

ENERGY ASSURANCE TECHNOLOGIES

Project Fact Sheet

REFINERY AWARENESS SECURITY SYSTEM (RASS)

BENEFITS

- Can continuously monitor entire facility boundary with very low false alarm rate
- Lower operating costs vs. current stand-alone security systems and patrols
- Features high detection sensitivity
- Provides a complete emergency management system, including integration with law enforcement
- Open architecture system with lower cost than proprietary systems now available

APPLICATIONS

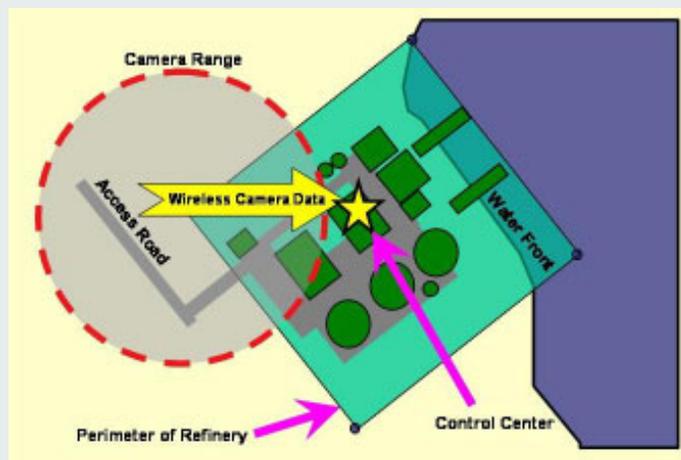
In addition to refineries, any energy facility (oil, natural gas or electricity) that has a vulnerability to illegal entry across its boundary coupled with the possibility of significant physical or economic damage resulting from such an intrusion is a candidate for the technology. This technology is also well suited for facilities in the chemical and transportation industries that possess these characteristics. The RASS technology is itself an extension of the PROTECT program, initiated by DOE, which mitigates the impact of chemical attacks on high-threat interior infrastructures, such as subways, airports, and buildings. The PROTECT system is already operational in the Washington, DC, subway and is being installed at a Boston inter-modal facility.

ADVANCED NETWORK SENSORS AND VIDEO PROVIDE LINK TO EARLY WARNING CRISIS MANAGEMENT SYSTEM FOR ECONOMICALLY ENHANCING PREVENTION AND MITIGATION CAPABILITIES

Refineries share a common security concern in providing continuous, comprehensive and cost effective site security. Their expansive facility boundaries that must be monitored and protected present a security challenge. Inadequately protected areas are potentially vulnerable to a wide range of intrusions that could jeopardize facility operation, expensive and difficult-to-replace equipment, and personnel. Existing monitoring systems and patrols typically employed by refineries for security purposes may not be able to effectively cover the entire facility boundary continuously and are costly to maintain. The use of advanced sensor and video technology, such as RASS, can improve the effectiveness of security, while potentially reducing associated operational costs.

The RASS protection approach uses a surveillance camera system with infrared, robotic high-resolution, and thermal imaging devices to spot an “exception” to ordinary behavior. The robotic camera then “locks on” to the moving object after alerting the Control Center staff through visual and audible alarms. The technology is used in conjunction with a Concept of Operations that includes an integrated response with local law enforcement.

Graphic Representation of RASS Concept



The RASS collects and analyzes surveillance data to automatically alert security of site intrusions. It is scalable to monitor all, or part, of site boundaries, as desired.



Project Description

The project will demonstrate enhanced energy facility security by leveraging currently developed and demonstrated DOE technologies. Security will be enhanced in a cost-effective manner, leading to lower operational costs when compared with current stand-alone security systems and patrols.

Numerous sensor systems — and a variety of camera systems — available in today's market are capable of intrusion detection, including seismic and motion detection. These systems, however, often do not meet industry needs because of high initial costs, high maintenance costs, unreliability due to false alarms or lack of robustness, and, frequently, proprietary software. Many systems, initially developed for the military, are very expensive and do not fit well in the civilian environment, where there is a very low tolerance for false alarms and the need for a system that does not require a highly trained technician.

The RASS program offers a level of sensitivity needed to identify intrusions using site specific software to distinguish routine activities from unwanted intrusions. The fixed cameras operate 24/7 and are equipped with software that, once an exception is identified, activates a robotic camera that follows the intruding person or vehicle. The system is scalable for protecting areas of greatly varying sizes and adaptable to other energy facilities. The RASS technology will be demonstrated at the Trainer, PA refinery of ConocoPhillips, Inc.

Progress and Milestones

This project includes the following milestones:

- Site Survey and Preliminary Design Customized to Demonstration Facility (1Q/04 [complete])
- Engineering and Network Design (2Q/04)
- Command and Control Software Design and Testing (3Q/04)
- Integration and Installation of RASS (4Q/04)
- Final Testing and Training of Demonstration Facility Staff (4Q/04)
- Technology Demonstration and Transfer (1Q/05)

Economic and Commercial Potential

The economic consequences of a major security breach at a refinery can be significant. It can lead to a shutdown of the facility resulting in loss of its economic value for months or longer to the facility owner and may require costly repairs. Additionally, it could potentially result in significant negative price and supply impacts to consumers of refined petroleum products. Use of the RASS at petroleum refineries will safeguard against security breaches and, thereby, minimize the possibility of economic losses to the facility owner and to petroleum consumers.

In addition, the use of this technology can reduce the need for costly security patrols. With the addition of RASS technology, larger areas of the refinery boundary could be monitored, while utilizing fewer security personnel for the task. Therefore, the annual security operating costs when using this new technology could be less than the costs of using the patrols alone. The potential offered by RASS to provide an enhanced level of security, and energy assurance, without increasing the facility's security related operational costs should be an attractive option for corporate and facility security decision makers to consider as a method to better manage corporate risk.

PROJECT PARTNERS

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ConocoPhillips, Inc.
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