



Total Cyber Resilience for your Mission-Critical Operational Assets

SigaGuard, an out-of-band, cybersecurity solution for Operational Technology (OT) environments, offering the most advanced detection and analytics of cyber-attacks on mission-critical automated equipment, machinery & processes.



ICS/SCADA Cybersecurity - Huge Risk, Big Challenge

Industrial control systems (ICS) were considered to be safe from cyber-attacks because they are isolated, air-gapped networks. However, these critical systems are extremely vulnerable! The development of the Industrial Internet of things (IIoT) and the convergence of operational technology (OT) and IT networks are creating a perfect environment for hackers to attack highly attractive targets - ICS network operators.

Recent deliberate disruptions of critical automation systems prove that cyber-attacks can have disastrous consequences for citizens and nations. Malicious code can potentially be used to manipulate the controls of power plants, water infrastructure, manufacturing facilities, building management systems and even large ships. All of these are considered critical infrastructure with damage potential resulting in real-world catastrophic physical damage, such as blackouts, disruptions to an entire city's water supply and substantive threat to human lives.

The transition to Industry 4.0 requires IT/OT convergence and accelerated "connectivity", combined with the global cybersecurity challenge - the Unknown Unknowns, and the ever growing frequency & magnitude of cyber attacks, raise new concerns and potentially disastrous consequences: financial losses, regulatory breaches, reputational damage, law suits, management liability, high remedial costs & risk to health.

Notable High Profile Industrial Cyber Security Incidents



2010 Iran / Stuxnet

Malware attacked industrial control program in Iran's Natanz uranium enrichment base.



2017 A.P. Maersk

Shipping and Logistics
Ransomware: NotPetya, 2 weeks operation disruptions. COST \$300 million



2015 Blackenergy

Ukraine power grid attacked, by invading grid control center. 225K customers without power



2018 Saudi Aramco

Oil and Gas, OT-Specific Malware: TRITON, Business and process disruption, revenue loss of \$1B.



2016 Duke Energy

Electric Power Company Failure to Meet Regulated Cyber Security Standards. COST \$10 million.



2019 Norsk Hydro

Metals and Mining, CYBER INCIDENT, reduced its output by 50%. Ransomware: LockerGoga. COST \$70 million

Current ICS Cybersecurity Solutions are Crucial, yet Insufficient

Increasing awareness of the ICS cybersecurity threats has led many software companies to develop and offer security solutions specifically designed for OT networks. These solutions are defined by 5 NIST framework functions - identify, detect, protect, respond and recover. Currently, ALL available ICS cybersecurity solutions are based on securing the IP-based network (Data packets), starting from the PLCs, Level 1 of the Purdue Model, and moving up the network to supervisory controls, operations management and business management. Of course, securing the data-network is crucial, however, it can be hacked despite the layers of protection installed and the operators don't even know it. Something is missing!

Paradox: The role of an ICS is to preserve the integrity of physical processes yet current ICS security solutions, designed to protect them, are installed in the most vulnerable levels, the data-packets network! This paradox can be solve by monitoring the most reliable source of information, the physical source which cannot be hacked - the raw electrical signals of level 0 - sensors and actuators.

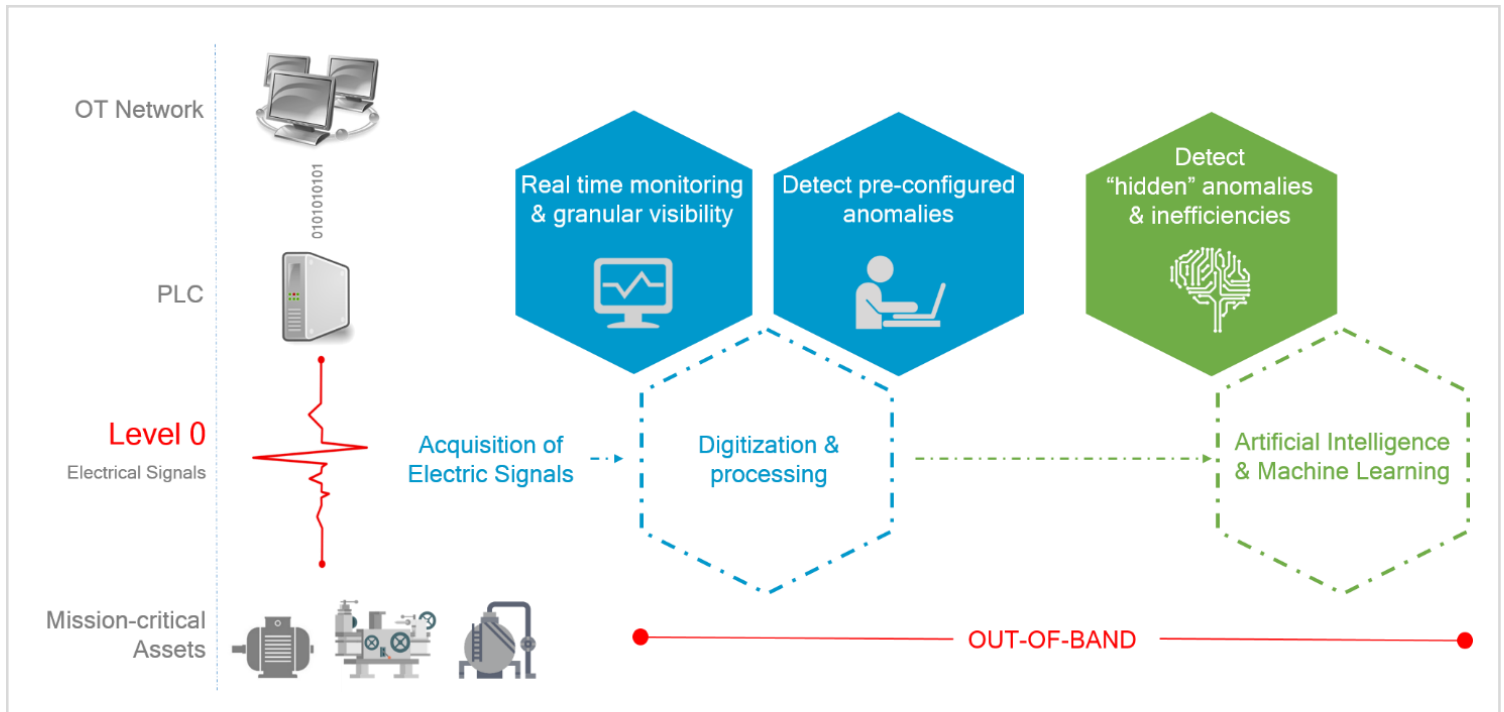
SigaGuard - Crucial for any Critical OT Asset

By activating Machine Learning on rich and unfiltered electrical signals at Level 0, we deliver autonomous cyber inspection & analytics solutions, offering bullet-proof detection of any cyber attack, inaccessible insights, and operational resilience of industrial processes and automated machinery.

Electrical Signals at LEVEL 0 are the most reliable source of data for OT environments. This source of data is rich & unfiltered, un-hackable, and often un-available to operators.

The SigaGuard safeguards industrial assets by monitoring raw electrical signals (level 0 realtime monitoring) - as opposed to data packets which can be hacked. SigaGuard brings new and unmatched operational reliability into physical processes, to provide real-time anomaly detection and to support intelligent, real-time, business-critical decision making. SigaGuard delivers unique visibility into physical processes - supporting more informed decision making. The system provides customizable real-time alerts and enables ICS/SCADA operators to consolidate all critical sensor data into one platform for optimized situational awareness.

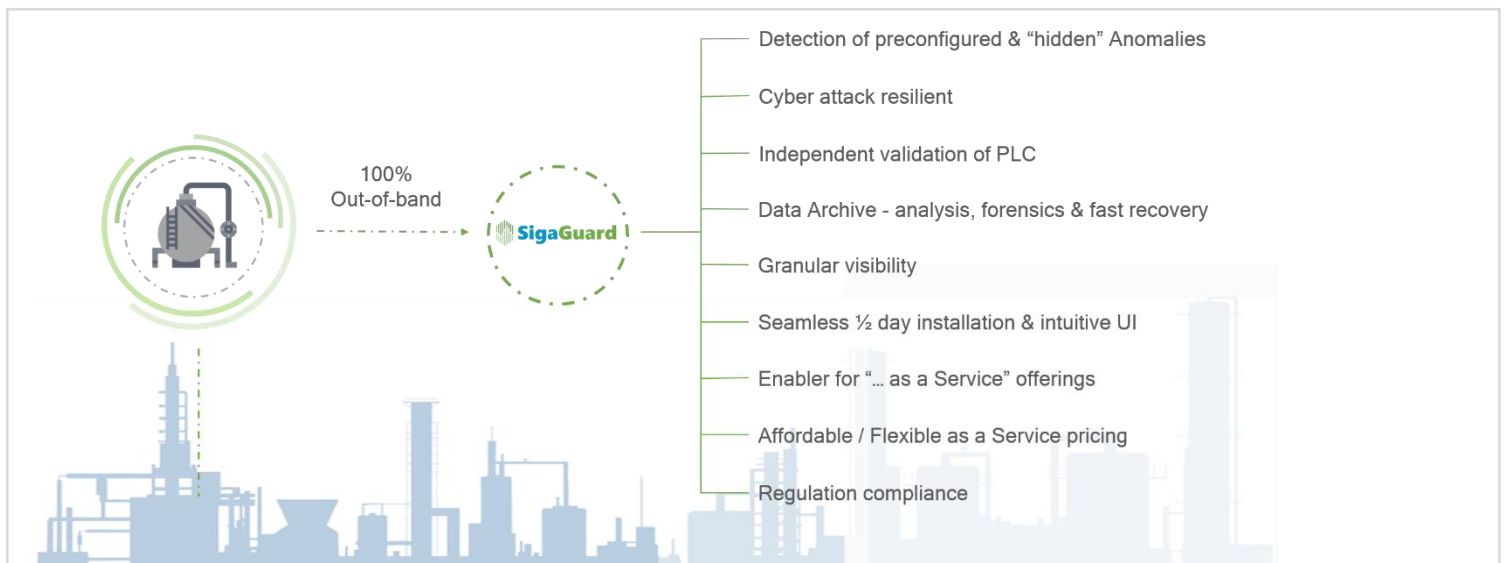
SigaGuard is an essential ICS security, level 0 solution, complementary to all other IP based solutions in the ICS network, level 1 and up.



Our Value Proposition

Absolute Cyber Resilience for organizations with ZERO TOLERANCE for operational downtime or failure of their critical assets.

- ICS/OT cybersecurity solution not depended on data flow and cannot be hacked
- Out of Band: unidirectional secure data export
- Device visibility from untampered, unsmoothed raw data (0 level)
- Enabler for continuous operation even when the ICS/SCADA system is compromised or shut down
- Operational reliability & risk minimization
- Situational awareness - 24/7 anywhere
- Smart alert - rule-based, real-time alerts
- Non rule-based Machine Learning engine: monitoring, analysis, anomaly detection & alerts
- ICS cybersecurity solutions showing an operational ROI



SigaGuard for SOC and Managed Service Providers (MSSPs)

The SigaGuard unique, out-of-band architecture and uni-directional monitoring system, allow this solution to be deployed as a managed service. The system is the most reliable source of information of a SOC (Security Operations Center), as the information, in the form of electrical signals (physics) is coming directly from the device; and in a communication medium which cannot be hacked or circumvented.

SigaGuard enables a wide variety of notifications options e.g. email, SMS, and also allows direct integration to SIEM-SOC via Syslog, XML or REST API.

SigaGuard As-A-Service for SOC and managed service providers (MSSPs) is an ideal anomaly detection solution, highly secured, reliable, un-hackable and very cost-effective.

How this Unique Technology Works

SIGA's core solution is a next generation anomaly detection platform which is based on securing raw data duplication, based on fully out-of-band hardware, reliable encrypted data delivery and multi layered analysis aiming to identify process abnormalities and generate new and valuable operational insights.

The SIGA solution is comprising both a hardware layer installed in the critical infrastructure, to measure low-level electric signals, and a software layer applying advanced analytics. The electrical signals are acquired directly from the control loop between the PLC and the sensors/ actuators, using uni-directional isolators, into a separate network. This raw data is analyzed by the SigaGuard smart AI engine providing real-time, totally reliable status of the critical end devices of the OT network, and send smart notifications according to customer specs.

The Hardware Layer

Isolated Transmitters: A standard automation control component, Utilization of non-invasive Isolated Transmitters to mirror selected electrical signals (current/ voltage) utilized by the assets without affecting the ICS system or the signals themselves. The result is an identical signal that can be processed in the SigaPlatform, which can be benchmarked, analyzed, and compared across time periods and locations. The transmitter also serves as a uni-directional gateway, preventing any possibility of a return signal reaching the I/O that is being monitored. The transmitter does not affect the signal or ICS in any way as its operation is completely parallel to the input signal.

Multifunction Data Acquisition Unit (DAQ): This component acquires and converts the data received from transmitters to a digital representation and sends it to the main processing server/ computer over a TCP/IP network.

Industrial Computer: A compact rigid computer that is the host of the Anomaly Detection Engine (see Software Layer Components section below). This computer has a powerful processor and it is suitable for operating in industrial conditions of high temperatures, dirt and heavy equipment.

The Software Layer

Source visualization: The basic SIGA Platform which allows users to continuously monitor their sensors and process health, with data that is missing in their conventional legacy systems. The information is displayed on a user-friendly and intuitive GUI dashboard named SigaSight. By default, the dashboard presents the overall system's state of health, as well as the state of every monitored I/O and a status assessment. Users are able to prepare analytical reports and prepare a trend analysis of their equipment's performance. In addition, the system logs all major events for future reviews.



Machine Learning Engine

The engine's main task is to detect anomalies and danger zones in the operational process which are either not identified for any reason (operational or cyber) by the operational system or not part of the expected fault cases hence not covered by the predefined operational alarms. This engine combines proprietary and advanced predictive analysis algorithms that employ machine learning to analyze all incoming signals and identify potential cyber-attacks or process related anomalies.

Any possible threat is forwarded to the SIGA Dashboard where it is presented to an operator or security professional who can investigate, shut-down the asset, or flag the warning as “not relevant”. The actions of the security professional are re-introduced to the algorithm to improve its accuracy and reliability. The detection engine is installed on a dedicated, off-the-shelf server (based on SIGA’s detailed specs) and is placed in the client's control room or any other secure location chosen by the client. When there is an anomaly in the I/O originating either from a compromised system or from an equipment problem it will create a visible notification with directions as to the source of the anomaly.



Our Verticals



Oil & Gas



Water Facilities



Buildings



Data Centers



Energy Facilities



Manufacturing Sites



Maritime

About Siga

SIGA OT Solutions Ltd is a young and dynamic company, led by synergetic and highly experienced managers, R&D, commercial and operational teams. SIGA developed a unique OT & Cyber Security, protocol agnostic solutions based on raw electrical signals of level 0 - sensors and actuators monitoring, with a range of solutions at commercial stage, and with over 30 installations worldwide.

The Siga technology is U.S. patented and ISO 27001- Certified, providing OT monitoring, anomaly detection and cybersecurity solutions for commercial, industrial, critical infrastructure, ICS and SCADA systems.

Siga Data Security and Siga OT Solutions Inc., a Delaware corporation, boasts satisfied customers in the United States, Europe, Singapore, Japan, and Israel, and were named a Gartner "Cool Vendor" for Industrial IoT and OT Security in 2018, and are a recipient of the EU Research and Innovation program - Horizon 2020.



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