SYSTEMS

The Millennium Gun can be supplied with or without on-mount fire control computer. If selected with integrated fire control computer, the Millennium Gun has increased autonomy. Internal fire control processing covers:

- Integration with CMS for command and control together or with external target data fire channels
- Integration with the navigation system for receipt of ship's stabilisation data
- Processing and filtering of target data
- Stabilisation data processing
- Target lead computation and ballistics processing
- Alignment processing and shot correction management
- Generation of gun angles and management of Ahead computer processing

The Millennium Gun can also be integrated into any third party fire control system. External fire control will therefore take over the firing control processing which means integration of the Millennium Gun will be simplified and will be limited to data interfacing with the external fire control computer.

The Millennium Gun is in service and at sea with both Rheinmetall and third party fire control systems.



Royal Danish Navy – HDMS Absalon (L16) fitted with Oerlikon Millennium Gun

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