

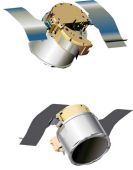
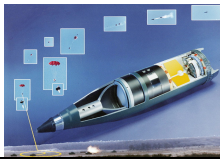


DMILT Artillery PGM Market Survey


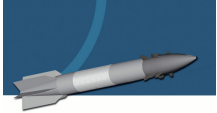




Manufacturers, products Sales mapping

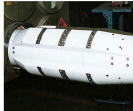
The following are selected excerpts from our recent Artillery PGM market survey....

A. Artillery PGM – Market niche overview





Region: Europe, West



Manufacturer	Product	Technology	Market Status
Howitzer, Guns			
BAe-Bofors+ NEXTER – Sweden/France	Bonus 155mm	CBU. IR + LIDAR homing, 	Operational since 2002 by Swedish and French armies. Being marketed by BAE Systems in the US. Tested by US ARMY, no contract. French's NEXTER adopted the warheads For the Pelican-155 shell.
GIWS , Diehl+ Rheinmetal - Germany	SMArt- 155mm Twin CBU	CBU. IR, MW Radiometer homing. 	Operational since 1997. In use by Germany, Australia, Greece, Switzerland. British subsequent procurement was canceled. Being Marketed by ATK in the US.
NEXTER - France	PELICAN 155mm + BONUS	Unitary – GPS guidance, Course Correcting Fuze. Optionally; terminal release of Bonus CBU IR homing 	Initial info about development surfaced in 2005. R&D apparently was not completed
NEXTER - France	Spacido - SAMPRESS 155mm	Ground-telemetry radar guidance. Course Correcting Fuze GPS. 	Latest info in 2006. Development apparently failed. Telemetry radio midcourse homing. Final - Course Correcting Fuze GPS. 105mm version with Course Correcting Fuze only.

Manufacturer	Product	Technology	Market Status
Thales-TDA , France-Germany	ACED 155mm shell	CBU. IR and MW homing. 	Development initiated late 90's. Apparently failed.
Oto-Melara Difesa ,Italy.	155mm IR	IR homing, Unitary warhead.	Under development since 2001. Uncompleted yet.
OTO Melara (former Difesa) Italy + Dutch navy funding.	Vulcano for 127mm Naval guns	GPS homing. Unitary warhead. 	Development since 2001, apparently still under development for Italian and Dutch Navies.
Mortars			
SAAB-Bofors Dynamics , Sweden	STRIX 120mm	IR homing. Unitary warhead. 	Operational since 1994. In use by Sweden, Australia, Switzerland and Finland.
DIEHL ,Germany	GMM 120mm	Unitary. SAL laser homing or GPS homing. Range: 12 km. CEP of 1 meter. Smooth bore/spiral mortar. 	Ordered by German army for self propelled Wiezel-2 120mm mortar
EXPAL Spain	GMG 120 GT	Unitary. INS/GPS homing. CEP of 10-15 meters. At maximal range 	Development completed (2010?) No sales recorded.
Thales-TDA , France - Germany	ACED 120mm Mortar shell	CBU. IR and MW homing., 	Development since the late 90's, apparently failed.



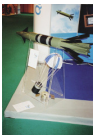

Manufacturer	Product	Technology	Market Status
Artillery Rockets			
Rheinmetall - Oerlikon- Contraves , Switzerland/ Germany	MLRS 227mm CORECT	GPS guidance + magnetic field measurement for MLRS. course correcting nozzles. 	Initial R&D data surfaced in 2004. Successful test firing tests in 2004. Development incomplete yet



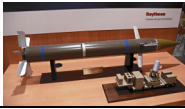

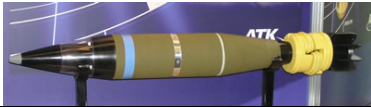

Region: Europe, CIS

Manufacturer	Product	Technology	Market Status
Howitzer, Guns			
Ametekh - Russia	152mm Santimeter	Laser spot homing, unitary warhead.. 	Development completed in 1998. No sales recorded. Advanced version of the - KRASNOPOL .
KBP Inst. Russia	KRASNOP OL 152/155mm shell	Laser spot homing, unitary warhead 	Operational since 1984 Artillery corps of Russia, India, and France (155mm). Requires ground designation. Harsh criticism - high % Duds (Indian Army trials)
Mortars			
KBP Inst. , Russia	Gran 120	Laser spot, unitary warhead 	No data. No recorded sales.
Ametekh Russia	Smelchak 240mm	Laser spot, unitary warhead 	Completed development in 1998. No recorded sales. Requires ground designation






Manufacturer	Product	Technology	Market Status
Artillery Rockets			
SPLAV , Russia	9M55K1 SMERCH-300mm rocket	IR homing, CBU. 	Operational since 1990. In use by Artillery corps of: Russia, Iran, UAE, and India. Target Acquisition UAV, (Rocket tube launched)
SLPAV + KBP , Russia	KITOLOV-2 122mm rocket	Laser spot homing, unitary warhead 	Operational since 1990. In service in Russia, various East Europe, Middle Eastern militaries. Requires ground designation

Region: North America

Manufacturer	Product	Technology	Market Status
Howitzer, Guns			
Raytheon Missile Systems (+ SAAB-BOFORS)	M982 Excalibur 155mm	Unitary or CBU. INS/GPS Guidance 	Completed development in 2007. Operational in: US, Canada, Australia, Sweden, UK. Poland and Korea have expressed interest.
ATK, US.	XM1156 PGK , 155mm Course Correcting Fuze	Unitary, GPS guidance. 	Completed development in 2010. Suitable also for 105 mm. US Army order imminent
BAe Systems NA – US + BAe BOFORS division Sweden.	IMPACT 155mm shell	. INS/GPS midcourse guidance. Terminal-IR homing CBU BONUS 	The technology was also transferred to US Navy's LRLAP program.
BAe Systems NA US	LRLAP 155mm Shell For naval guns.	Unitary or CBU. INS/GPS mid-course guidance. 	Firing test in 2008. Funding – by USN. No orders yet. Tested against targets within 50 miles range.

Manufacturer	Product	Technology	Market Status
BAe Systems NA + BOFORS Swedish division	Course Correcting kits CCGF. Fuze for 105 and 155 mm.	Unitary, GPS guidance resistant 	development since 2006, Apparently abandoned. Competed against ATK PGK and lost.
ATK US.	BTERM 127mm naval gun	Unitary or CBU, GPS/INS guidance. 	The USN has canceled the program in 2008.
Raytheon Missiles US.	127mm shell ERGM naval gun.	Unitary or CBU, GPS/INS guidance. 	The USN has canceled the program in 2008.
Mortars			
ATK , US	MGK 120mm	Unitary warhead. Course Correcting Fuze INS/GPS (PGK kit). 	US Army initial order March 2011.
ATK	XM395 120mm	Laser spot, unitary warhead. 	Prototype trials 2010. Awaiting US Army/US MC tenders.
GD OTS - US	RCGM-120	GPS guidance compatible for M934A1 mortar shell. Course correcting roll, fixed canard.	Lost against ATK but got funding from the US ARMY in 9/09 to continue the development.
Artillery Rockets			
L-M Missile & FC US In cooperation with Diehl, MBDA (Europe)	GMLRS CCF 227mm	Unitary or CBU. INS/GPS guidance. Fuze course correcting 	Completed development in 2004. In use with: US, UK, Germany, Italy, France, UAE. First firing test in 13/12 GMLRS Plus. Laser head homing version under development

Region: Asia

Manufacturer	Product	Technology	Market Status
Howitzer, Guns			
IAI MLM Israel	155mm shell TOP Gun CCF	Unitary, course correcting fuze, GPS/INS guided. Claiming 20m CEP at maximum range.	Under development since 2009 
Norinco - China	Krasnopol 152/155 (Copy)	Laser spot homing, unitary warhead	Operational in china, sold to Pakistan. Being marketed worldwide
Mortars			
IAI MLM Israel	LGMB 120mm DMM (Fireball)	Laser spot homing with GPS backup. 	Under development since 2000. Competing in IDF tender. Assumed INS guidance backup
Raytheon +IMI (US and Israel)	Dagger 120mm	Unitary, INS/GPS guidance. Claiming CEP of 1-3 meters in 10 KM range. 	Under development. Advanced version will be equipped with laser homing SAL. Older references to development of GMB 120 DGPS version guidance. Probably abandoned.
Artillery Rockets			
IMI, Elbit Israel	ACCULAR MLRS 160mm ACCULAR	Radar tracking, telemetry guidance. GPS backup 	Completed development in 2006. No sales recorded. Reportedly offering 160mm version to Indian Army.
IAI - Israel	STRIKES 122mm rocket	GPS guidance, no information about accuracy and range.	First revealed at "SATORI 2010" 

Region: Africa

Manufacturer	Product	Technology	Market Status
Howitzer, Guns			
Reutech-FUCHS South Africa	M0138 Course correcting fuze	GPS guidance. Three guidance discs, Standard MOFA thread fit.	Latest info surfaced 2002. Apparently R&D was abandoned. 