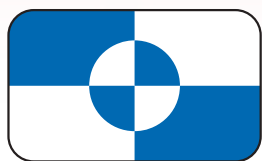




SHOOTING TRAINING SIMULATORS



Savronik

About Savronik

Savronik, founded in 1986, has been operating for over a quarter of a century in the Turkish Defence Industry, and is one of the few major players in an industry dominated by quasi-governmental organizations. Starting from early 2000s, we have been employing our defence industry experience also in Intelligent Road Systems, Railway Systems and Integrated Logistics Support.

Savronik produces award winning, high quality products, both unit and integrated solutions, compliant with standards such as ISO 9001:2015, AS9100 rev.D in the fields of electronics, electro-mechanics and software. Our true differentiator however, is our field capabilities which allow Savronik be wherever and whenever our customer needs us. In this respect Savronik is not only a technology company but also a services and maintenance competence center providing full life cycle maintenance and operating services to its customer in the civil and military sector.

SIMULATOR TYPES

- **Basic Marksmanship Simulator**
- **Sniper-Sharp Shooter Simulator**
- **Shoothouse Simulator**
- **Close Quarter Battle Simulator**
- **Motion Platform Gunner Simulators**
 - Boat Gunner
 - Helicopter Gunner
 - Vehicle Gunner
- **Portable Simulators**
 - Portable Sniper/Sharp Shooter Simulator
 - Portable Basic Marksmanship Simulator

SHOOTERSIM simulator family uses some state of the art technology such as easy-to-calibrate laser unit, generic sniper/spotter scope emulators, and also has realistic external ballistics and integrated evaluation software.

Common Software

Scenario Preparation and Running Software

It works on the Instructor Simulator Control Station and Portable Systems computers, which prepares and initializes the scenario, and provides the running and management during the runtime.

Data Management Software

Its main function is to add, delete and edit system-related data in the central database. The whole system is also supported with infrastructure and support software.

Evaluation and Reporting Software

It can evaluate the training conducted on the system and prepare reports on them by making individual or group evaluations based on the success criteria selection. Each shot has relevant interfaces for hit analysis. The trainer can evaluate the "Shot Group Analysis" according to the distribution of the hits, select the relevant option and save it. It shows the trace left on the screen (5- seconds- before- 1- second- after) by the aiming point of each shooter to examine the breathing and trigger pull status.

Image Generator Software

It is used to prepare training on the Instructor Simulator Control Station. While preparing the training, different objects from the model list can be positioned on the three-dimensional terrain. These positioned objects can be changed later by drag-and- drop. Game engines like UNREAL and VBS3/4 are used.

Hit Detection Software

It detects the trigger pull-drop time of the shots, the hit coordinate (x:y) information on the screen and the tagged information of the gun used, through the sensor and / or electronic system.

Ballistics software

It calculates the path of the bullet after exiting the barrel, by using information like the ammunition type, the weapon parameters, and virtual atmospheric conditions, using mathematical and physics methods.

Simulated Weapons



Simulated weapons are electronic/mechanical devices that are similar to the original weapons visually but in terms of operating principles they do not have the capability to shoot with real ammunition.

Simulated weapons can send electronic signals such as running out of bullets and jams/ stoppages to simulate these effects. The problems can be solved by interfering with the magazine and/or the cocking lever, by conducting the same drills as in real life situations in a simulated weapon.

The number of rounds in the magazine can be counted electronically and if there are rounds in the magazine and the trigger is pulled, the rounds decrease in proportion to the number of trigger pulls. When the magazine is empty, the weapon needs to be loaded with a different loaded/charged magazine. Empty magazines can be charged on the charging unit. Charging the magazines, also charges the battery in the gun.

The system works as untethered to prevent restriction of movement during training. At least 4 (four) hours of training can be conducted when the batteries are fully charged. Simulated guns have a battery life of at least 400 shots in a 4-hour training period.

Simulated weapons can communicate with the central system via wireless network (WiFi & BT). Weapons can be activated with remotely during the training.



SHOOTING SIMULATORS

Shooting Training Simulators enable trainees to move and shoot with real, and simulated weapons, using various ammunition (UTM, blank) and dry fire in virtual environments. Some of the training types that can be conducted with the the system are:

- Basic Marksmanship
- Close Quarter Battle
- Close Protection
- Sniper/Sharp Shooter
- Observation, Reconnaissance
- Directing Close Air Support
- Forward Observer
- Recognition
- Room Clearing

Basic Marksmanship Simulator

Instructor Simulator Control Station

Known Distance Range

10 Trainees

Portable Basic Marksmanship Simulator

Portable System Box

Portable Screen

2 Trainees

Sniper / Sharp Shooter Simulator

Instructor Simulator Control Station

Sniper / Sharp Shooter Training Cell

2 Trainees

Portable Sniper / Sharp Shooter Simulator

Portable System Box

Portable Screen

2 Trainees

Shoothouse Simulator

Instructor Simulator Control Station

Shoothouse

4+ Trainees

Close Quarter Battle Simulator

Instructor Simulator Control Station

CQB Range

1-3 Trainees

Motion Platform Simulator

Instructor Simulator Control Station

Motion Platform Boat / Vehicle Helicopter

1 Trainee

BASIC MARKSMANSHIP SIMULATOR

Simulated Weapon Production

Portable Version



Instructor Simulator Control Station

Known Distance Range

10 Trainees



PORTABLE BASIC MARKSMANSHIP SIMULATOR

Portable System Box

Portable Screen

2 Trainees

Basic marksmanship training can be conducted on this simulator, by using real weapons (with Laser Unit attached on picatinny rails), shooting blank or dry fire or by using plastic/aluminum alloy simulated weapons produced by Savronik.

- Screens used in training, on which images are created, may be in different sizes consist of fixed (wallmounted), movable (lowered - lifted), replaceable/repairable image area.
- Virtual shooting lanes can be created in the desired number (to the extent allowed by the physical dimensions of the shooting area), one shooter placed in each lane, in the shooting ranges with known distances (25m and 50m) for basic marksmanship.
- Movement shooting drills (walking, kneeling, prone, etc.) can also be performed in shooting ranges with sufficient space.

Basic Marksmanship Simulator Components

- *Weapon System (Real, Simulated)*
- *Imaging System*
- *Common Software*
- *Common Subsystems*



- Desired fixed and moving virtual 3D targets can be created on the screens in proportion to their real world dimensions.

- Shooting training can be conducted by adding virtual distances to real world distances. This allows conducting long-range shooting trainings, which are also needed in places where there is not a large area for system installation.

- Ambient sounds can be created for the trainees by using a sound system.

- Time-synchronised recording of the simulation, the movement and voices of the trainees, and the screen images, can be obtained by deploying cameras in appropriate places during the training.



SNIPER / SHARP SHOOTER SIMULATOR

Instructor Simulator Control Station

Sniper / Sharp Shooter Training Cell

2 Trainees

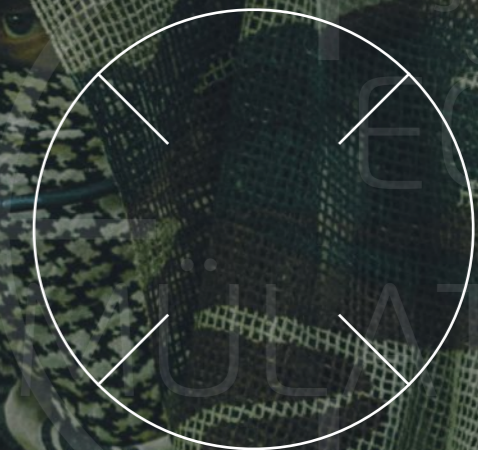
Simulated Weapon Production

Emulated Optical Devices

Advanced Ballistics Calculation

Networked/Connected Teams Training

Portable Version

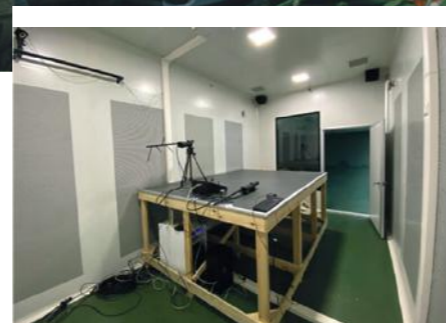


Sniper / Sharp Shooter Simulator Components

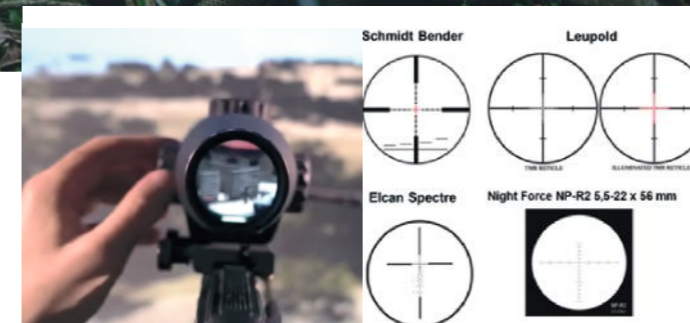
- Weapon System (Real, Simulated)
- Imaging System
- Generic Rifle Scope
- Generic Spotter Scope
- Junction Box
- Common Software
- Common Subsystems

Sniper/Sharp Shooter training can be conducted as a team on this simulator, by using real weapons shooting blank or dry fire, or by using plastic/aluminum alloy simulated weapons produced by Savronik, with simulated rifle and spotting scopes attached on picatinny rails, also produced by Savronik. Observation-surveillance, directing of close air support, forward observer, recognition training can be performed with this equipment setup.

- The Simulator consists of the main screen observed by the sniper/spotter team through the naked eye, and the simulated weapon and spotting scopes on which the desired real scope reticle symbology superimposed, as the imaging system.



- Any number of sniper/sharp shooter training cells can be built in the required facility. By networking the cells, multiple sniper/sharp shooter teams can carry out combined training in a virtual environment.
- Ambient sounds can be created for the trainees by using a sound system.
- Time-synchronised recording of the simulation, the movement and voices of the trainees, and the screen images, can be obtained by deploying cameras in appropriate places during the training.



Generic Rifle Scope

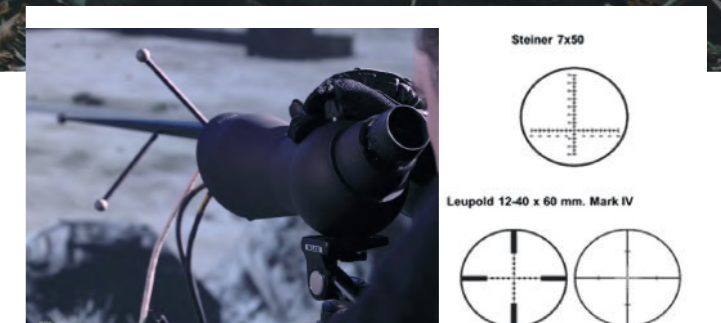
It is a functional mock-up of generic rifle scopes.

The main function of the scope is to simulate target image with the reticle symbology superimposed on that is generated in the image generator computer.

The scope is used in Stationary and Portable Sniper/Sharp Shooter Simulators.

Savronik develops the product.

The scope allows the required reticle symbology and to adjust magnification, elevation, windage (MOA/MIL depending on the reticle chosen) and reticle change (first/second focal).



Generic Spotter Scope

It is a functional mock-up of spotter scopes.

The main function of the scope is to simulate target image with the reticle symbology superimposed on that is generated in the image generator computer.

The scope is used in Stationary and Portable Sniper/Sharp Shooter Simulators.

Savronik develops the product.

The scope allows the required reticle symbology and to adjust magnification (MOA/MIL depending on the reticle chosen).

SNIPER / SHARP SHOOTER
SIMULATOR



PORTABLE
SNIPER / SHARP SHOOTER
SIMULATOR

PORTABLE
SNIPER / SHARP
SHOOTER
SIMULATOR

Portable
System Box

Portable
Screen

2
Trainees

Sniper/Sharp Shooter training can be conducted as a team on this simulator, by using real weapons shooting blank or dry fire, or by using plastic/aluminum alloy simulated weapons produced by Savronik, with simulated rifle and spotting scopes attached on picatinny rails, also produced by Savronik. Observation-surveillance, directing of close air support, forward observer, recognition training can be performed with this equipment setup.

- The Simulator consists of the main screen observed by the sniper/spotter team through the naked eye, and the simulated weapon and spotting scopes on which the desired real scope reticle symbology superimposed, as the imaging system.

- Ambient sounds can be created for the trainees by using a sound system.

SHOOHOUSE
SIMULATOR

Instructor
Simulator
Control
Station

Shoothouse

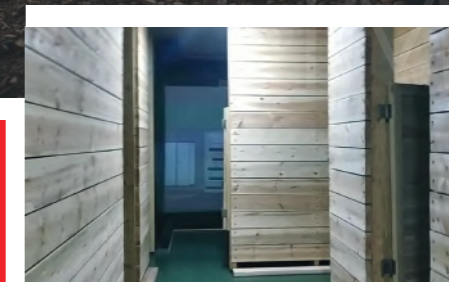
4+
Trainees



*Shoothouse Simulator
Components*

- Shoot House
- Weapon System (Real, Simulated)
- Laser Unit
- Imaging System
- Common Software
- Common Subsystems

In Shoothouse Simulator, room clearing and CQB/quick reaction shooting training can be conducted, by using real weapons (with Laser Unit attached on picatinny rails), shooting blank or dry fire or by using plastic/aluminum alloy simulated weapons produced by Savronik.



- Screens used in training, on which images are created, may be in different sizes consist of fixed (wall-mounted), movable (lowered - lifted), replaceable/repairable image area.

- The simulator can be arranged to consist of different numbers of rooms/corridors, and an image area can be created on the desired walls.

- Desired fixed and moving virtual 3D targets can be created on the screens in proportion to their real world dimensions.

- Ambient sounds can be created for the trainees by using a sound system.

- Time-synchronised recording of the simulation, the movement and voices of the trainees, and the screen images, can be obtained by deploying cameras in appropriate places during the training.

CLOSE QUARTER BATTLE SIMULATOR

Instructor Simulator Control Station

CQB Range

1-3 Trainees

Simulated Weapon Production



MOTION PLATFORM SIMULATOR

Instructor Simulator Control Station

Motion Platform Boat / Vehicle Helicopter

1 Trainee

Simulated Weapon Production

2-6 DOF Motion Platform Choice

VR Glass Choice



CQB/quick reaction shooting training can be conducted on this simulator, by using real weapons (with Laser Unit attached on picatinny rails), shooting blank or dry fire or by using plastic/aluminum alloy simulated weapons produced by Savronik.

The Simulator cell, with a concave field of view, allows 1-3 trainees to perform reactive shooting training against pop-up, moving and stationary targets.

The main difference between the Basic Marksmanship Simulator and the CQB Training Simulator is that this simulator allows coordinated shooting drills by combining training cells set up side by side on a networked virtual environment.

Training types such as close protection and CQB/MOUT, in which reactive firing is carried out as a coordinated unit, can be conducted.

Ambient sounds can be created for the trainees by using a sound system.

Time-synchronised recording of the simulation, the movement and voices of the trainees, and the screen images, can be obtained by deploying cameras in appropriate places during the training.



Close Quarter Battle (CQB) Simulator Components

- Weapon System (Real, Simulated)
- Laser Unit
- Imaging System
- Common Software
- Common Subsystems

Motion Platform Simulators Components

- Platform Models Vehicle, Boat, Helicopter Model
- Motion Platform
- Weapon System (Simulated)
- Imaging System
- Common Software
- Common Subsystems



Gunner training can be conducted on this simulator, by using plastic/aluminum alloy simulated weapons produced by Savronik.

Motion Platform Simulators consist of three different types:

- Helicopter Machine Gunner Shooting Simulator
- Vehicle Machine Gunner Shooting Simulator
- Boat Machine Gunner Shooting Simulator

Motion Platform Simulators allow the use of virtual reality glasses in addition to the main screens, and enable the trainee to perform suppressive fire training with a simulated machine gun.

Motion Platform Simulators consist of placing the desired vehicle models on motion platforms of the required size with 2-6 degrees of freedom (DOF).

In Motion Platform Simulators, one trainee can perform shooting training, while another (driver) trainee performing driving/coordination training on the same platform or next to the same platform at the same time.

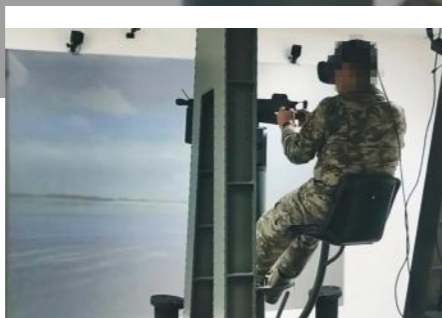
Ambient sounds can be created for the trainees by using a sound system.

Time-synchronised recording of the simulation, the movement and voices of the trainees, and the screen images, can be obtained by deploying cameras in appropriate places during the training.

MOTION PLATFORM
SIMULATOR

VEHICLE / BOAT MACHINE GUNNER SHOOTING SIMULATOR

HELICOPTER MACHINE GUNNER SHOOTING SIMULATOR



The Simulator moves in accordance with the simulated riding path and the trainee feels like riding and aims the weapon accordingly.

The platform consists of a symbolic desired size vehicle/boat model mounted on the motion platform with 2-6 degrees of freedom (DOF).

The model is not exactly in the form of a vehicle/boat, it has only the parts that affect the duty conditions of the trainee and the areas that need to be handled manually during shooting.



M2 Browning Simulated MG

It is a training tool that resembles the weapon in terms of size, shape, recoil and sound and cannot be fired with normal ammunition.

Mechanical processes such as pulling the trigger are transferred to the electronic environment through the electronic systems inside.

The product is produced by our company.



The Simulator moves in accordance with the simulated flight path and the trainee feels like flying and aims the weapon accordingly.

The platform consists of a symbolic desired size helicopter model mounted on the motion platform with 2-6 degrees of freedom (DOF).

The model is not exactly in the form of a helicopter, it has only the parts that affect the duty conditions of the trainee and the areas that need to be handled manually during shooting.



PKM Simulated MG

It is a training tool that resembles the weapon in terms of size, shape, recoil and sound and cannot be fired with normal ammunition.

Mechanical processes such as pulling the trigger are transferred to the electronic environment through the electronic systems inside.

The product is produced by our company.



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SHOOTING TRAINING SIMULATORS



Organize Sanayi Bölgesi
20. Cadde No:19
26110 Eskişehir/TÜRKİYE
P: (+90) 222 236 15 90
F: (+90) 222 236 15 89

Mutlukent Mah. Angora Bulv.
2010. Sk. No.33 06800
Beysukent/Ankara/TÜRKİYE
P: (+90) 312 236 64 55
F: (+90) 312 219 57 95