White paper on

Nuclear power plant perimeter security

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Nuclear power plant perimeter security

There is a constant focus on the security of nuclear power plants, not least due to recurring events of terrorism. This white paper describes how to take current perimeter security to the next level through intelligent wide area perimeter detection solutions.

High security level

Since 1954, when the first nuclear reactor was connected to an electric grid, nearly 500 nuclear power plants have been built around the world. Even before 9/11, security standards at each facility have been higher than in any other comparable civilian industry. After 9/11 and with the growing threat of terrorist activity, billions of dollars have been spent trying to ensure that the industry stays one step ahead of its potential attackers.

Nuclear power plants are by default very robust structures that, by design and construction, are very difficult to penetrate. The combination of robust structures, well-armed professional security force, and multiple layers of backup safety systems including both physical and electronic security measures provide layer upon layer of safety and security. Plants also adhere to “concentric circles of escalating security” whereby the perimeter area is divided into:

1. “Owner-controlled areas”; typically the outer perimeter at a sufficient distance from the reactor where minimal security is needed.
2. “The protected area” where access is more restricted and both physical and electronic countermeasures are used.
3. The innermost circle, also called the “vital area”, where security measures are escalated further, and the safe shutdown of the reactors can take place

Exercises

To keep a constant state of security readiness, mock exercises comprising an attacking force is used to evaluate the success with which a nuclear power plant can withstand a number of threat scenarios. In today’s world, this means being able to protect against attacks from multiple entry points, in armored vehicles or airplanes by persons who are willing to kill or bekilled. In all exercises however, plant personnel are informed beforehand to avoid the use of lethal force hurting anyone.

Therein lays the problem. Training is necessary, however, it can give a false estimate of the actual physical reaction time such as when the surprise is total, and the event is real.

Situational awareness

Besides good counterintelligence, the key element of winning against a surprise assault is therefore time. Time to understand exactly what is happening, time to determine the level of response, time to shut down, and time to neutralize at perhaps multiple locations before damage, potentially catastrophic, occurs.

Mission-critical command and control systems used in military environments around the world can handle multiple intelligent sensors such as radars, thermal sensors, advanced weapon systems, and critical data in order to provide operators with the decision-making data they need. Like in all layered security-solutions using multiple sensors, detection devices, cameras, access controls and alarms, the operator quickly becomes both the strongest *and* the weakest link in the security plan. In a worst case scenario, failure to understand the situation fast enough at the operator level can render vital countermeasures obsolete.

Intelligent wide area perimeter detection

In 2010, Terma started a project to address issues that are vital to critical infrastructure protection in the *commercial* market:

- To provide an operator environment that is simple and intuitive through automation, data fusion, and minimization of secondary information. Presenting highly accurate and prioritized data in a simple way to the operator.
- To deliver this information at a speed never seen before in the commercial market whilst enabling the operator to maintain control over his area of responsibility despite multiple events taking place. Early warning through intelligent sensors and direct relevant playback of an incident within split seconds rather than seconds to allow for a complete and fast understanding of events.
- To introduce system stability and robustness, not least through a redundant infrastructure that is required when protecting assets of national importance.

To obtain all this, you need an intelligent wide area perimeter detection solution that in the fastest and most precise way can help detect, identify, and track both internal and external perimeter threats in areas where business continuation is a matter of national importance.

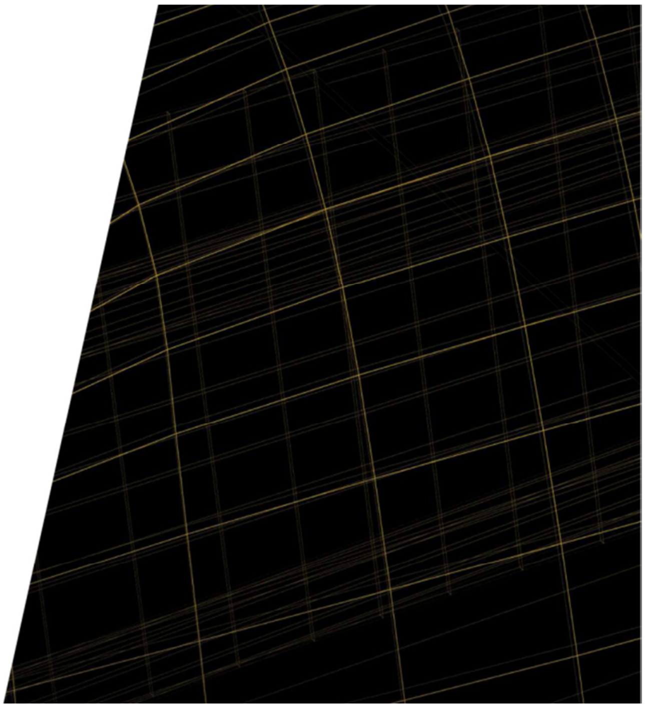
Terma is one of the leading providers of this type of system. Based on more than 30 years of providing mission-critical command and control systems, we have developed a commercial platform for Intelligent Wide Area Perimeter Detection called the T.react CIP. For more information, please visit www.terma.com.

Operating in the aerospace, defense, and security sector, Terma supports customers and partners all over the world. With more than 1,300 committed employees globally, we develop and manufacture mission-critical products and solutions that meet exacting customer requirements.

At Terma, we believe in the premise that creating customer value is not just about strong engineering and manufacturing skills. It is also about being able to apply these skills in the context of our customers' specific needs. Only through close collaboration and dialog can we deliver a level of partnership and integration unmatched in the industry.

Our business activities, products, and systems include: command and control systems; radar systems; self-protection systems for ships and aircraft; space technology; and advanced aerostructures for the aircraft industry.

Headquartered in Aarhus, Denmark, Terma has subsidiaries and op-erations in The Netherlands, Germany, Belgium, UK, India, UAE, Singapore as well as a wholly-owned U.S. subsidiary, Terma North America Inc. Terma North America Inc. is headquartered in Arlington, in the Washington D.C. area, with other offices in Georgia, Texas, Alabama, and Virginia.



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