MoST-5 / MoST-10 MODULAR TACTICAL SHOOTING RANGE

SHOOTING RANGE USES

These are fully enclosed shooting facilities for a variety of training types for uniformed services as well as for private uses. They are made of steel modules which can be transported to any suitable location having a flat, paved surface and then assembled.
A MoST system does not require fixing to the ground.
The time of building the shooting range is between 180 and 360 days, depending on the MoST size.

Each MoST system is designed for:

- firing live ammunition with a maximum energy of 3600 J;
- training for shooting on fixed or moving firing lanes;
- shooting practice, tactical shooting, sports shooting, and leisure shooting;
- burst fire with automatic firearms;
- deployment of firing scenarios, including targert retrieval system, strobe lights, artificial fog, and sound effects;
- deployment of shoot houses and 180° firing sectors with mobile bullet traps deployed in the lane zone;
- disassembly and relocation, or modification of the firing lane length at any time;
- ventilation to guarantee the highest air quality during firing, including reduction of airborne lead concentrations below the limit;
- air conditioning to ensure comfort in all seasons;
- environmental protection by preventing the release of combustion dust and by maintaining low noise emissions.

MoST-5 and MoST-10 systems have Certificates of Compliance issued by the Military Institute of Armament Technology in Zielonka, Poland.

AVAILABLE FIRING RANGE SIZES

Each MoST system consists of steel modules, measuring inside 2.5 m long and 2.5 m high and 5 m wide (MoST-5) or 2.9 m high and 10 m wide (MoST-10). When assembled, the modules form an integrated facility capable of supporting various shooting range functions, including the firing zone and all the auxiliary functions required for a fully professional tactical training range

MoST systems are available in eight sizes, varying by firing lane width and length:

1. MoST-5 – 5 m lane width, either 25, 50, 100 or 200 m long
2. MoST-10 – 10 m lane width, either 25, 50, 100 or 200 m long

The modular design of the MoST system allows the range length to be modified, by the addition or removal of the modules. Each MoST range can also be disassembled and relocated at any time. The standard length of each module is 2.5 m, and the total range length can be changed by adding or removing individual modules

MoST-5

MoST-10

SHOOTING RANGE STRUCTURE

Each MoST shooting range comprises the following modules:

- Logistic module
- Communication module
- Shooting stall module
- Shooting modules
- Bullet trap module
- Ventilation module

All modules exposed to live fire are designed as welded frames, combined with sufficiently strong, hard-wearing steel sheet able to resist piercing. The modules are delivered separately to the installation site, where they are assembled on a level and hard-paved surface, aligned, and combined into a single facility. With the modules assembled, the integrated facility, the side walls and the ceiling surface are lined with façade panels to ensure sufficient thermal and noise insulation performance. The MoST is ready for operation once connected to an electrical power source and furnished with the required fixtures.

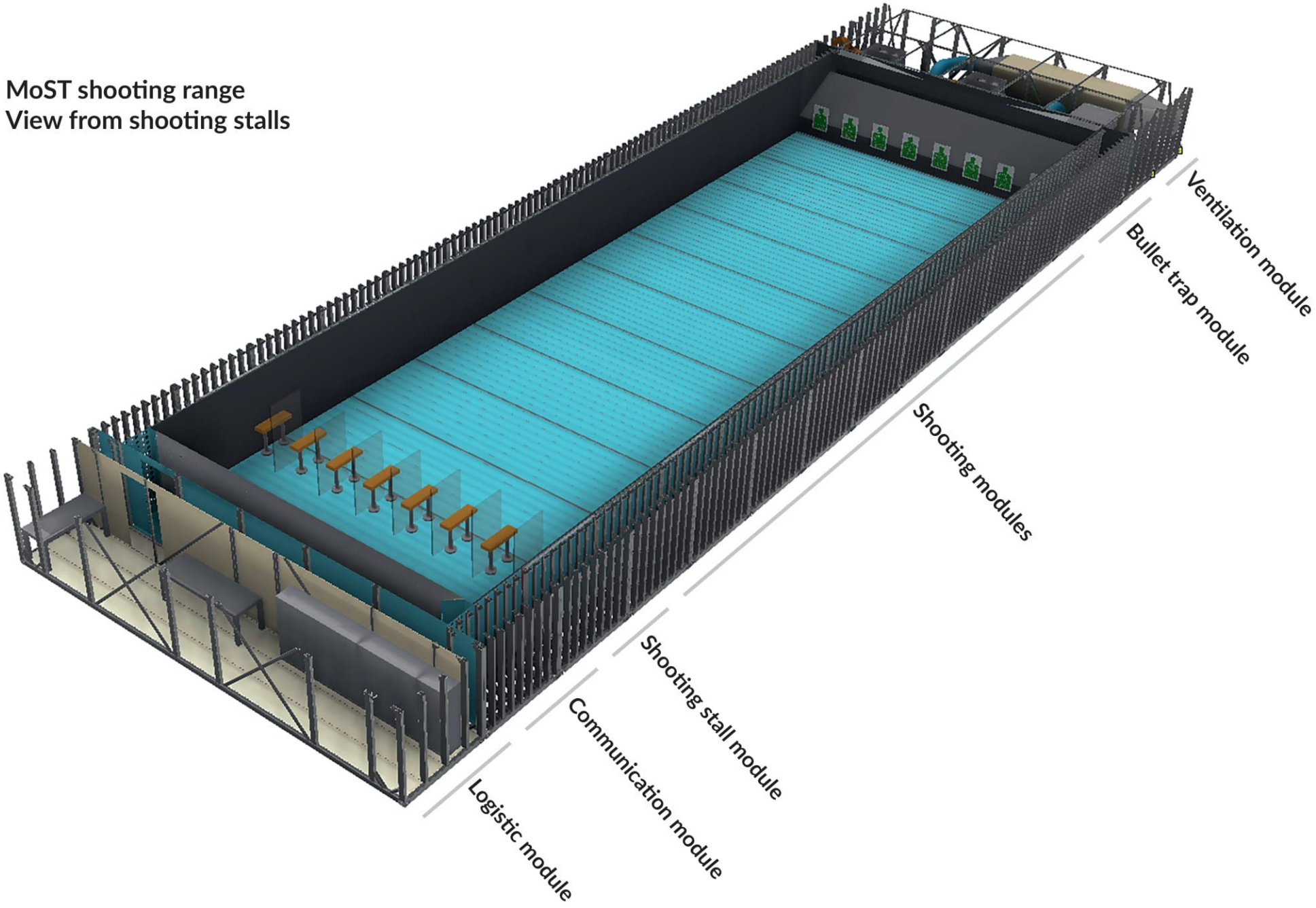
Logistic module

This is the fire control room, and houses the range master's control workstation, including a display unit for viewing the CCTV feeds from the firing lanes, and controls for operating ventilation, lights, sound and other equipment. The logistic module features an external door, and a bulletproof door internal leading to the communication module. The logistic module configuration is customizable, and may be expanded to include a medical station, a briefing room, a locker room, etc.

Communication module

This module provides a passageway between the logistic module(s) and the shooting stand module. The communication module features an Air Wall expansion chamber, which supplies fresh air to the shooting range facility. The internal lining of the module comprises anti-ricochet panels

MoST shooting range
View from shooting stalls



Shooting stall module

This module houses the shooting stand booths, each separated by removable partition walls. Each shooting stand has an overhead lamp and CCTV IP cameras. A target carrier control panel can be installed in each shooting stand. The internal lining of the module comprises anti-ricochet panels.

Shooting modules

The 2.5 m long shooting modules are combined to form the firing lane zone, for firing lanes of 25, 50, 100 or 200 m. The internal lining of the modules comprises anti-ricochet panels. Mobile bullet traps can be supplied and installed in the firing lane zone. When deployed in parallel with both side walls, they create a 180° firing sector; however, armour-piercing, tracer and incendiary rounds cannot be used.

Bullet trap module

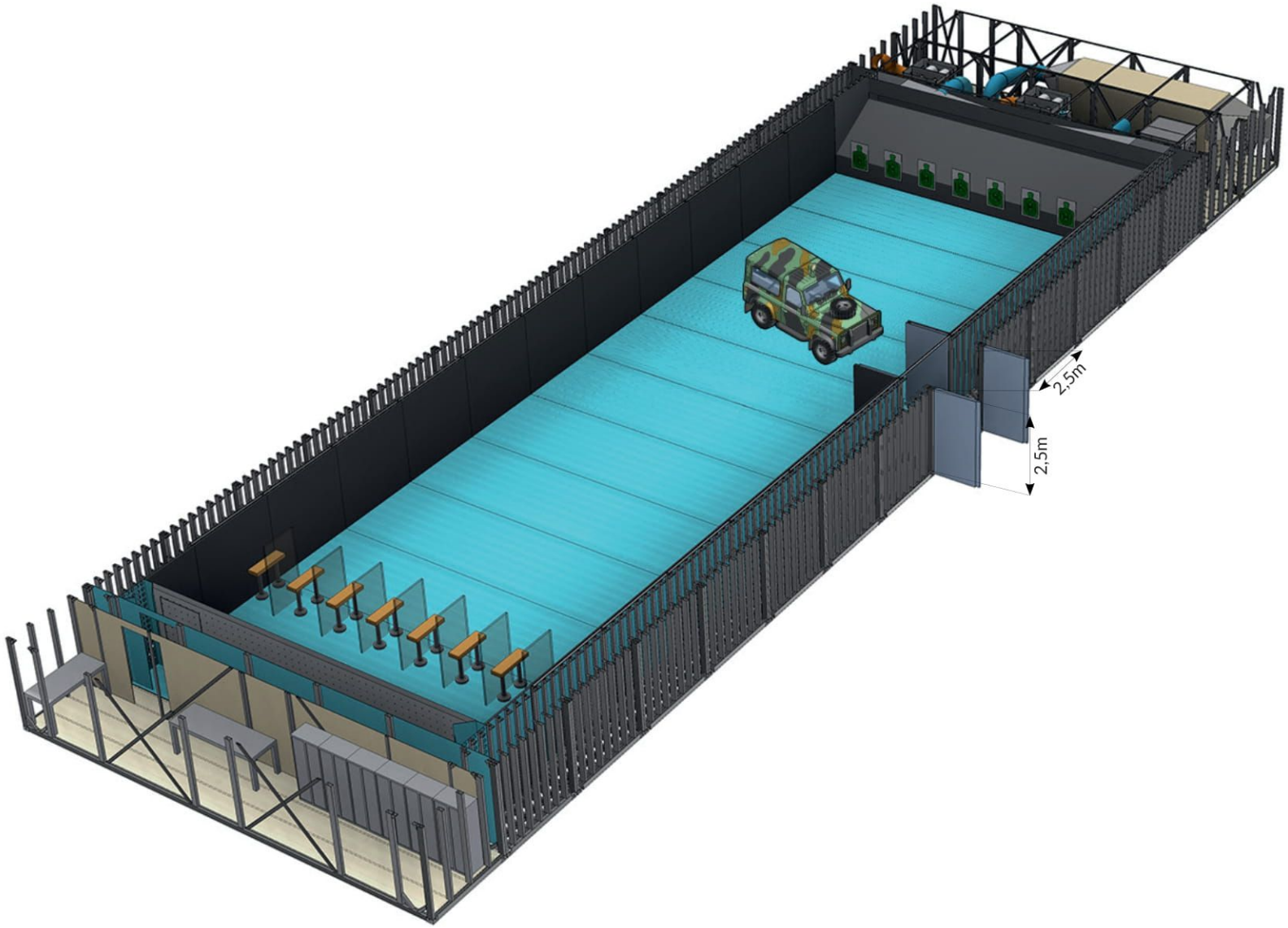
This module features granular bullet trap fitted across the entire module width. The bullet trap module also features pre-installed top and bottom connections for the ventilation ductwork. The internal lining of the module comprises anti-ricochet panels. The granular bullet trap has a capacity of approximately 100,000 shots per firing lane. The bullet traps need periodic maintenance for continued use.

Ventilation module

This module uses two coupled units, each 2.5 m wide. The module houses the heat recovery air supply, exhaust unit and ventilation filter units. The latter have a filter separation efficiency of 99.9%. Aside from its unique air filtration system, the AHU also features heat recovery systems. This significantly improves the energy efficiency of the electric air heating in winter and air conditioning in summer. The automatic controls of the ventilation system maintain steady indoor air parameters and comfort in all seasons.

CAR MODULE

An optional version of the shooting module, available on request. This features a garage-style door through which vehicles or other large objects can be moved in and out of the lane zone.



BALLISTIC FEATURES

The state-of-the-art solutions designed for the MoST system facilitate shooting practice alone, in pairs or in task teams, and are freely configurable. With computer-aided control systems, the ballistic feature can be programmed with various firing scenarios.

The ballistic features comprise:

- Main bullet trap
- Anti-ricochet panels
- An optional target retrieval system (with target carriers, turntables and lifts)
- Main, tactical and emergency lamps
- Audio system
- CCTV system

MoST operating features:

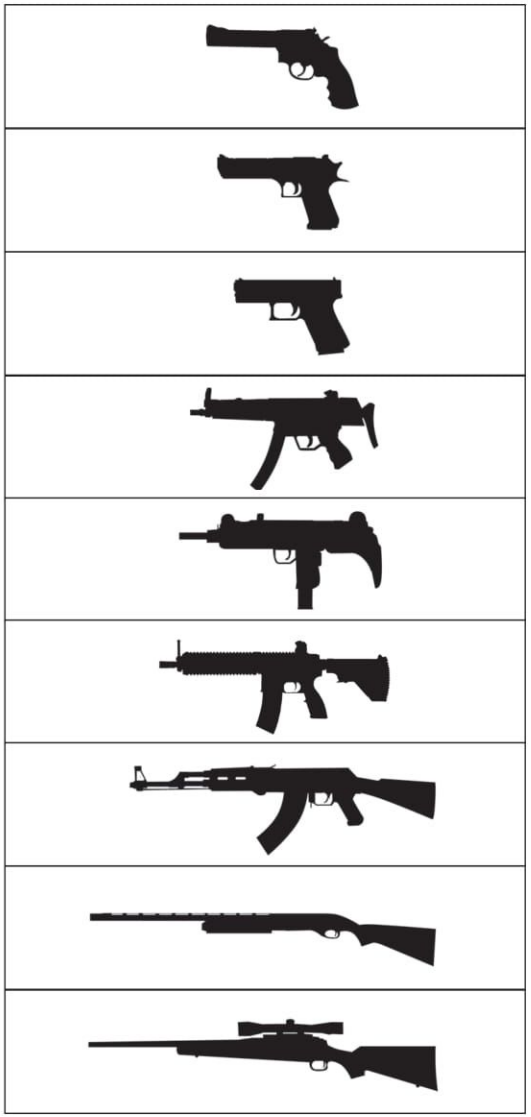
- firing on fixed and moving lanes
- 16° ricochet angle for the maximum safety of the users
- full containment of fired projectiles
- long service life of the bullet traps
- firing live ammunition with a maximum energy of 3600 J;

Target retrieval system

Target carrier:

- projectile hardened
- stepless speed control
- management with PC workstations, tablets, laptop computers, hard-wired control panels, touch screen displays, etc.
- programmable and highly accurate target positioning
- high-quality components for low-noise and reliable operation

MoST-supported firearm types



Turntable:
- projectile hardened
- stepless speed and 360° rotation
- optional tilt arm for targets behind covers
- can be integrated with target carrier systems and target lifts

Lift:
- projectile hardened
- stepless lifting speed control
- programmable lifting height

Tactical lamps

The tactical lamps comprise a system of LED RGB lamp fixtures (providing white and coloured light) installed within the lanes to illuminate the firing zone and the targets.
The LED lamp fixtures with ballistic shielding feature:
- resistance to projectile fire
- management by PC workstations, tablets, laptop computers, hard-wired control panels, touch screen displays, etc.
- stepless brightness adjustment
- strobe mode
- lamp group control

Audio system

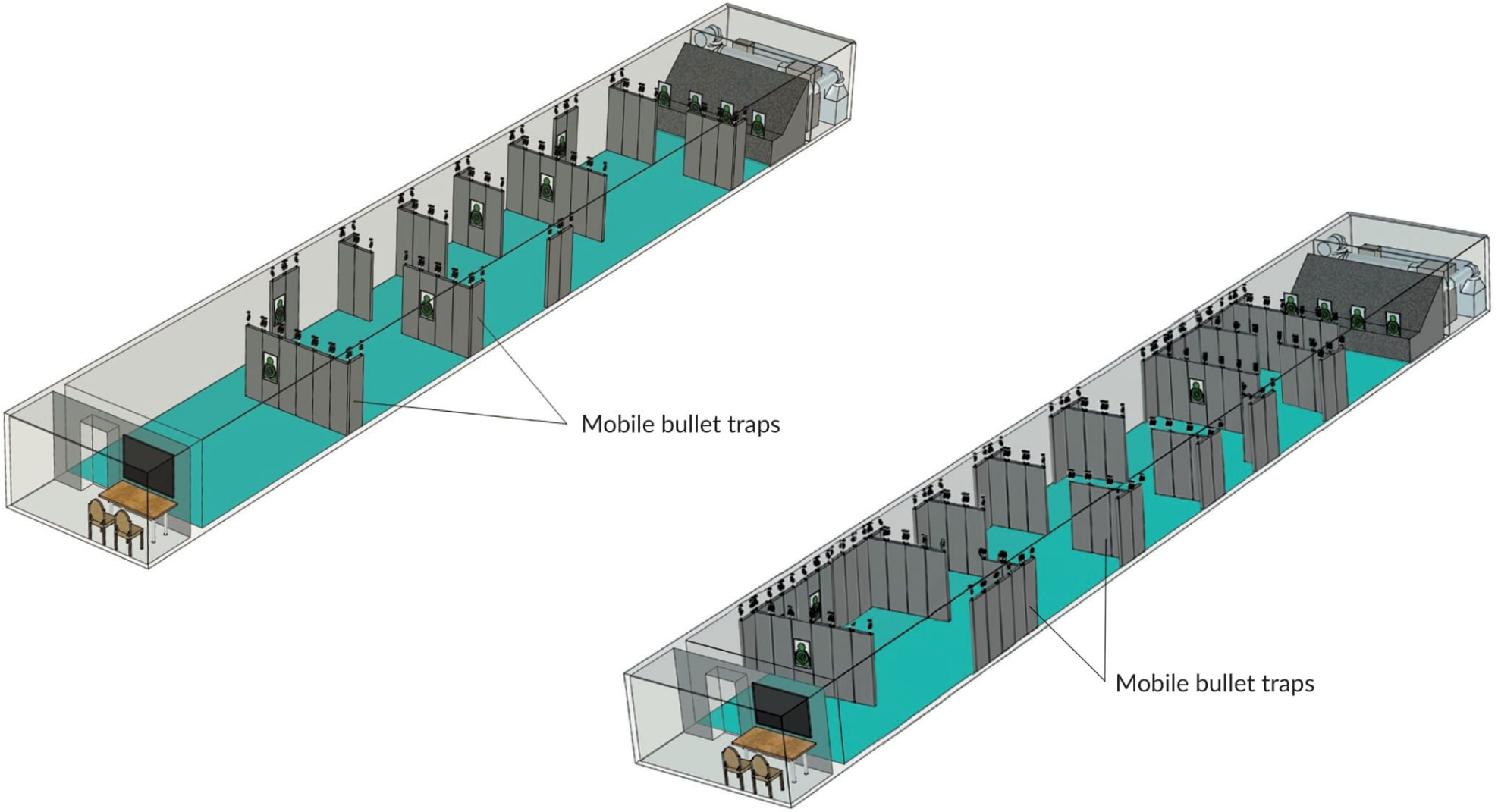
The integrated and fully programmable audio system can output any sound required by the fire scenario.

CCTV system

The CCTV system features:
- visual monitoring of each shooting stand during use
- video recording and playback
- integration of visual cameras for projectile hit location determination

MOBILE BULLET TRAPS WITH “SHOOT HOUSE” OPTION

The optional mobile bullet traps can be deployed in any configuration in the firing zone to create shoot houses for tactical live-fire training. See the configuration shown below.

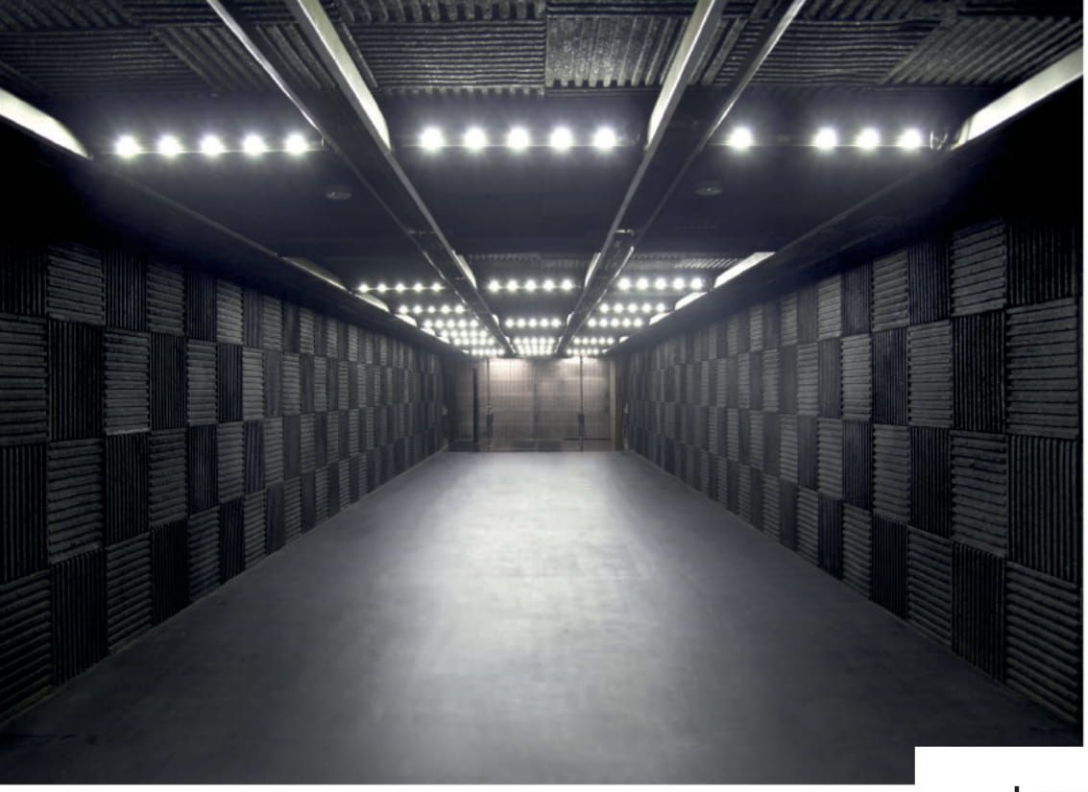


A. MoST TECHNICAL SPECIFICATIONS PER SIZE									
Item	Designation	MoST-5				MoST-10			
		25	50	100	200	25	50	100	200
1	Firing zone size:								
	width [m]	5	5	5	5	10	10	10	10
	length [m]	25	50	100	200	25	50	100	200
	min. height [m]	2.4	2.4	2.4	2.4	2.4	2.4	2,4	2,4
2	Shooting range external dimensions:								
	width [m]	6.5	6.5	6,5	6,5	12.6	12.6	12,6	12,6
	length [m]	40	65	115	215	40	65	115	215
	height [m]	4.4	4.4	4.4	4.4	4.6	4.6	4,6	4,6
3	Peak power [kW]	94	95	120	160	177	179	215	283
4	Shooting range overall weight [t]	140	225	395	734	273	437	766	1425

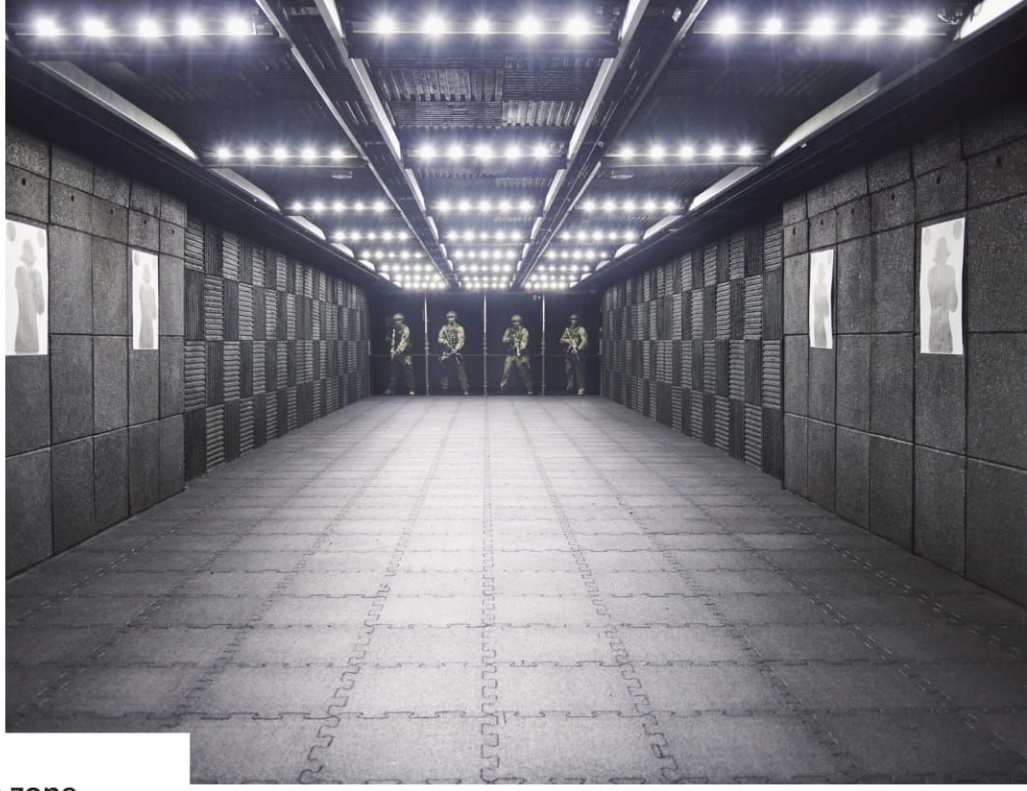
B. BALLISTIC SPECIFICATIONS			
1	Firing zone outer partition structure:	Notes	
	main bullet trap	bulk bullet trap	
	side walls & ceiling	sheet metal + anti-ricochet panels	
	floor	sheet metal, non-slip flooring mats	
2	Safe limit angle (ricochet angle)	16°	
3	Supported firearm and ammunition types	-pneumatic weapon -rimfire pistols and rifles, e.g. .22 LR -rimless pistols and revolvers, e.g. 9 mm NATO, .45 ACP, 10 mm Auto, .44 Magnum -smoothbore shotguns, e.g. 12 gauge -rimless carbines, e.g. 5.56 NATO, 7.62x39 mm (excluding: armour-piercing, tracer and incendiary rounds) -rimless rifles, e.g. 7.62 NATO (excluding: armour-piercing, tracer and incendiary rounds)	
4	Automatic firearm support and limitations	Short-burst fire (up to 5 shots/burst)	
5	Bulk bullet trap cleaning / emptying intervals	MoST-5 400k shots	MoST-10 800k shots

C. HVAC		
1	Filter separation efficiency of indoor and exhaust air	99.9%
2	Air treatment	winter heating, summer cooling, heat recovery

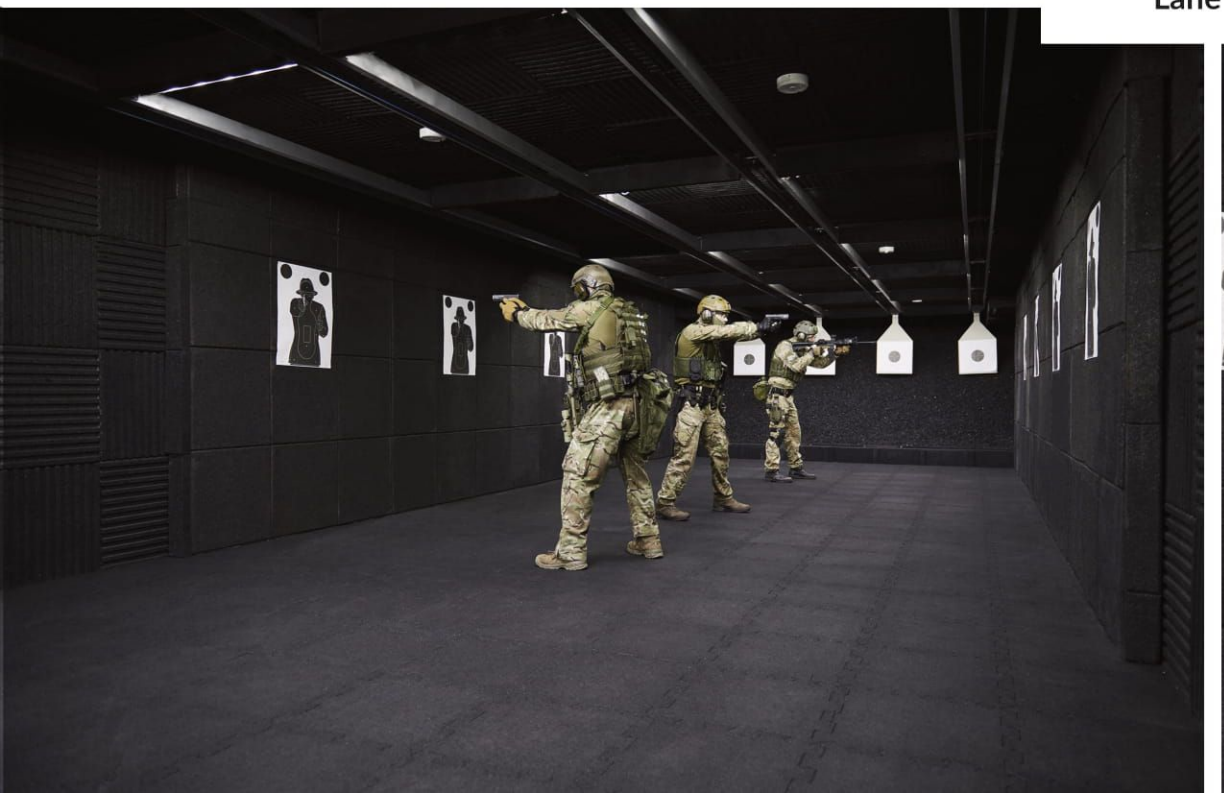
D. NOISE, LIGHT, AND CCTV MONITORING		
1	Outdoor sound pressure level, measured 5 m from the shooting range	55 dB(A)
2	Light types	main lights, tactical lights, and emergency lights
3	CCTV monitoring	Each shooting stand is visually monitored with CCTV IP cameras + video feed recording

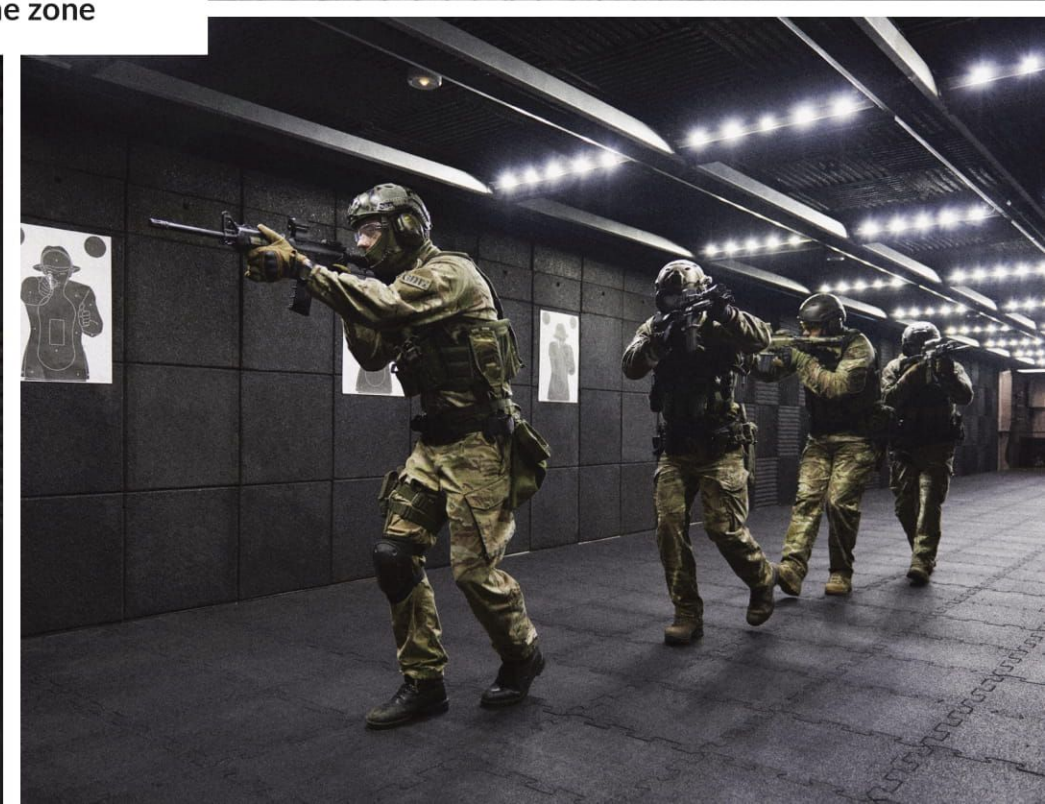


Lane zone



Lane zone





CERTIFICATE AND CONCESSIONS

MINISTER SPRAW WEWNĘTRZNYCH I ADMINISTRACJI

KONCESJA

Nr 8-038/2018

udziela

KLIMAWENT SPÓŁKA AKCYJNA

koncesji

na wykonywanie działalności gospodarczej

DZiK-1-6611-70-1/18/B-038/2018/MK
Warsaw, 03 April 2018

MINISTER OF THE INTERIOR AND ADMINISTRATION CONCESSION
No. B-038/2018

Pursuant to Article 6(1) and Article 7(1) of the Polish Act of 22 June 2001 for Commercial Business in the Manufacture and Trading of Explosives, Firearms and Weapons, Ammunition and Military or Law Enforcement Products and Technologies (Dz.U. 2017.0.290, as amended)

this Office hereby grants to the following:
KLIMAWENT SPÓŁKA AKCYJNA
with its registered office at: ul. Chwaszczyńska 194, 81-571 Gdynia
KRS 0000308902, NIP 9581592135

with the President / CEO: Janusz Tadeusz KASZYŃSKI, as the individual authorized to manage the commercial business under this Concession,

and with the Vice-Presidents / CEOs: Joanna Maria KONIAREK-MAJKOWSKA, as the individual authorized to manage the commercial business under this Concession,
Natalia Anna KASZYŃSKA
Krzysztof Włodzimierz PAJEWSKI
this Concession for Commercial Business in:

• Trade in Ordnance as defined in Sections 1 to 28 of Annex no. 1, Ordnance Types (BA) to the Polish Regulation of the Council of Ministers dated 03 December 2001 and concerning the types of weapons and ammunition and the list of mandatory concession eligible military and law enforcement products and technologies (Dz.U. 2001.145.1625, as amended), without the authorization for ordnance storage;
• Manufacture of Military or Law Enforcement Products identified in Items WT VII, WT XII, and WT XIV; Sections 1, 12, and 13 of Annex no. 2, List of Military and Law Enforcement Products and Technologies (WT) to the same Regulation;
• Trade in Military or Law Enforcement Products identified in Items WT II to WT XIV of the foregoing Annex, coupled with the Storage of the Products and Technologies identified in Items WT VII, XII, XIII, and XIV, Sections 1, 12, and 13.

WOJSKOWY INSTYTUT TECHNICZNY UZBROJENIA
OŚRODEK CERTYFIKACJI
ul. Prym. St. Wyszyńskiego 7, 05-220 ZIELONKA

CERTYFIKAT ZGODNOŚCI Nr Z/27/9/2021

KLIMAWENT S. A.
81-571 GDYNIA, ul. Chwaszczyńska 194

Kulochwyt mobilny KMR-600
Kulochwyt mobilny KMB-600

KIEROWNIK OŚRODKA CERTYFIKACJI
mgr inż. Andrzej BRZYSKI

DYREKTOR
ppłk dr inż. Michał CEREMUGA

Zielonka, dnia 07.07.2021 r.

MILITARY INSTITUTE OF ARMAMENT TECHNOLOGY
CERTIFICATION CENTRE
ul. Prym. St. Wyszyńskiego 7, 05-220 ZIELONKA, POLAND
CERTIFICATE OF CONFORMITY No. Z/27/9/2021
Certificate Holder's name and address:
KLIMAWENT S.A.
ul. Chwaszczyńska 194, 81-571 GDYNIA
Manufacturer's name and address: as above
Product designation:
KMR-600 mobile bullet trap
KMB-600 mobile bullet trap
The designated products meet the requirements specified in Klimawent S.A. Technical Specifications No. 01/05/2018:
• KMR-600 mobile bullet trap: bullet energy level up to 3600 J (including: 9mm PARA; 5.56 NATO; 7.62x39mm; 7.62 NATO; 7.62x54R).
• KMB-600 mobile bullet trap: bullet energy level up to 6600 J (including: 9mm PARA; 5.56 NATO; 7.62x39mm; 7.62 NATO; 7.62x54R; .338 LM LockBase).
This is certified pursuant to the Test Report (and Certificate) produced by: Military Institute of Armament Technology, Testing Laboratory Complex, ref. 27/MON/2017, at the address:
ul. Prym. St. Wyszyńskiego 7, 05-220 Zielonka
Test Report (and Certificate) reference: LBUSO/31/2018, dated 30/05/2018; LBUSO/32/2018 of the 30.05.2021; LBUSO/71/2019 of the 30.09.2019.
The right to use the Certificate issued according to the programme PCW-05 (type 3 according to the standard PN-EN ISO/IEC 17067-2014) within the period from 29.05.2021 to 06.07.2024, concerns exclusively the examples of the product having the characteristics (parameters), as the represented for research representative, and meeting the requirements as represented above. The present Certificate remains valid under the condition that it is observed by the Holder of the Agreement No. 6/2021/D2/11/006 of the 07.07.2021 (Application 6/2021).

HEAD OF THE CERTIFICATION CENTRE
Andrzej BRZYSKI, MSc. Eng.

DIRECTOR
Colonel Dr. Eng. Michał CEREMUGA

Zielonka, 07/07/2021

WOJSKOWY INSTYTUT TECHNICZNY UZBROJENIA
OŚRODEK CERTYFIKACJI
ul. Prym. St. Wyszyńskiego 7, 05-220 ZIELONKA

CERTYFIKAT ZGODNOŚCI Nr Z/27/23/2020/PZ

Nazwa i adres posiadacza certyfikatu:
KLIMAWENT S. A.
ul. Chwaszczyńska 194, 81-571 GDYNIA

Nazwa i adres producenta: j.w.

Nazwa wyrobu:
MODUŁOWA STRZELNICA TAKTYCZNA MoST-5 oraz MoST-10

Wyrób spełnia wymagania zawarte w:
Wymagania techniczne odnośnie modułowych strzelnic taktycznych MoST-5 i MoST-10:
- Wytyczne techniczne producenta;
- Uchwała nr 703 Komendanta Głównego Policji z dnia 14.12.2006 r. w sprawie warunków technicznych jakim powinny odpowiadać policyjne strzelnice treningowe;
- Wytyczne Podsekretarza Stanu w Ministerstwie Obrony Narodowej z dnia 10.03.2016 w sprawie projektowania strzelnic kryte;
- Wytyczne projektowania strzelnic kryte Departamentu Infrastruktury Ministerstwa Obrony Narodowej z 2017 roku;
w zakresie podanym w załączniku do niniejszego certyfikatu.

Zgodnie ze sprawozdaniem / świadectwem z badań wykonanych przez:
Laboratorium Instytutu – Zespół Laboratoriów Badawczych Wojskowego Instytutu Technicznego Uzbrojenia, ul. Prym. St. Wyszyńskiego 7, 05-220 Zielonka

Nr sprawozdania / świadectwa:
LBUSO-95/2017 z dnia 14.11.2017; LBUSO-31/2018 z dnia 30.05.2018;
LBUSO-96/2018 z dnia 21.11.2018; LBUSO-71/2019 z dnia 30.09.2019.

Prawo do podpisania się certyfikatu wyrażam według Programu PCW-05 (typu 3 zgodnie z normą PN-EN ISO/IEC 17067:2014) w okresie od 27.11.2020 r. do 26.11.2023 r. dotyczy wyłącznie egzemplarzy wyrobu posiadających właściwości (parametry) jak przedstawiony do badań reprezentant i odpowiadających wymaganiom powyższych. Certyfikat ważny pod warunkiem przestrzegania przez Posiadacza umowy nr 21/2020/N/D2/820/02 z dnia 27.11.2020 r. (Wniosek 23/2020).

KIEROWNIK OŚRODKA CERTYFIKACJI
mgr inż. Andrzej BRZYSKI

DYREKTOR
płk dr inż. Rafał BAZELA

Zielonka, dnia 27.11.2020 r.

MILITARY INSTITUTE OF ARMAMENT TECHNOLOGY
CERTIFICATION CENTRE
ul. Prym. St. Wyszyńskiego 7, 05-220 ZIELONKA, POLAND
CERTIFICATE OF CONFORMITY No. Z/27/23/2020/PZ
Name and address of the Certificate Holder:
KLIMAWENT S.A.
ul. Chwaszczyńska 194, 81-571 GDYNIA
Name and address of the manufacturer: as aboveProduct designation:
MODULAR TACTICAL SHOOTING RANGE MoST-5 and MoST-10
Hereby the designated product meets the requirements included in:
The technical requirements refering the modular tactic shooting range MoST-5 and MoST-10
- Technical guidelines of the manufacturer;
- Resolution No. 703 of the Chief Police Commander dated 14.12.2006 on technical conditions to be fulfilled by police training shooting ranges;
- Guidelines of the Subsecretary of State in the Ministry of National Defense dated 10.03.2016 on designing of the indoor shooting ranges;
Guidelines for designing of the indoor shooting ranges of the Department of the Infrastructure of the Ministry of National Defense of 2017.
within the scope as specified in the Enclosure to the present Certificate of Conformity.
According to the Report / Testimonial on the research, as executed by:
The Laboratory of the Institute — Testing Laboratory Complex of the Military Institute of Armament Technology, ul. Prym. St. Wyszynskiego 7, 05-220 ZIELONKA
No. of the Report/Testimonial
LBUSO-95/2017 of the 14.11.2017; LBUSO-31/2018 of the 30.05.2018; LBUSO-96/2018 of the 21.11.2018; LBUSO-71/2019 of the 30.09.2019.
The right to exercise this Certificate of Conformity, as issued under the Programme PCW-05 (type 3, ref. the PN-EN ISO/IEC 17067-2014) standard, has been granted a period from 27.11.2020 to 26.11.2023, and applies exclusively to the the product items which feature the performance parameters, identical to the product samples, provided for testing, and meet the foregoing Requirements. The present Certificate of Conformity shall remain valid under the condition that it is observed by the Holder of the Contract No. 21/2020/N/D2/820/02 dated 27.11.2020 (per Application 23/2020).
Head of the Certification Centre
MSc Andrzej BRZYSKI

DIRECTOR
Col. Rafał BAZELA PhD Eng.

Zielonka, 27/11/2020

WOJSKOWY INSTYTUT TECHNICZNY UZBROJENIA
OŚRODEK CERTYFIKACJI
ul. Prym. St. Wyszyńskiego 7, 05-220 ZIELONKA

CERTYFIKAT ZGODNOŚCI Nr Z/27/26/2021/PZ

Nazwa i adres posiadacza certyfikatu:
KLIMAWENT S. A.
81-571 GDYNIA, ul. Chwaszczyńska 194

Nazwa i adres producenta: j.w.

Nazwa wyrobu:
Strzelnica kontenerowa MoST-2

Wyrób spełnia wymagania zawarte w:
1) Wymagania techniczne Klimawent S.A. dla strzelnicy kontenerowej MoST-2, m.in:
- pocisk energii do 3600 J (w tym: 9 mm PARA; 5,56 mm NATO; 7,62x39mm; 7,62 mm NATO; 7,62x54R mm);
- strzelanie seriami;
- wychwytność kulochwytu głównego do 1000 strzałów / dm² dla amunicji 5,56x45mm, 7,62x39 mm;
2) Decyzja nr 703 Komendanta Głównego Policji z dnia 14.12.2006;
3) Wytyczne Podsekretarza Stanu MON z dnia 10.03.2016.

Zgodnie ze sprawozdaniem / świadectwem z badań wykonanych przez:
Laboratorium Instytutu – Zespół Laboratoriów Badawczych Wojskowego Instytutu Technicznego Uzbrojenia, ul. Prym. St. Wyszyńskiego 7, 05-220 Zielonka

Nr sprawozdania / świadectwa: LBUSO/96/2018 z dnia 21.11.2018

Prawo do podpisania się certyfikatu wyrażam według Programu PCW-05 (typu 3 zgodnie z normą PN-EN ISO/IEC 17067:2014) w okresie od 29.11.2021 r. do 28.11.2024 r. dotyczy wyłącznie egzemplarzy wyrobu posiadających właściwości (parametry) jak przedstawiony do badań reprezentant i odpowiadających wymaganiom powyższych. Certyfikat ważny pod warunkiem przestrzegania przez Posiadacza umowy nr 18/2021/D2/11/169 z dnia 28.11.2021 r. (Wniosek 23/2021).

KIEROWNIK OŚRODKA CERTYFIKACJI
mgr inż. Andrzej BRZYSKI

DYREKTOR
płk dr inż. Rafał BAZELA

Zielonka, dnia 29.11.2021 r.

MILITARY INSTITUTE OF ARMAMENT TECHNOLOGY
CERTIFICATION CENTRE
ul. Prym. St. Wyszyńskiego 7, 05-220 ZIELONKA, POLAND
CERTIFICATE OF CONFORMITY No. Z/27/26/2021/PZ
Certificate Holder's name and address:
KLIMAWENT S.A.
ul. Chwaszczyńska 194, 81-571 GDYNIA
Manufacturer's name and address: as above
Product designation: MoST-2 Container Shooting Range
The designated product meets the requirements specified in:
1) Klimawent Technical Requirements for MoST-2 Container Shooting Range, including:
-bullet energy level up to 3600 J (for: 9 mm PARA; 5.56 mm NATO; 7.62x39mm; 7.62 mm NATO; 7.62x54R mm),
-burst fire capability;
-main bullet trap capacity of up to 1000 shots / dm2 for 5.56x45mm and 7.62x39 mm ammunition;
2) Letter of Decision no. 703 by the General Commandant of Police, dated 14/12/2006;
3) Ministry of Defence State Undersecretary Guidelines, dated 10/03/2016
This is certified pursuant to the Test Report (certificate) produced by: Institute Laboratory-Military Institute of Armament Technology Testing Laboratory Complex, at the address: ul. Prym. St. Wyszyńskiego 7, 05-220 Zielonka
Test Report reference: LBUSO/96/2018 dated 21/11/2018,
The right to use the Certificate issued according to the programme PCW-05 (type 3 according to the standard PN-EN ISO/IEC 17067-2014) within the period from 29.11.2021 to 28.11.2024, concerns exclusively the examples of the product having the characteristics (parameters), as the represented for research representative, and meeting the requirements as represented above. The present Certificate remains valid under the condition that it is observed by the Holder of the Agreement No. 18/2021/D2/11/169 of the 28.11.2021 (Application 23/2021).

HEAD OF THE CERTIFICATION CENTRE

Andrzej BRZYSKI MSc. Eng.
MILITARY INSTITUTE OF ARMAMENT TECHNOLOGY

DIRECTOR
Col. Rafał BAZELA PhD Eng.

Zielonka, 29/11/2021

Klimawent S.A. is a Polish manufacturer and provider of industrial ventilation solutions, with 27 years of global excellence. The product range includes a wide selection of filter ventilation solutions, local exhaust ventilation units, AHUs, various fan types, and exhaust gas removal units for motor vehicle testing. The core business includes the production and delivery of HVAC solutions for industrial facilities. It has recently launched a line of container and modular tactical shooting range solutions and mobile bullet traps.
Klimawent S.A. has an in-house design office and an R&D facility, to ensure high levels of innovation for all its equipment and product solutions.

Klimawent S.A. manufactures MoST shooting ranges in partnership with Port Arthur Poland.

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