

TRAINING THREAT SIMULATOR FOR THE 23 MM FOUR-BARREL SELF-PROPELLED ANTI-AIRCRAFT GUNCLOWN FISH



CLOWN FISH has been designed for use at radio-electronic warfare training fields for the purpose of training pilots and gun crews in real conditions, using real armament.

Implemented on the Shilka ZSU-23-4 anti-aircraft self-propelled gun in its original version, fully technically efficient, with the artillery and radar units, original fire control system and automatic systems, ready for combat use, except for the possibility of ammunition use.

Equipped with a real radar-controlled anti-aircraft gun, **CLOWN FISH** simulates fire at an aircraft, which the pilot must avoid in self-defence, undertaking manoeuvring and/or radio-electronic counteraction.

Owing to the technological advancement, the training threat simulator employs a cutting-edge patented technical solution for ballistic trajectory modelling („Method projectile trajectory modelling and measuring the target miss vector”; assignee: Wojskowe Zakłady Uzbrojenia S.A.).

The training threat simulator performs operational functions and ballistic simulation of the 23 mm four-barrel self-propelled anti-aircraft gun. It ensures two-way transmission of tactical and technical data, using an appropriate transmission protocol, directly to a remote Command Centre equipped with tactical and technical terminals. Communication is carried out by radio.

Threat simulation is effected by an on-board computer, based on data read by interface systems. The on-board computer processes data to be interpreted by the tactical terminal console. The graphic user interface – defined at Wojskowe Zakłady Uzbrojenia S.A. – ensures compatibility with information received from training field sensors, and enabling the evaluation of combat efficiency by an officer in charge of the training, at the Command Centre.

The simulator also enables the transmission of the gun's technical parameters using a transmission protocol defined at Wojskowe Zakłady Uzbrojenia S.A. Analogue and digital signals are measured and coded by custom-designed analogue and digital transmission units.

PROCESSES PERFORMED BY THE SIMULATOR:

- » Receiving and displaying information on targets to be eliminated.
- » Receiving orders related to fighting air targets.
- » Exchanging data on own location.
- » Sending combat activity reports.
- » Modelling the ballistic trajectory of missiles from the ZSU-23-4 gun using an eye-safe laser beam.
- » Evaluating the effectiveness of the fire exercise by measuring target miss errors using optoelectronic methodology.
- » Initiating target destruction effects.
- » Acquiring operating parameters of the radar and optoelectronic system, and sending collective data to the technical terminal.

Training simulator instruments may also be implemented on other guns, in different configurations / different calibres, e.g. 23 mm, 35 mm, 57 mm, etc. – especially on ZSU-23-4 Biała. The data acquisition system may also cooperate with an optoelectronic tracking system.

