



PRECISION WEAPONS PLATFORM

SDL is defining the state of the art for lightweight stabilized remote weapon systems (RWS). These systems provide operators with effective range and hit probability overmatch from safer locations. SDL's RWS are precision response solutions that combine IS&R and lethal capabilities with low collateral damage. Leveraging decades of experience in precision optical and spacecraft pointing systems, SDL has developed and demonstrated a remotely-operated, lightweight, stabilized turret called the Precision Weapon Platform (PWP) system that can accommodate weapons, energy sources, active or passive sensors, and other payloads. Remotely operated, a single person can control the system using a laptop computer. This system includes compatibility with current battle networks and precise geo-referencing capabilities for correlation of the target with other assets. The shock tolerance, light weight, and small size of the system make it compatible with many platforms and payloads. Potential platforms include unmanned air systems (UAS), ground vehicles, watercraft, buildings, and mobile towers. Payloads could include sniper rifles, machine guns, less lethal systems, laser designators, and passive sensors.

Precise, closed-loop stabilization using an onboard inertial measurement unit (IMU) minimizes the effects of disturbances, such as wind and host vehicle motion, to maintain pointing accuracy throughout the mission. Ballistic offsets and hit probabilities are automatically calculated several times a second based on current meteorological conditions. All these capabilities, combined with an intuitive operator interface, make the PWP a precise, point-and-shoot solution.



PWP with a .338 Lapua Magnum sniper rifle

SPECIFICATIONS

SIZE	· 22" diameter x 28" height
PLATFORM WEIGHT	· 75 lbs (34 kg)
PAYLOAD WEIGHT	· To a maximum of 35 lbs (15.9 kg)
POWER	· 24 V, 300 W (typical)
DEMONSTRATED PAYLOADS	· .338 Lapua Magnum sniper rifle · M240H · Laser rangefinder/wind sensor
FUTURE PAYLOADS	· M249, M134, non-lethal weapons
OTHER CAPABILITIES	· Full geolocation · Battle network compatible for cross-cue to/from other networked systems
BALLISTICS	· Real-time, long-range ballistic correction with a point & shoot interface · Moving target tracking with automatic lead · Moving platform compensation
VISIBLE CAMERAS	· Situational awareness & scope view
THERMAL CAMERA	· Cooled MWIR thermal weapon sight

CURRENT CAPABILITIES

- Sniper system on UAV & manned rotorcraft (ARSS)
- Sniper system on tower (TowerHAWK)
- UH-60 Blackhawk Remote Door Gunner (RDG) system



The PWP represents cutting-edge RWS technology. Further capabilities are currently being developed in cooperation with the U.S. Army's Aviation Applied Technology Directorate (AATD).

In the Autonomous Rotorcraft Sniper System (ARSS) application, SDL optimized the PWP system for a .338 Lapua Magnum sniper rifle. ARSS represents a long-range, low collateral damage, precision engagement capability from manned and unmanned rotorcraft. Flight testing demonstrated excellent performance from a hovering rotorcraft.

In the TowerHAWK application, SDL optimized the PWP system for a .338 Lapua Magnum sniper rifle with overwatch force/asset protection in mind. This system provides Forward Operating Bases (FOB) and Combat Outposts (COP) with a precise, long-range response capability that any soldier can operate without being exposed to enemy fire. Testing at extended ranges has demonstrated the unmatched performance of the TowerHAWK system.

SDL's Remote Door Gunner (RDG) system links the two UH-60 Blackhawk M240/M134 door gunner stations for remote operation from inside the aircraft. As with the ARSS and TowerHAWK applications, weapon hit probability is improved while simultaneously enabling one crew member to control either weapon station from the relative safety of the aircraft cabin.



PWP on a Vigilante UAS (ARSS)



PWP firing from a UH-1 (ARSS)



PWP engaging targets from a tower (TowerHAWK)

PWP DEMONSTRATED PERFORMANCE

DATE	December 2009
LOCATION	Fort Pickett, Virginia
HOST VEHICLE/PLATFORM	Hovering UH-1 Huey Helicopter
DEMONSTRATED PERFORMANCE	E-type silhouette (ARSS)
DATE	January 2011
LOCATION	Redstone Arsenal, Alabama
HOST VEHICLE/PLATFORM	80-ft mobile tower
DEMONSTRATED PERFORMANCE	E-type silhouette(TowerHAWK)
DATE	January 2015
LOCATION	Fort Benning, Georgia
HOST VEHICLE/PLATFORM	30-ft mobile tower, 80-ft mobile tower
DEMONSTRATED PERFORMANCE	Urban assault overwatch, long distance target engagements

The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the official policies, either expressed or implied, of the Aviation Applied Technology Directorate or the U.S. Government.

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