

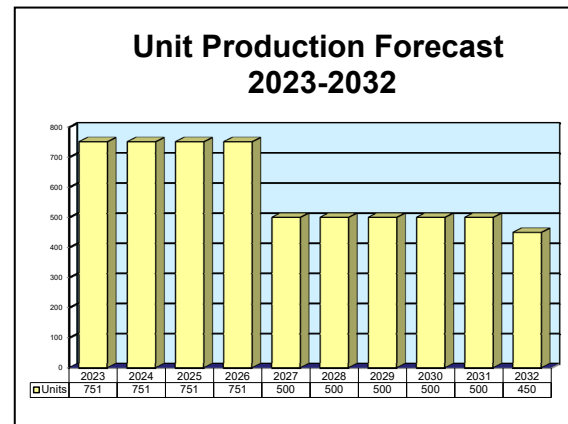
ARCHIVED REPORT

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Alcotan-100

Outlook

- Initial serial production for Spanish Army ended in 2007
- December 2012: Peru orders an unspecified quantity of Alcotan-100 weapons; this order represents the first reported export sale of the Alcotan-100
- Forecast reflects ongoing production for possible export and anticipated Spanish Army follow-on procurement



Orientation

Description. A man-portable anti-armor and bunker-busting weapon.

Sponsor. The prime contractor initially pursued the program as a private venture.

The Spanish Ministry of Defense, Directorate General for Defense Armament & Materiel, currently sponsors development and Spanish Army procurement of the Alcotan-100.

Status. Development through serial production.

Total Produced. Through 2022, we estimate the prime contractor produced at least 61,248 Alcotan-100 munitions.

Application. A lightweight, man-portable, shoulder-fired anti-armor and multipurpose weapon system, optimized for use by infantrymen on the move.

The Alcotan-100 launcher is disposable after firing; the operator retains the fire control mechanism for re-use.

Price Range. In 2023 U.S. dollars, the complete Alcotan-100 system (container/launch tube with munition and fire control component) reportedly maintains a unit price of \$11,657.

An individual tandem-warhead munition (in the disposable container/launch tube) costs \$3,502.

Contractors

Prime

| | |
|---------------------|--|
| Instalaza SA | http://www.instalaza.es , Monreal 27, Zaragoza, Spain, Tel: + 34 976 2934 23, Fax: + 34 976 2993 31, Email: instalaza@instalaza.es , Prime |
|---------------------|--|

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Subcontractor

| | |
|---|--|
| General Dynamics European Land Systems, Santa Bárbara Sistemas | http://www.gdels.com, Via de los Poblados 3, PE Cristalia Edificio 7/8, Madrid, Spain, Tel: + 34 91 585 04 55, Fax: + 34 91 585 02 18, Email: info.sbs@gdels.com (Alcotan-100 Warhead Development) |
| RUAG MRO Holding Ltd | http://www.ruag.ch, Allmendstrasse 86, Thun, Switzerland, Tel: + 41 58 467 06 00, Email: info.defence@ruag.com (Tandem Warhead) |

Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 75 Glen Road, Suite 302, Sandy Hook, CT 06482, USA; rich.pettibone@forecast1.com

Technical Data

Design Features. The Alcotan-100 weapon system consists of two basic components:

- A detachable fire control component
- A disposable container/launcher, containing the 100mm munition

The Alcotan-100 is a recoilless weapon operating on the Davis principle, enabling the infantryman to fire it from an enclosed space.

Dimensions. The following data reflect the Alcotan-100 launcher. The total diameter is for the launch tube only.

| | <u>SI Units</u> | <u>U.S. Units</u> |
|---------------------|-----------------|-------------------|
| Projectile length | 127 cm | 50.0 in |
| Total length | 135 cm | 53.15 in |
| Projectile diameter | 100 mm | 3.94 in |
| Total diameter | 115 mm | 4.53 in |
| Projectile weight | 9.02 kg | 19.86 lb |
| Total weight | 13.98 kg | 30.79 lb |

Performance. The range data reflect the maximum effective anti-armor range. The armor perforation data reflect our standardized formula for chemical (HEAT) warheads. As the standard Alcotan-100 warhead is a tandem HEAT type, the actual armor perforation performance probably exceeds our estimation.

| | <u>SI Units</u> | <u>U.S. Units</u> |
|-------------------|-----------------|-------------------|
| Speed | 265 m/sec | 869.41 ft/sec |
| Altitude | Line of sight | Line of sight |
| Range | 600 m | 656.16 yd |
| Armor perforation | 63.2 cm | 24.88 in |

Propulsion. All Alcotan-100 munitions employ a common solid-fuel rocket motor. The launch component burns out before the projectile leaves the launch tube. Upon exiting the launch tube, a sustainer motor ignites.

Launcher Mode. The disposable Alcotan-100 container/launcher tube is most likely composed of reinforced aramid resin.

Control & Guidance. The Alcotan-100 features a Voxel electronic fire control component, which the operator attaches to the launcher tube prior to firing. This component incorporates a day/night 4x vision unit with an aiming point capability. The unit includes:

- A laser rangefinder
- A transverse velocity measuring component
- A telemetry component
- An ammunition interface unit
- A computer
- A control component with keyboard

After exiting the launch tube, the rocket munition most likely deploys a number of fins that aerodynamically stabilize the projectile. The munition is otherwise unguided during its flight to the target.

Warhead. Three Alcotan-100 warhead options are currently available:

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- TANDEM, a tandem HEAT shaped-charge warhead optimized for use against explosive reactive armor. RUAG developed this warhead especially for the Alcotan-100.
- BV, a HEAT warhead with a fragmentation component, optimized for light vehicles and personnel.
- ABK, another tandem warhead, optimized for use against bunkers and other structures.

Warhead development reportedly continues as of this writing.



Alcotan-100 Weapon System

Source: Instalaza SA

Variants/Upgrades

Variants. Other than for warhead options, the prime contractor has not developed any distinct variants of the Alcotan-100. Instalaza is reportedly contemplating the development of an off-route mine system based on the Alcotan-100.

In the future, the prime contractor may develop new rocket-based munitions for the Alcotan-100. There is also a remote chance that Instalaza will introduce an improved fire control system in the long term of the forecast period.

Modernization and Retrofit Overview. Generally not applicable at this time. Instalaza incorporates product improvements as production cut-ins.

Program Review

Background. In 1991, Instalaza SA, a Spanish firm with well over four decades of experience in the armaments industry, began the private development of a new anti-armor/multipurpose weapon to meet a Spanish Defense Ministry requirement for a new shoulder-launched anti-tank weapon system.

Spanish Army commenced operational evaluations about a year later. Low-rate serial production for Spanish Army procurement began in 1999.

An Industry Leader

The Alcotan-100 development program ran through the 1990s; manned firings reportedly began in 1995. The

Instalaza's experience in this industry dates back to 1951. Perhaps the most famous Instalaza weapon is the 88.9mm Model 65 rocket launcher. This lightweight

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multipurpose weapon is now in its third decade of service in Spain and in at least 13 other nations. Instalaza also continues to produce the C-90 series of light anti-armor/multipurpose weapons. For more information on this weapon system, see the 'C-90 Series' report in this service.

Description. The Alcotan-100 is a lightweight, easy-to-use modular-design weapon system. The system is especially rugged for a weapon of this type. The container/launcher is a factory-loaded component, consisting of the munition in a disposable tube (most likely reinforced synthetic aramid resin) with sealed ends to protect the munition. The container/launcher requires no maintenance.

Reusable FCU & Disposable Tube

The operator attaches the reusable fire control component to the launch tube before firing. This device, known as the Vosel fire control unit (FCU), features a computer that accepts inputs from the laser rangefinder, a traverse velocity-measuring component, and an ammunition interface that identifies the type of munition in the launch tube and monitors the temperature. The computer calculates the aim point and projects it in the 4x sight reticle of the day/night vision unit.

When the operator squeezes the trigger, the fire control unit sends the command to the munition, firing the weapon. Concurrently, the FCU activates the warhead fuze. The Vosel FCU gives the weapon a much higher probability of a hit. The rocket munitions also feature a self-destruct fuze that activates after a preset time.

Sequence of Operation

Although one person can operate the weapon, Instalaza designed the Alcotan-100 as a two-person weapon system. After removing the protective end caps from the

launcher tube, the crew attaches the Vosel FCU. The operator acquires the target through the day/night optical sight and uses the laser rangefinder to determine the range. After deactivating the safety, the operator fires the weapon through the Vosel device.

The first component of the solid-fuel rocket ignites pyrotechnically in a few milliseconds. It burns out before the projectile leaves the launch tube, preventing injury to the operator. Once the munition leaves the launch tube, a sustainer rocket ignites, propelling the warhead out to a range of 600 meters (656.16 yd).

Competitive, but Unproven

Despite the glut of man-portable anti-armor weapons today, the Alcotan-100 appears to have the potential to make an impact on the international market. While Instalaza may not enjoy the name recognition of many other companies in this market, the contractor has produced a series of serviceable, cost-effective weapons that have enhanced Instalaza's reputation and market position.

The Alcotan-100 is technologically comparable to any similar system competing on the international market. Indeed, in terms of technical sophistication, it is better than most. Firing the TANDEM warhead, the Alcotan-100 can defeat most modern tanks with advanced armor, including explosive reactive armor (ERA). The Alcotan-100 is also quite capable of holding its own in several other mission areas, including bunker-busting. However, the Alcotan-100 lacks a proven operational record. We are currently unable to confirm whether Spanish troops have ever employed the Alcotan-100 in combat.

Without a proven combat record, the Alcotan-100 may be unable to realize its sales potential on the international market.

Funding

The prime contractor initially funded development of the Alcotan-100 as a private venture. The Spanish Ministry of Defense later funded further development and Spanish Army procurement of this weapon system.

Worldwide Distribution/Inventories

Export Potential. The Alcotan-100 appears to be a versatile and effective weapon system that should be very competitive on the international market. Yet it remains hindered by the apparent lack of a proven operational record. We have not yet been able to confirm whether Spanish troops employed the Alcotan-100 in combat during Operation Iraqi Freedom. Without a proven combat record, the Alcotan-100 may be unable to realize its sales potential on the international market.

Alcotan-100

In December 2012, open-source reporting indicated that Peru had ordered an unspecified quantity of Alcotan-100 weapons. This order represents the first reported export sale of the Alcotan-100.

Countries. Peru and Spain.

Forecast Rationale

With its unit price and technological sophistication, the Alcotan-100 remains firmly within the high end of the man-portable anti-armor weapon market. However, despite its technical merits and the steadily improving reputation of Instalaza, the Alcotan-100 faces an already inundated international market and a domestic market limited in size.

Peru: The First Export Customer

In December 2012, open-source reporting indicated that the Peruvian Army had ordered an unspecified quantity of Alcotan-100 weapons. This order represents the first reported export sale of the Alcotan-100. The Forecast International Weapons Group estimates Peru may procure as many as 2,700 Alcotan-100 weapons.

Unproven Asset

Combat operations in Afghanistan highlighted the infantryman's need for lightweight, shoulder-fired weapons that are effective against a variety of targets. The Alcotan-100 and its associated line of munitions are particularly well suited to fill this need.

Moderate Production Expected

Serial production for the initial Spanish Army procurement contract was completed in 2007. Regardless of the Alcotan-100's export potential, we expect production to continue at a moderate level for possible Spanish Army follow-on orders.

Ten-Year Outlook

| ESTIMATED CALENDAR YEAR UNIT PRODUCTION | | | | | | | | | | | | |
|--|-----------------|------|------|------|------|-----------------|------|------|-------------|------|------|-------|
| Designation or Program | High Confidence | | | | | Good Confidence | | | Speculative | | | Total |
| | Thru 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | |
| Instalaza SA | | | | | | | | | | | | |
| Alcotan-100 Tube | | | | | | | | | | | | |
| | 61,248 | 751 | 751 | 751 | 751 | 500 | 500 | 500 | 500 | 500 | 450 | 5,954 |
| Total | 61,248 | 751 | 751 | 751 | 751 | 500 | 500 | 500 | 500 | 500 | 450 | 5,954 |