

Houston Chemical Plant SCADA Implementation Case Study

DeepShield Systems, Inc.

Document Reference: CS-HCP-2023-142

Date: September 15, 2023

1. Executive Summary

This case study documents the implementation of DeepShield Systems' Industrial Control System (ICS) security solution at the Houston Chemical Processing Facility ("Facility"), a major petrochemical manufacturing complex in Harris County, Texas. The implementation was executed pursuant to Master Services Agreement No. MSA-2023-0472 dated March 1, 2023.

2. Project Overview

1. The Facility operates multiple interconnected SCADA systems controlling critical chemical processing operations across 127 acres, including:

- 14 primary processing units
- 3 utility generation plants
- 42 storage tanks
- 8 loading/unloading terminals

2. Prior to implementation, the Facility's legacy SCADA infrastructure exhibited multiple security vulnerabilities, including:

- Outdated firmware versions on PLCs
- Insufficient network segmentation
- Limited intrusion detection capabilities
- Absence of real-time threat monitoring

3. Solution Implementation

1. DeepShield deployed its comprehensive ICS security platform, including:

- DeepShield Guardian(TM) v4.2 network monitoring system
- AI-powered anomaly detection modules
- Real-time threat response automation

- Secure remote access infrastructure
- Custom-configured industrial firewall deployment

2. Implementation Timeline:

- Phase 1: Network Assessment & Design (March 15-31, 2023)
- Phase 2: Infrastructure Deployment (April 1-30, 2023)
- Phase 3: System Integration & Testing (May 1-31, 2023)
- Phase 4: Operator Training & Handover (June 1-15, 2023)

4. Technical Specifications

1. Network Architecture:

- Segregated OT/IT networks with DMZ
- Redundant fiber backbone infrastructure
- Military-grade encryption for all control traffic
- Distributed sensor network with 147 monitoring points

2. Security Features:

- Real-time deep packet inspection
- Behavioral analysis of control systems
- Automated threat containment protocols
- Continuous integrity monitoring of PLC configurations

5. Performance Metrics

1. Key Performance Indicators:

- 99.999% system uptime achieved
- Zero security incidents during first 6 months
- 100% detection rate for test attack scenarios
- Average threat response time: 1.2 seconds

2. Compliance Achievements:

- NIST SP 800-82 compliance verified
- ISA/IEC 62443 certification obtained

- NERC CIP requirements satisfied
- API 1164 guidelines implemented

6. Risk Management

1. Identified Risks:

- Production disruption during implementation
- Legacy system compatibility issues
- Operator adaptation challenges
- Communication protocol conflicts

2. Mitigation Measures:

- Phased deployment strategy
- Comprehensive backup systems
- Extended operator training program
- 24/7 technical support availability

7. Legal Considerations

1. This case study is subject to the confidentiality provisions contained in Section 8.3 of MSA-2023-0472.

2. All technical specifications and performance metrics contained herein are considered Confidential Information as defined in the Master Services Agreement.

3. This document may not be reproduced or distributed without written authorization from DeepShield Systems, Inc.'s Legal Department.

8. Certification

The undersigned hereby certifies that this case study accurately represents the implementation of DeepShield Systems' ICS security solution at the Houston Chemical Processing Facility.

DEEPSHIELD SYSTEMS, INC.

By: _

Name: Dr. Elena Rodriguez

Title: Chief Security Architect

Date: September 15, 2023

9. Disclaimer

This document is provided for informational purposes only and does not constitute a warranty or guarantee of system performance. DeepShield Systems, Inc. makes no representations or warranties regarding the accuracy or completeness of the information contained herein. This case study reflects specific implementation results which may vary based on operational environment and conditions.

CONFIDENTIAL AND PROPRIETARY

(C) 2023 DeepShield Systems, Inc. All Rights Reserved.