Freedom On-The-Move (FOTM) ™ Surveillance System

Freedom On-The-Move (FOTM) is the direct descendent of a gyro-stabilized surveillance system created for the US Military with OTM counter-sniper and anti-ambush surveillance capabilities. These rugged and tactical surveillance systems have enabled war fighters to have situational awareness inside and beyond the small arms effective range of combat, while OTM, in both day and night operations. FOTM is a stabilized, multi-sensor system (SMSS) with dual-band (IR and Color) cameras, laser range finder (LRF), laser designator / illuminator, and networking / recording capabilities which enable FOTM to handle multiple mission objectives for public safety agencies.

Rugged and Reliable Build

FOTM is designed to handle the rigorous vibration and shock that occurs in on-the-move, off-road interdiction, as well as high-speed, on-road pursuits. In addition, FOTM is built to withstand extreme terrain and climate conditions ("weatherproof"). Through the integration of world-class commercially available components (COTS), Strongwatch builds and integrates FOTM from the "bare metal", making it both affordable and extremely reliable.

Gimbal Accuracy and Stabilization

FOTM's precision gimbal has capabilities for rapid "slew-to-cue" movement, coupled with extreme accuracy. With this speed and accuracy, FOTM can have integrated features

such as shot detection and triangulation equipment, as well as interoperability (slew-to-cue) with other ground / aerial surveillance assets.

Stabilization for the system is handled by Strongwatch proprietary gyro-stabilization technology, which enables OTM operations, as well as stable imagery when operating in very narrow fields of view while static. With FOTM's revolutionary stabilization, the system can also be utilized as a lights-out driving assistant for tactical night movements.

Sensor Technology

The FOTM SMSS is available with either cooled or uncooled infrared (IR) cameras, for 24/7 force protection at short to long range distances. FOTM IR cameras also operate in different polarities, including: White/Hot, Black/Hot, Red, and Color, which can make threat detection in all types of environments and climates easier for the operator, while reducing eye strain. The IR sensor has a dual (wide and narrow) field-of-view (FOV) lens, which enables the operator to quickly detect human threats, with accuracy, through a very wide FOV for rapid terrain scanning, while a narrow FOV is utilized for greater threat detection, classification, and recognition at longer ranges.

The second camera is a rugged CCD (color camera), with continuous optical zoom and additional digital zoom, giving the sensor a medium range capability. Both the IR and CCD cameras have optically-matched FOV(s), allowing the operator to quickly switch between either camera without losing image quality of the IOI (item of interest). In addition, the CCD camera has a low-light feature, which enables the operator to have extended hours of operation with the color camera.

FOTM utilizes a long range LRF with a GIS-overlay for acquiring precise range and grid coordinates on POI(s). In addition, an NVG-viewable laser designator and illuminator can be added, allowing the operator to "paint" IOI(s) for friendly forces. In addition to these features, the SMSS also has the ability to be removed and re-installed in under 10 seconds, without the need of any tools. This capability enables agencies to have the FOTM asset on multiple platforms (truck, command center, armored vehicle), for a fraction of the cost.

Cab Control and Command

FOTM uses a standardized (Xbox) hand controller unit (HCU), which creates a shortened operator learning curve, as well as an ongoing ease-of-use. Through a ruggedized visual display, all functions of the FOTM system are controlled from the cab of the vehicle. With the simplicity of the FOTM user-

interface and easy to read on-screen display (OSD), no dedicated operator is required, and individuals can typically be trained in full operational use within 30 minutes.

In addition to the display and HCU, FOTM has a cab controller with a built-in digital video recording device (DVR) to handle the recording of both video and snapshots. The cab controller also enables the use of Strongwatch or third-party software, such as human detection and tracking software, as well as other biometric capabilities (facial recognition, license plate recognition, etc.).

Mast and Vehicle Configurations

FOTM can be configured to use pneumatic, hydraulic, or even electric masts, whether in a truck, tactical vehicle, command vehicle, SUV, UTV, or even maritime applications. The pneumatic masts can be outfitted with our Tactical Mast Deployment System (TMDS), allowing multiple, and rapid mast deployments while eliminating compressor noise entirely. Mast sizes can vary from 12-42 feet in height, and all masts are designed for rugged on-the-move use. In addition, safety features are integrated into the FOTM mast to ensure operator safety – if the operator forgets to retract the mast from an elevated position before they move, the mast will retract to a safe "drive" height once the vehicle is in motion.

Covert Skid Mount System

The FOTM mast can be integrated into our Covert Skid Mount System, and installs in a truck bed by using the existing bed box / frame bolt pattern. Weighing under 700 pounds, this covert skid design allows for fast install / removal of the entire system from vehicle to vehicle, or vehicle to trailer (via forklift), as well as the ability to "fold" the mast into the truck bed box when not in use.
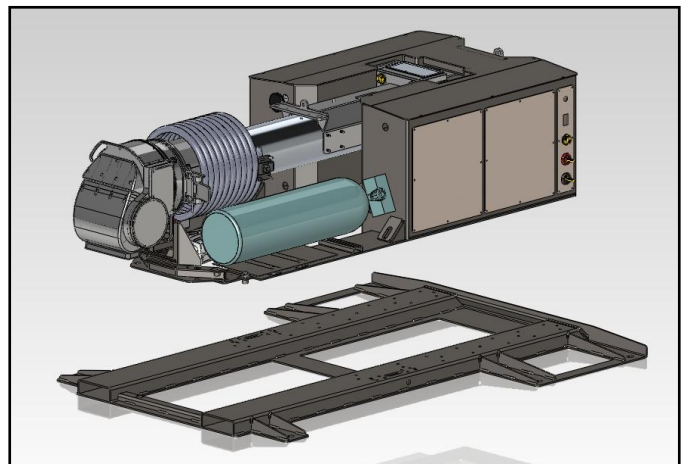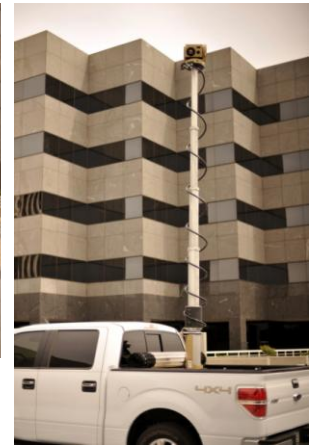
Networking and Wireless Features

   With wireless networking capabilities, the system can be used in a wireless mesh network through the use of TCP/IP (Ethernet), and deliver images and video from FOTM to remote observers through any 802.11 network (WiMax, 3G, 4G, LTE, etc.) available in the area. The flexibility of the wireless needs allows the system to be operable nearly anywhere in the world. Additional user interface options are available through our wireless capabilities. These interface options include the Remote Operator™ (RO) and Dismounted Operator™ (DO) technologies. The RO feature allows an individual at a remote desktop, mobile command center, or any other location to view and operate the system through the network (IP) connection. The DO option allows the operator to exit the vehicle with a portable tablet device while maintaining full view and control of the system, while away from the vehicle.
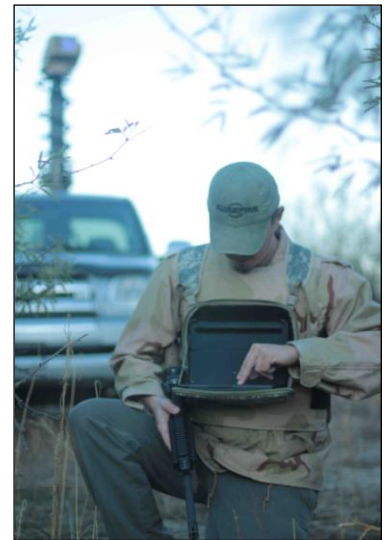
Open-Architecture Design

   The entire FOTM system is an open-architecture surveillance platform, enabling complete connectivity with other surveillance systems, software, and technologies. FOTM can share video, images, geo-spatial coordinates (slew-to-cue) and system controls with other surveillance assets or personnel. Other technologies such as UGS (unmanned ground sensors), shot triangulation equipment, or even cooled binoculars, can be integrated into FOTM for a more comprehensive interdiction system and technology multiplier.

Power Management

   Power requirements for FOTM are supplied by deep-cycle marine batteries, and are charged by the vehicle alternator/electrical system. The system can run continuously for multiple hours (while static; with vehicle "off") through the use of the independent power supply, which recharges once the vehicle is turned back "on".

Applications

FOTM can be customized for many different concepts of operations and platforms – systems are built in a scalable fashion, so features can be added incrementally. FOTM supports many operational needs, including:

- **Tactical Interdiction**
- **SWAT Applications**
- **Search and Rescue (Rural and Urban)**
- **Criminal Investigations / Narcotics**
- **Homeland Security**
- **Protection of Critical Infrastructure and Natural Resources**
- **Port (Aerial and Maritime) / Perimeter Security**
- **Special Events / Crowd Control**
- **Incident / Emergency Management**
- **EOD Operations**
- **Firefighting (Rural and Urban)**

For more details on the FOTM system, you can email us at: info@strongwatch.com or contact us by phone at 520-298-1600.

<u>Specifications</u>

INFRARED IMAGING (UNCOOLED)

Sensor Type	640 x 480 microbolometer
Wavelength	8 - 12 μm
FOVs	20.7° and 6.9° discrete zoom
Range	1mile (human detection)
Automated Features	Automatic gain, focus memory, detail enhancement, polarity display settings (white hot, black hot, red, color)

INFRARED IMAGING (COOLED)

Sensor Type	640 x 512 detector (cooled)
Wavelength	3-5 μm
FOVs	23.6° to 2.2° continuous zoom
Range	4 mile (human detection)

VISIBLE IMAGING

Sensor Type	Color CCD
Video Format	NTSC or PAL, HD (optional)
FOV	42° to 2° continuous zoom
Range	5 km (human detection)
Automated Features	Autofocus, automatic exposure, backlight compensation

LASER POINTING AND RANGE FINDING

Eyesafe Near-IR Laser Range Finder	4 km range
Visible and Near-IR Pointers	30mW to 300 mW available
Sensors	GIS,GPS, compass, accelerometer
Input / Output Cues	Bearing or lat-long (target ranged with LRF) Coordinates delivered in degrees, degrees/minutes, or degrees/minutes/seconds

GIMBAL

System Type	Two-axis stabilized multi-sensor
Pan Range	360° (degree) continuous
Pan Speed	0.01° - 120°/sec
Pan and/or Tilt Slew Rate	90° in < 0.5 sec
Tilt Range	-95° to +200°
Tilt Speed	0.01°- 400°sec
Mechanical Stabilization	MEMS Inertial gyro stabilization

SYSTEM INTERFACES

Analog Video	NTSC/PAL
Network Streaming Video	MPEG-4
Operator Control	Pelco D and Strongwatch proprietary

ENVIRONMENTAL

Operating Temperature	-26°F to 131°F(-32° C to 55°C)
Storage Temperature	-40°F to 140°F

POWER REQUIREMENTS

Voltage	12 -32 VDC