

Seaports - Landside Perimeter Security

INDUSTRY:

Seaports

THE PROBLEM:

Seaports are a vital hub for global freight transfer. Shipping accounts for a mesmerizing 90% of world trade. This huge level of commerce exposes ports to a large array of security concerns. One challenge for seaports is implementing a site protection solution that safeguards facility infrastructure without having an adverse effect on the flow of cargo.

IDENTIFYING THE CHALLENGES:

Post 9/11, the U.S. Coast Guard's National Facility Security Plan Review Center reviewed U.S. ports for compliance with 33 CFR Part 105 Regulations. These performance guidelines called for perimeter monitoring, access control and anti-terrorism readiness for marine facilities receiving regulated cargo, and required that restricted areas - both land and waterside perimeters - be continuously monitored.

Prior to 9/11 the key priority of most seaports was ensuring secure transfer of cargo and roving patrols by port police to manage loss prevention. With the prospect of a terrorist breach, a system that could reliably detect and monitor disturbances at the perimeter became the new paradigm.

Seaports needed to find a solution that successfully addressed a marine environment; one that remained in near constant motion between ship, vehicle and foot traffic. This scenario would trigger nuisance alarms in most security systems, so the new system needed the intelligence to recognize and ignore traditional environmental disturbances to avoid desensitizing monitoring personnel with false positives.

Another challenge was balancing the divergent priorities of terminal security and efficient cargo transfer. By definition, complex counter-terror measures had the potential to slow the pace of facilities consistently recognized for high productivity. It was imperative to narrow the solutions to those that delivered superior intrusion detection without being cumbersome to administrate.



Seaports face the challenge implementing site protection solutions that safeguard facility infrastructure without adversely impacting the flow of cargo.



PureActiv® provides intelligent video analytics, 3D geospatial command and control, autonomous PTZ tracking and open architecture for ease of integration with the MicroPoint™ Cable system.

Port operations and port security are often 180 degrees out of phase because operations wants to move cargo as quickly as possible. Turn times are of the utmost importance and shipping lines rely on port authorities to securely transfer their cargo, while port police must also ensure 105 Regulations are in place.

Working through these conflicting issues is one of the most difficult issues with implementing seaport security. Strong communication is key to effectively bridging the gap between Operations and Security. This includes coordination with port operations, engineering, IT, maintenance teams, port police, customs and border protection and the U.S. Coast Guard. By understanding and addressing the needs of each of these constituents, a seaport is more likely to deliver a security program that satisfies all parties.

Mapping out a security program expansion for often non-continuous terminals is another challenge experienced by seaports. 105 Regulations say that you have to monitor your perimeter and access points, but each seaport must assess the appropriate systems and actions needed to comply.

AN INTELLIGENT SOLUTION

A key requirement of a perimeter system for seaports is its ability to precisely locate fence line breaches and monitor intruders from point of attack through incident resolution. However, it is unmanageable and costly to install cameras along every linear foot of a seaport's often irregular boundary for this purpose. To overcome this issue, ports needed a solution that was affordable, accurate and had the level of intelligence to overcome the challenges encountered when balancing security versus cargo efficiency.

One solution to these challenges was the idea of combining two market-leading intelligent detection solutions: Southwest Microwave's INTREPID™ MicroPoint™ Cable fence detection system - which offers pinpoint intrusion location and tie-in of detection zones to CCTV camera presets - and PureTech Systems' PureActiv® wide area video surveillance system - which successfully identifies and tracks qualified targets.

The synergistic solution enabled seaports to strategically place visible light, infrared illuminated and thermal pan-tilt-zoom cameras controlled by the PureActiv® system at key points along the perimeter, and integrate them with the MicroPoint™ Cable system to quickly locate and react to intrusions across vast property boundaries.

MicroPoint™ is one of the only sensors that can detect to within 3 meters and direct camera PTZ activity to an incident location. PureActiv® provides intelligent video analytics, 3D geospatial command and control, autonomous PTZ tracking and open architecture which easily integrates with MicroPoint™ and access control systems.

An added benefit to this combined solution is the fact that the Southwest Microwave fence detection system had been successfully paired with PureTech Systems' video analytics package at many other sites. The combined MicroPoint™ Cable / PureActiv® system has been installed and subjected through extensive performance verification ensuring round-the-clock functionality. Typical testing occurs at every point along the integrated fence line and at each camera, ensuring the system successfully detects and tracks an 'intruder.'



Southwest Microwave's MicroPoint™ Cable system pinpoints fence cut or climb attempt to within 3m, while ignoring environmental disturbances such as wind, rain or vehicle traffic.

Most extensive testing includes the ability to detect running, walking, rolling, crawling and climbing the fence. For seaports, this history of extensive integration testing helps to ensure that all the kinks have been ironed out, avoiding time consuming integration problems during installation.

RESULTS

Use of a combined intelligent video and fence detection system for seaport perimeter detection has proven to solve the main concerns of seaports; terrorist breach and cargo loss, while allowing efficient flow of cargo. Southwest Microwave's INTREPID™ MicroPoint™ Cable system allows seaports to confidently pinpoint a cut or climb attempt to within one fence panel while PureTech Systems' PureActiv® system reliably analyzes disturbances, then smoothly tracks and manages qualified events until they are resolved.

Each product has contributed to solving environmental nuisance alarm issues common to other detection technologies. MicroPoint™ effectively identifies fence attacks while ignoring distributed environmental disturbances such as truck traffic at the Port. PureActiv® copes exceptionally well with the diversity of port environments, including long fence lines, active roadways and controlled entrance and egress points.

The MicroPoint™ Cable / PureActiv® solution has delivered the Port a cost-effective solution for detecting intrusions along a lengthy perimeter, and an efficiency that reinforces both systems' smart sensor capabilities. MicroPoint's unique ability to assign detection zones in system software at any point along the cable has reduced hardware requirements and simplified assessment.

PureTech Systems' analytics can identify targets at long ranges, minimizing the required number of cameras and simplifying monitoring processes. By employing standard cameras, the PureActiv® system further reduces cost and gives the port installation flexibility without compromising detection standards.

Although there are many surveillance systems available to seaports, there appear to be few that can provide the level of reliable detection capabilities as exhibited by the MicroPoint™ Cable and PureActiv® combination. These solutions are so well integrated you often forget that they are two separate systems.



Example Seaport User Interface showing video tracking and intelligent fence detection on a combined map-based interface.

ADDITIONAL INFORMATION / LINKS

Video Analytics	Web Site
Geospatial Video Surveillance for Seaports	White Paper
Target Classification	Blog
Combining Sensors for More Efficient Perimeter Protection	White Paper
8 Things to Consider When Designing a Camera Perimeter	White Paper
Slew to Cue	Blog Video
Intelligent Zoom	Video
Camera Auto Follow	Video



About PureTech Systems

PureTech Systems Inc. is a manufacturer of wide-area perimeter surveillance software solutions including internally developed outdoor video analytics, PTZ Auto Follow, multi-sensor integration and a map-based (real object size) command and control. It is offered to fortune 1000 firms, petro-chemical, water and electric utilities, seaports, airports and federal, state and local governments. With headquarters in Phoenix Arizona, PureTech Systems serves national and international markets. To find out more about PureTech Systems Inc. visit our website at www.puretechsystems.com , follow us on [Twitter](#) or sign up for our [email list](#).

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