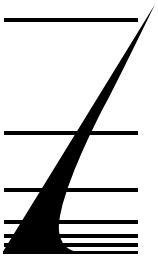
# The Market for Self-Propelled Artillery Systems

Product Code #F653



A Special Focused Market Segment Analysis by:



FORECAST INTERNATIONAL

# Analysis 1
# The Market for Self-Propelled Artillery Systems
# 2011 - 2020

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# PROGRAMS

The following reports are included in this section: (**Note:** a single report may cover several programs.)

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K9 155mm Self-Propelled Howitzer
M109 155mm Self-Propelled Howitzer
Panzerhaubitze 2000 155mm Self-Propelled Howitzer
Raad-1 122mm and Raad-2 155mm Self-Propelled Howitzers
SP-120 (2S31) Vena 120mm Self-Propelled Gun
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Type 88 (PLZ45) 155mm Self-Propelled Howitzer
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# Introduction

Over the past three centuries, conventional tube artillery has played a key role in all of the major conflicts in the world, as well as in many of the smaller brush wars. Despite the emergence of tactical missiles and guided "smart" munitions, conventional tube artillery continues to offer an unmatched capability to deliver large amounts of munitions accurately on the battlefield.

During Operation Iraqi Freedom, the dust storms of March 2003 effectively neutralized and preempted most guided, air-launched munitions. Yet, conventional tube artillery soldiered on through the storms, delivering fire when and where the infantryman needed it.

## *M109A6 Paladin as a Unique Player*

Operation Iraqi Freedom/Operation New Dawn (2003-present) has clearly demonstrated the continuing utility of self-propelled artillery in general and the 155mm M109A6 Paladin in particular. While the M109A6 may not be the most state-of-the-art system available, it just might be the most dependable system of its class, boasting a proven combat record.

The center of gravity for the M109 program worldwide has shifted to the modernization and retrofit of existing howitzers. The U.S. Army's M109A6 Paladin program involves the ongoing rebuild of existing weapons systems to the A6 configuration, under the Howitzer Improvement Program II (HIP II) and the Paladin Integrated Management (PIM) programs.

The Forecast International Weapons Group does not currently factor modernization and retrofit programs into market analyses, limiting our forecast calculations to new-production systems only. Consequently, the M109A6 Paladin rebuild program, which is so complete that the end system is virtually a new-production item, remains effectively transparent to this analysis.

With the demise of the XM2001 Crusader program and the Non-Line-of-Sight Cannon (NLOS-C), the M109A6 Paladin will remain the first-line 155mm self-propelled howitzer in U.S. Army service throughout the forecast period.

In the near term, the primary field artillery assets of the U.S. Army's new modular brigade combat teams will be the M109A6 Paladin and the towed 155mm M777A2 Joint Lightweight Howitzer. In addition, the 105mm Stryker Mobile Gun System (MGS) is now replacing existing field artillery assets in the Stryker Brigade Combat Team (SBCT) table of organization and equipment (TO&E).

**Historical Perspective.** In the three-century history of conventional tube artillery, the worldwide trend toward self-propelled artillery systems is a relatively recent phenomenon. Lagging somewhat behind the main battle tank, the self-propelled howitzer made its debut too late to see action in the First World War.

## *Tentative First Steps*

In 1918, Renault introduced its prototype Char Canon 75 as the world's first self-propelled howitzer. The vehicle was simply a stripped-down FT17 light tank, mounting a 75mm M1897 gun on a primitive superstructure in place of the tank hull. The French Army ultimately abandoned the Char Canon 75 after testing a few prototypes during the 1920s.

In 1925, the United Kingdom became the next country to dabble in the field of self-propelled artillery, with the testing of the Woolwich Arsenal Birch Gun in 1925. The Birch Gun design mounted an 18-pounder Gun Mark 5 on a modified Vickers medium tank chassis. Between 1925 and 1928, the British Army's Experimental Mobile Force tested three versions of the Birch Gun before the British Army abandoned the self-propelled gun project and disbanded the Experimental Mobile Force.

## *The Concept Matures*

The Second World War provided the long-absent impetus and funding for serious development of self-propelled artillery systems. As with so many other weapons systems, Germany led the way with a wide variety of self-propelled artillery designs, primarily consisting of various artillery pieces mounted on modified Panzerkampfwagen Mk III or Mk IV tank chassis. In 1940, Rheinmetall-Borsig introduced the 540mm Karl Gerät. Subsequent combat-proven designs included the 150mm Brummbär (1943), the 150mm Hummel (1943), and the 75mm Hetzer (1944).

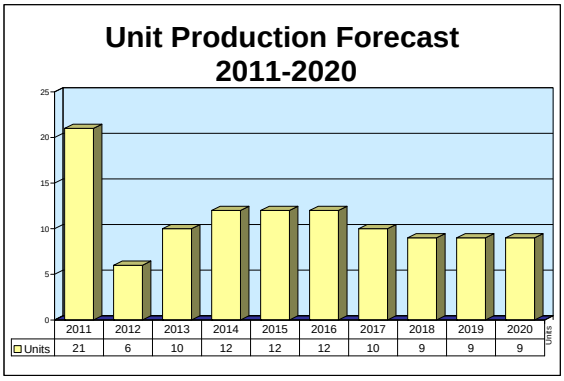
The United States fielded its first attempt at a practical self-propelled artillery system in 1940 with the introduction of the GMC-Autocar M3 75mm self-propelled gun. While this was hardly a sophisticated design (mounting a 75mm howitzer on an M3 half-track), it holds the distinction of being the U.S. Army's first self-propelled artillery system to see combat. A handful of the initial November 1941 issue of these weapons systems successfully engaged Japanese light tanks in the Philippines prior to the fall of

**Continued…**

# CAESAR 155mm Self-Propelled Howitzer

## Outlook

- December 2004: French Army orders 72 CAESAR systems; first delivery occurs in July 2008
- August 2009: French Army deploys eight-tube CAESAR battery to Afghanistan
- Production forecast reflects the French Army's initial procurement of 72 systems, the Saudi Arabian National Guard's order for 80 systems, and other export sales




## Orientation

**Description.** A wheeled 155mm self-propelled artillery system.

**Sponsor.** Giat Industries (now operating as Nexter) initiated the CAESAR as a private venture.

The French Ministry of Defense, through the French Army, assumed sponsorship of the CAESAR program in 1999.

**Licensees.** None

**Status.** Development through initial low-rate serial production.

**Total Produced.** Through 2010, we estimate the prime contractor produced three prototypes and 102 operational CAESAR systems.

**Application.** Mobile indirect fire artillery support for maneuver forces at the battalion through division levels.

**Price Range.** In 2011 U.S. dollars, the CAESAR reportedly maintains a unit price of $2.27 million.

## Contractors

### Prime

| | |
|---|---|
| **Nexter** | http://www.nexter-group.fr, 13, rue de la Minière, Versailles, 78034 France, Tel: + 33 1 30 97 37 37, Fax: + 33 1 30 97 39 78, Email: presse@nexter-group.fr, Prime |

### Subcontractor

| | |
|---|---|
| **Air Precision SA** | http://www.airprecision.com, 5, avenue Denis Papin, BP 35, Le Plessis-Robinson, 92393 France, Tel: + 33 01 46 01 21 24, Fax: + 33 01 46 31 85 25, Email: sales@airprecision.com (Electrical Slip Ring Assemblies) |
| **Behr Industry GmbH & Co KG** | http://www.behrgroup.com, Heilbronner Strasse 380, Stuttgart, 70469 Germany, Tel: + 49 711 896 0, Fax: + 49 711 896 3075, Email: behrindustry@behrgroup.com (Vehicle Air Conditioning System) |
| **European Aeronautic Defence and Space Co (EADS) NV** | http://www.eads.com, Mendelweg 30, Leiden, 2333 CS Netherlands, Tel: + 31 71 52 456 00, Fax: + 31 71 52 328 07 (CS 2002-G Ballistic Computer) |
| **Honeywell-LMB** | http://www.lmbsa.com, 36 avenue Pierre et Marie Curie, Malemort-sur-Correze, 19360 France, Tel: + 33 5 55 92 16 33, Fax: + 33 5 55 92 19 00, Email: lmbsa@honeywell.com (Fans and Blowers) |

## CAESAR 155mm Self-Propelled Howitzer

| | |
|---|---|
| **Intertechnique** | http://www.intertechnique.fr, 61 rue Pierre-Curie, BP 1, Plaisir Cedex, 78373 France, Tel: + 33 1 30 54 82 00, Fax: + 33 1 30 55 71 61 (RDB4 Muzzle Velocity Radar) |
| **Renault Trucks** | http://www.renault-trucks-defense.com, 99 Rte de Lyon, Saint-Priest Cedex, 69802 France, Fax: + 33 4 72 96 27 63 (Sherpa 5 Truck Chassis) |
| **Sagem** | http://www.sagem-ds.com, Le Ponant de Paris, 27, Rue Leblanc, Paris, 75015 France, Tel: + 33 1 58 11 78 00, Fax: + 33 1 58 11 78 50 (Sigma 30 Positioning System) |
| **Thales Communications** | http://www.thalesgroup.com/Markets/Defence/, 1/5 Avenue Carnot, Massy, 91883 France, Tel: + 33 69 75 50 00, Fax: + 33 69 73 30 01, Email: supportline@fr.thalesgroup.com (ATLAS Fire Control System) |

Comprehensive information on Contractors can be found in Forecast International's "International Contractors" series. For a detailed description, go to www.forecastinternational.com (see Products & Samples/Governments & Industries) or call + 1 (203) 426-0800.

Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 22 Commerce Road, Newtown, CT 06470, USA; rich.pettibone@forecast1.com

# Technical Data

**Special Note.** In 2005, we learned the serial-production CAESAR artillery system mounts on the purpose-built Renault Sherpa 5 truck chassis.

**Design Features.** The CAESAR is a wheeled self-propelled artillery system. Use of a 6x6 truck chassis provides a high degree of cross-country mobility; the CAESAR is also air transportable via C-130 tactical transport aircraft. The 52-caliber ordnance conforms to the latest NATO ballistics standards.

**Crew.** Six: commander, driver, gunner, loader, and two ammunition handlers. One gun crew member may double as the vehicle driver, reducing the overall crew requirement to five.

**Muzzle Brake.** Double-baffle.

**Recoil System.** Hydro-pneumatic.

**Breech Mechanism.** Interrupted screw stepped-thread.

**Ammunition.** The CAESAR is compatible with all patterns of NATO-standard 155mm ammunition and charge systems. The new 155mm rounds developed by Giat Industries are also compatible with the CAESAR system.

**Dimensions.** The following data reflect the operational CAESAR system, mounted on a Renault Sherpa 5 truck chassis. Height is measured with main armament lowered in travel position.

| | SI Units | U.S. Units |
|---|---|---|
| Length overall | 10.00 m | 32.81 ft |
| Width | 2.55 m | 8.36 ft |
| Height | 3.70 m | 12.14 ft |
| Combat weight | 17.68 tonnes | 19.48 tons |
| Fuel capacity | 230 l | 61.2 gal |
| Ordnance caliber | 155 mm | 6.10 in |
| Ordnance length | 52-cal/8.06 m | 52-cal/26.44 ft |

**Performance.** The maximum range and speed data reflect the Renault Sherpa 5 on hard earth. The cannon range is with the Extended Range Full Bore/Base Bleed (non-assisted) projectile. The cab-off depression is 0 degrees. The maximum burst rate of fire is three rounds in 18 seconds.

| | SI Units | U.S. Units |
|---|---|---|
| Maximum speed | 96 km/h | 59.65 mph |
| Maximum range | 850 km | 528.19 stat mi |
| Step | 50 cm | 1.64 ft |
| Trench | 90 cm | 2.95 ft |
| Slope | 40% | 40% |
| Gradient | 60% | 60% |
| Fording | 1.2 m | 3.94 ft |
| Elevation | +66 deg | +66 deg |
| Depression | +17 deg | +17 deg |
| Traverse (total) | 17 deg left and right | 17 deg left and right |

| | SI Units | U.S. Units |
|---|---|---|
| Maximum ordnance range | 42.0 km | 45,931.2 yd |
| Maximum rate of fire | 6 rpm | 6 rpm |
| Sustained rate of fire | 3 rpm | 3 rpm |

**Engine.** Euro-4 liquid-cooled four-cylinder diesel engine. This powerplant generates 158 kilowatts (211.72 hp), with a power-to-weight ratio of 8.94 kilowatts per tonne (10.87 hp/ton). The 24-volt electrical system features two 12-volt/125-ampere-hour batteries.

**Gearbox.** A 4106 OD manually operated unit, with one reverse and eight forward gear ratios. The vehicle features a hydraulically assisted steering system.

**Suspension and Running Gear.** The Sherpa 5 is an all-wheel-drive 6x6 vehicle. A central tire pressure regulating system maintains the run-flat 14.5xR20 tires. The vehicle uses a pneumatically operated brake system.

**Fire Control.** As the CAESAR is an indirect fire system, targeting data originate with the forward observer, passing through a fire direction center command post before reaching the individual CAESAR platform via the PR4G very high frequency (VHF) frequency-hopping radio. Otherwise, the CAESAR is an autonomous system, featuring a digital fire control suite based on the SAGEM Sigma 30 positioning system with a Global Positioning System (GPS) component. This equipment mounts directly on the ordnance.

An Intertechnique RDB4 muzzle velocity radar mounts over the 52-caliber ordnance; the radar feeds information to the EADS CS 2002-G ballistic computer. The computer integrates input from several sources and calculates the fire control solution; it can also display identification and other situational data. The CAESAR also mounts a telescopic sight for direct fire.

The CAESAR fire control suite also features the Thales Automatisation du Tir et de Liaisons de l'Artillerie Solsol (ATLAS) fire control system, integrated with the Sigma 30 positioning system and the CS 2002-G ballistic computer.

CAESAR 155mm Self-Propelled Howitzer

Source: French Ministry of Defense

# Program Review

**Background.** In the late 1980s, Giat Industries began to privately develop a high-mobility and high-ballistic-performance 155mm self-propelled artillery system to augment and possibly replace existing towed artillery. Specifically, Giat explored mounting its 39-caliber 155 TR system (in French Army service as a towed artillery piece) on a vehicular platform. By integrating a vehicle platform with the existing 155 TR ordnance, mount, and associated components, Giat could field a much more capable system for a relatively low unit price.

### *Opting for a Wheeled Platform*

In developing its concept for a new high-mobility self-propelled artillery system, the contractor opted for a wheeled platform as the best choice in terms of mobility, purchase price, and operating costs. Despite the wide variety of French vehicle designs available, the contractor selected the well-proven DaimlerChrysler (Mercedes) Universal Motor Gerät, better known as the UNIMOG, as the initial CAESAR platform.

## CAESAR 155mm Self-Propelled Howitzer

By 1991, Giat/Lohr had developed a technology demonstration system, based on an unmodified U 2450 L truck and the 52-caliber version of the 155 TR ordnance; this demonstrator made its debut at the Eurosatory weapons fair in June 1994. Giat subsequently produced two succeeding prototypes and five systems for operational evaluation by the French Army.

### *A New Platform*

DaimlerChrysler took the UNIMOG U 2450 L out of production after Giat completed the initial five operational evaluation systems. In mid-2005, Giat selected the purpose-built Renault Sherpa 5 truck chassis as the production-standard vehicular platform for the CAESAR system.

The new system carries the official designation Camion Equipé d'un Système d'Artillerie, but this system is generally known by its acronym, CAESAR.

### *Corporate Evolution*

In October 2006, Giat Industries approved a reorganization and an associated name change to Nexter. Under the restructuring, the group maintained four core operations:

- Nexter Systems
- Nexter Munitions
- Nexter Electronics
- Nexter Mechanics

The move was intended to better prepare the firm for consolidation in the near future, possibly with either Thales or EADS.

**Description.** The CAESAR vehicle platform features an armored cab, which seats the six-man crew. The air-conditioned cab features steel armor, affording protection from 7.62mm small arms projectiles; the windows are 26 millimeters (1.02 in) thick. A central tire-pressure-regulation system adds to the already high degree of mobility of the 6x6 truck chassis.

The 155mm 155 TR ordnance system mounts on the rear bed of the truck. During travel, a clamp mounted on the rear of the cab secures the 52-caliber barrel in a forward-pointing position. At the firing location, a hydraulically operated spade at the rear of the vehicle lowers, raising the rear wheels clear of the ground and supporting the entire system during recoil. The CAESAR can be configured for firing or be reconfigured for travel in about one minute.

The ordnance features an automatically operating screw-breech mechanism and automatic primer feed mechanism. Projectiles load via an electrohydraulic projectile-loading system; propelling charges require manual loading. The contractor originally developed a dedicated ammunition supply vehicle, based on the same UNIMOG U 2450 L truck chassis. First shown at the 2002 Eurosatory weapons fair, this vehicle carries 72 rounds of 155mm ammunition (projectiles and charges). Given the change in vehicular platforms, we expect Nexter will also develop a comparable ammunition supply vehicle based on the Renault Sherpa 5 truck chassis.

### *French Army Evaluations*

In 1998, the French Army evaluated the second prototype CAESAR system. In the evaluation, the CAESAR fired over 120 rounds with no significant failures. Based on the evaluation, Giat Industries made a number of minor changes to the system, as reflected in the third prototype. In September 2000, the French Délégation Générale pour l'Armement (DGA) ordered five CAESAR systems for operational evaluation. Giat delivered these five units in June 2003.

However, when DaimlerChrysler took the UNIMOG U 2450 L chassis out of production, the program slipped at least six months. As the Forecast International Weapons Group expected, a Renault Sherpa 6x6 chassis ultimately became the vehicular platform replacement.

### *CAESAR: A Cost-Effective Alternative*

In December 2004, the DGA awarded Giat Industries a contract worth $358 million for the production of 72 CAESAR self-propelled howitzers. The French Army reportedly intends to field these weapons systems in eight artillery batteries of nine howitzers each. In July 2008, the French Army accepted delivery of the first operational CAESAR system. Nexter is to complete deliveries under the French Army's initial 72-unit order by the end of 2011.

Reports indicate the French Army intends to use the 72 CAESAR systems as a lower cost alternative to the tracked 155mm AU-F2 self-propelled howitzer retrofit program. The French Ministry of Defense originally expected (then) Giat Industries to upgrade 174 AU-F1 self-propelled howitzers for the French Army. Of these, 104 howitzers would receive the AU-F1TA upgrade package (the ATLAS fire control system, the E9 engine, and the ENC 200 automatic transmission). The remaining 70 AU-F1 howitzers would receive a more extensive AU-F2 retrofit, featuring the ATLAS fire control system, the E9 engine, the ENC 200 transmission, and the new 52-caliber ordnance.

However, the French MoD ultimately scaled back the entire AU-F1 upgrade program. The AU-F2 upgrade program remains on hold for lack of funding; the

AU-F1TA program reportedly completed upgrading 94 pieces by the end of 2007.

### *Export Sales & Opportunities*

In April 2006, Thailand awarded Giat Industries a procurement contract (of undisclosed value) for six CAESAR howitzers to equip an artillery battery of the Thailand Army. This represents the first export order for the CAESAR.

In July 2006, Giat Industries secured an export contract of undisclosed value for 76 CAESAR artillery systems. While the contractor did not publicly identify what country had placed the order, open-source reporting indicates the Saudi Arabian National Guard is the customer, having placed an order for 80 CAESAR systems.

In the meantime, Nexter is aggressively promoting the CAESAR on the international market. In Australia, Nexter is partnering with Thales Australia (formerly ADI Ltd) to offer the CAESAR to the Australian Army. In the United States, BAE Systems Land & Armaments (formerly United Defense LP) acts as the domestic agent for Nexter in offering the CAESAR to the U.S. Army.

In 2010, Nexter Systems teamed with the Polish firms Huta Stalowa Wola and Jelcz to offer a variant of the CAESAR for the Polish Army's Kyl expeditionary artillery requirement. Under the teaming agreement, HSW would integrate Nexter's CAESAR 155mm ordnance and mount with the Polish Army's indigenous artillery fire control system and a Jelcz-produced 6x6 truck.

## Related News

***French Arms Exports Rank Fourth in 2009*** – Thanks to a deal with Brazil for an export version of Scorpene submarines, France ranked fourth in 2009 for global arms exports. With 7.2 percent of the world's arms exports, France trailed only the United States (52 percent), Britain (13.4 percent), and Russia (8.4 percent), while nudging ahead of Israel (5.3 percent).

According to a Defense Ministry report published on October 6, 2010, French defense exports in 2009 totaled EUR8.16 billion ($11.3 billion), up almost 20 percent from its 2008 tally of EUR6.58 billion. In two years, French arms sales have almost doubled, with EUR4.81 billion being exported in 2007.

The report showed that from 2000 through 2009, the leading French arms customers were Brazil, Saudi Arabia, India, Greece, and the UAE. (Agence France-Presse, 10/10)

***It's Official: France Cutting Defense Spending by EUR3.6 billion through 2013*** – As part of a government-wide effort to trim the country's budget deficit, France will cut defense spending by EUR3.6 billion ($4.8 billion) over the coming three fiscal years. The effects of reduced defense expenditures are expected to have little impact on the military, however, as the French government continues to prioritize defense. This stands in contrast with Europe's four other leading military nations – Britain, Germany, Italy and Spain, all of which have made, or are preparing to make, deep cuts to their defense budgets.

The only equipment items that will come under pressure from the Defense Ministry's cuts will be the Mirage 2000-D jet fighter midlife upgrade, an order for 14 Multi-Role Tanker and Transport (MRTT) aircraft, and some elements of the Scorpion Army modernization program. The MRTT program is expected to come under review in 2012 or 2013, though French officials remain in talks with the British Ministry of Defence concerning the possibility of buying into the British FSTA (Future Strategic Tanker Aircraft) program involving the lease of 14 A330s from the AirTanker consortium. Currently, the lease terms presented by British officials have been deemed too costly by the French side and an agreement remains elusive, though not yet ruled out.

As for the impact on the French defense budget, with the government imposing reductions across all segments of the state and the reductions to the Defense Ministry budget spread out over three fiscal years, defense is one area that has been comparatively spared. Defense expenditure will still climb each year from 2011 onward, as equipment spending – originally planned for EUR49.47 billion from 2011-13 under the 2009-14 Military Planning Law – will actually rise to EUR49.84 billion. The high point in equipment expenditure during the period covered by the Military Planning Law was 2009, when many equipment programs under development reached the production and delivery stage, causing procurement expenditure to spike temporarily to EUR18 billion. The procurement figure fell to EUR17 billion during 2010. (*Defense News*, 9/10)

CAESAR 155mm Self-Propelled Howitzer

# Funding

The French Ministry of Defense, through the French Army, funds the CAESAR artillery system program.

# Contracts/Orders & Options

In December 2004, the French Ministry of Defense awarded (then) Giat Industries a $358 million contract for production of 72 CAESAR howitzers and associated support services.

In April 2006, Thailand awarded Giat Industries a contract (of undisclosed value) for production of six CAESAR howitzers to equip an artillery battery of the Thailand Army. This represents the first export order for the CAESAR.

In July 2006, Giat Industries secured an export contract of undisclosed value for production of 76 CAESAR howitzers. While the contractor did not publicly identify what country had placed the order, open-source reporting indicates the Saudi Arabian National Guard is the customer, having placed an order for 80 CAESAR systems.

# Timetable

| Month | Year | Major Development |
|---|---|---|
| Late | 1980s | Giat initiates concept development |
| | 1981-1982 | Giat/Lohr fabricate concept demonstrator |
| | 1984-1998 | Continued development, testing, and evaluations |
| Late | 1998 | French Army begins evaluation of prototypes |
| Sep | 2000 | French DGA procures five units for operational evaluation |
| Jun | 2003 | Giat delivers initial five units to French Army |
| Jul | 2003 | French Army operational evaluations begin |
| Dec | 2004 | French MoD awards Giat a contract for production of 72 CAESAR systems |
| Mid | 2005 | Giat selects Renault Sherpa 5 truck chassis as production-standard platform |
| Apr | 2006 | Thailand places an initial order for six CAESARs; total procurement could ultimately exceed 18 systems |
| Jul | 2006 | An undisclosed customer (the Saudi Arabian National Guard) orders 80 systems |
| | 2007 | Nexter offers CAESAR for Japan Ground Self-Defense Force (JGSDF) evaluation of lightweight 155mm self-propelled howitzer |
| Jul | 2008 | French Army accepts first operational CAESAR system |
| Aug | 2009 | French Army deploys eight-tube CAESAR battery to Afghanistan, marking combat debut of the CAESAR |
| | 2011 | Serial production ongoing; development and marketing continue |

# Worldwide Distribution/Inventories

**Export Potential.** Wheeled self-propelled artillery systems are gradually gaining a larger following around the world, a direct result of the various force transformation efforts under way worldwide. With French Army procurement and two initial export sales, interest in the CAESAR will likely intensify.

In 2010, Nexter Systems teamed with the Polish firms Huta Stalowa Wola and Jelcz to offer a variant of the CAESAR for the Polish Army's Kyl expeditionary artillery requirement. Under the teaming agreement, HSW would integrate Nexter's CAESAR 155mm ordnance and mount with the Polish Army's indigenous artillery fire control system and a Jelcz-produced 6x6 truck.

**Country.** **France** (3 prototype systems; 67 operational systems); **Saudi Arabia** (1 test system; 28 operational systems); **Thailand** (1 test system; 5 operational systems).

# Forecast Rationale

The CAESAR 155mm self-propelled howitzer is currently in serial production for French Army procurement and export.

### *Cry 'Havoc'..*

In December 2004, the DGA awarded (then) Giat Industries a contract worth $358 million for 72 CAESAR self-propelled howitzers. In July 2008, the French Army accepted delivery of the first operational CAESAR system. Nexter is to complete deliveries under the French Army's initial 72-unit order by the end of this year.

The French Army reportedly intends to field these weapons systems in eight artillery batteries of nine howitzers each, as a cost-effective alternative to the AU-F2 retrofit program.

Nexter will also retrofit the five operational evaluation systems (which the French Army has been testing since June 2003) to the production-standard configuration.

### *.. And Let Slip the Dogs of War*

In August 2009, the French Army deployed an eight-tube CAESAR battery to Afghanistan. This deployment marks the combat debut of the CAESAR self-propelled howitzer.

### *Export Sales & Opportunities*

In April 2006, Thailand awarded Giat Industries a procurement contract (of undisclosed value) for production of six CAESAR howitzers to equip an artillery battery of the Thailand Army. This represents the first export order for the CAESAR.

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### *Fortune Is Merry*

Our 10-year production outlook reflects the revised Forecast International Weapons Group assessment of a probable CAESAR production run in support of French Army procurement and export.

With its advantages as a rapidly deployable, medium force option, the CAESAR could become a hot item on the international market.

# Ten-Year Outlook

ESTIMATED CALENDAR YEAR UNIT PRODUCTION

| Designation or Program | High Confidence | | | | Good Confidence | | | Speculative | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Thru 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | Total |
| **Nexter** | | | | | | | | | | | | |
| Caesar | | | | | | | | | | | | |
| | 105 | 21 | 6 | 10 | 12 | 12 | 12 | 10 | 9 | 9 | 9 | 110 |
| | | | | | | | | | | | | |
| Total | 105 | 21 | 6 | 10 | 12 | 12 | 12 | 10 | 9 | 9 | 9 | 110 |

# FORECAST INTERNATIONAL

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City _____ State/Prov. _____ Country _____ Zip _____

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E-Mail _____

Cardholder Name _____

Card# _____ Exp. _____ csc# _____

Billing Address (if different from above) _____

_____

☐ Check Enclosed
☐ Bill Company
(Purchase Order # and Signature Required)
☐ Quotation Requested
☐ VISA ☐ MasterCard
☐ American Express

| Name of Product/Service | Code | E-Mail Address | Qty. | Price |
|---|---|---|---|---|
| | | | | |
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| | | | | |
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In Connecticut add 6% sales tax _____
Grand Total _____

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