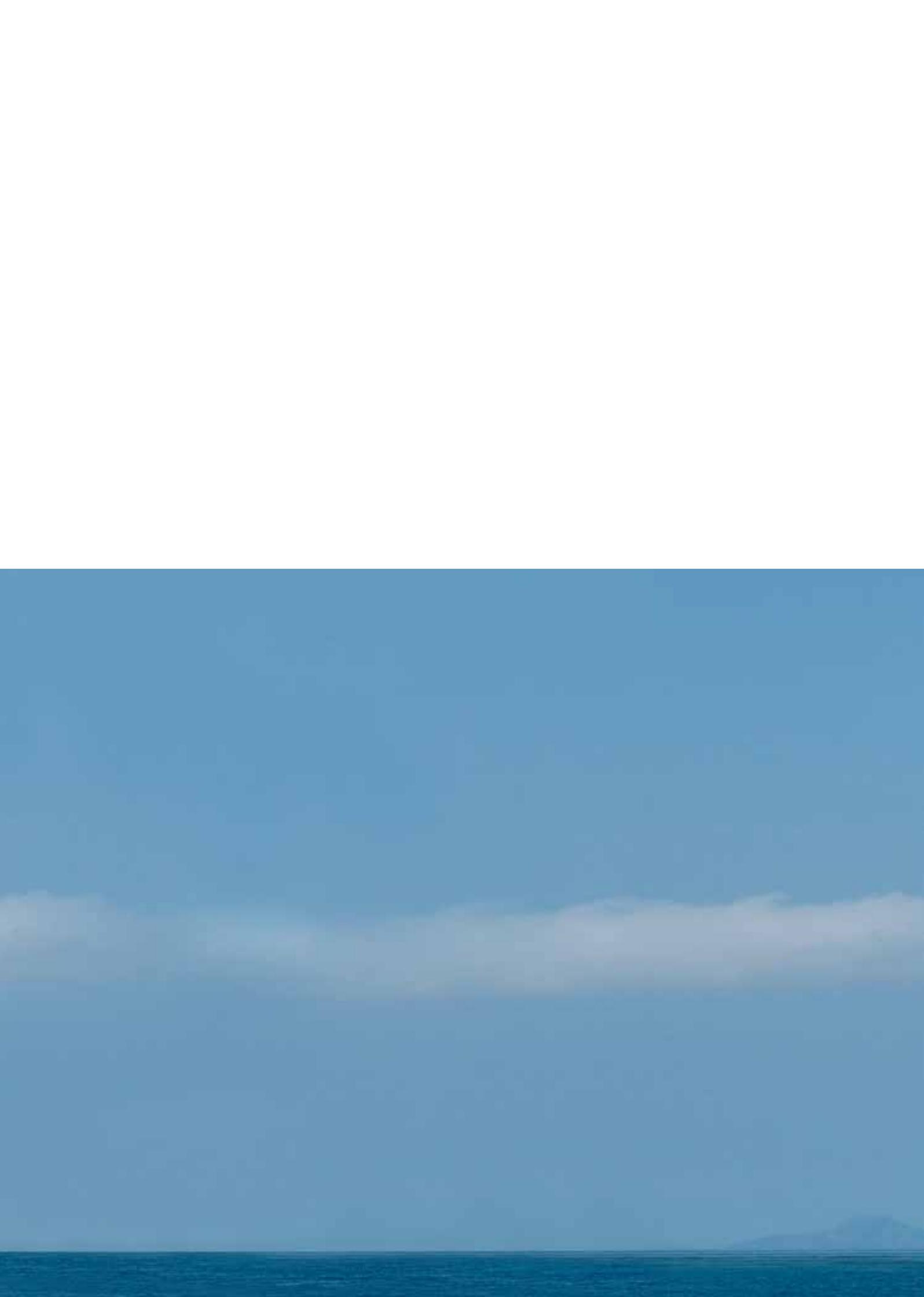


Oil & Gas infrastructures protection





Oil & Gas infrastructures are mission critical systems since they need to adapt to fluctuating demands, whilst guaranteeing 24/7 availability. In this context, surveillance and monitoring technologies are required to deliver a 360° field of view (both in a physical and cyber context), since operations should be fully informed and in control, ensuring business continuity, avoiding injuries to operators, and delivering effective protection against a range of attacks.

Leveraging a breadth of expertise across both defence and civil domains, Selex ES has developed a range of capabilities that allow us to offer modular complex solutions ensuring effectiveness, reliability, security, and control of Oil & Gas operations at every stage of the lifecycle.

Selex ES provides multi-functional integrated solutions based on state of the art technologies, in order to meet increasing requirements of critical infrastructure reliability, safety and security. Our solutions encompass automation and process control, communications, physical and cyber security, and SCADA.

- Long-standing experience in automation and process control for the Oil & Gas sector
- Strong integration expertise
- Flexible security solutions and operator alert systems
- Deep understanding of C2 and management of plants and pipelines
- Consolidated alliances with world-leading companies
- Integrated communications solutions employing operation-specific technologies
- In-house development capability for operational communications technologies, leveraging experience in mission-critical networking
- Flexible SCADA platform, developed in-house and capable of supporting application packages for optimal plant management.



**AUTOMATION AND PROCESS CONTROL:
WHERE EFFECTIVENESS MATTERS**

Selex ES’s activities in process automation are focused on system integration, and the design and delivery of automation systems based on third party hardware. These solutions use third party products or the proprietary SCADA GRS (Global Ranger System) as software components, depending on the complexity of the plant.

Thanks to an alliance with Rockwell Automation, Selex ES can provide ICS Triplex ESD (Emergency ShutDown) and Fire & Gas systems certified to SIL2 (Safety Integrity Level) and SIL3.



**COMMUNICATIONS:
WHERE RELIABILITY MATTERS**

Oil & Gas operators require fully integrated information and communications solutions that are both reliable and robust, designed to operate in extreme and hazardous environments and during critical and emergency situations.

Selex ES develops turnkey multi-technology network solutions that integrate a range of wired and wireless communication technologies –including TETRA, DMR and next generation wireless broadband radios – and guarantee transparent user connectivity in all circumstances, for safe and efficient operations.

As a systems integrator, we offer complete communications packages to EPC and end customers, addressing:

- Transport networks (both wired and wireless)
- Access to wired (LAN) and wireless networks
- PAGA/PABX
- Clock distribution
- Operational communications.



Selex ES’s communications solutions	
TETRA	The “ ElettraSuite ADAPTANET® ” is a complete modular, scalable and flexible family of TETRA systems, satisfying requirements ranging from single-site to national networks. The system supports TEDS (TETRA Enhanced Data System) for technology enhancements with full support for IP communications, and is complemented by terminals dispatching solutions and service applications. The ElettraSuite PUMA-T3 Plus2 Ex handheld terminal enables to operate with TETRA and conventional FM mode and fulfils ATEX specifications for use in potentially explosive environments.
DMR	The “dual-mode” ECOS-D DMR network operates both in analogue and digital modes. This unique feature allows existing analogue terminals to be used whilst supporting the introduction of and migration to new digital terminals as required. Simulcast DMR networks can be used to support SCADA applications as well as operational communications over large areas using the same physical channel, owing to the 2-slot TDMA air-interface structure.
LTE	LTE infrastructures support data intensive Oil & Gas applications. The Selex ES LTE Core network can guarantee standard enforcement and openness to professional applications for private networks.
Network integration	The PERSEUS CSP network infrastructure facilitates the integration of multi-technology networks with unified users and application management, supporting the progressive evolution from narrowband to broadband professional communications networks.

**PHYSICAL AND CYBER SECURITY:
WHERE PROTECTION MATTERS**

Selex ES's security solutions address the requirements of Oil & Gas infrastructures in a scalable and flexible way, adapting to different geographic conditions, size/scale and scope requirements, and the various threat modes.

From long-range radar based protection to perimeter protection and video surveillance, Selex ES can design, integrate, install, and deliver a complete range of protection systems and access control to guarantee secure and efficient operations. Subsystem integration at command and control level increases situational awareness and solution effectiveness.



Selex ES's security solutions		
Long/medium range	Radar	Lyra 10 is a coherent, pulsed-doppler, solid state radar, operating in X Band. It is characterised by small dimensions and weight, low maintenance, low life-cycle costs, and fixed tower mobile installations.
	Electro optical	Thesan solutions provide medium to long-range surveillance in optical and infrared domains.
	UAV	Selex ES provides advanced Unmanned Aerial Systems (UAS) to enhance situational awareness for customers worldwide. ASIO and Crex B are micro UAV platforms designed for medium-range surveillance of critical sites, such as oil drilling platform.
Perimeter protection	Fences/barriers	Physical security solutions are based on third-party multi-technology products (microwave barriers, infrared sensors, fencing, taut wires, micro-phonic cables, anti-intrusion) closely integrated with video surveillance.
	Sensors	MasterZone is a solution based on a set of unattended ground sensors, capable of detecting movement and activity. The system dynamically creates and maintains a wireless "mesh" network able to transfer information and data to remote operation centres.
Video surveillance	S3I	S3I (Integrated Security Systems and Solutions) implements and manages highly integrated, geographically dispersed video surveillance and alarm systems.
Access control	Auto-Detector	Access control systems simultaneously manage the entrance of vehicles and people through automated identification and superior security performances, thanks to specialised hardware and smart algorithms. Auto-Detector is a robust and highly reliable, smart IP Fixed ANPR (Automatic Number Plate Recognition) system that uses advanced technologies to perform embedded OCR processing and can read vehicle license plates without additional (or external) hardware or software.

CYBER SECURITY

The threats and attacks on SCADA and Information Systems are becoming more frequent. Many major Oil & Gas companies are unfortunately suffering increased numbers of cyber-attacks, motivated by commercial and criminal intent. Selex ES can help customer in designing, deploying and managing cyber security and data protection networks, in order to defend and secure customers' ICT infrastructures and data.

Our solutions are built on defining predetermined behaviour/reference points for critical infrastructures, in accordance with operational standards, analysis and incident correlation algorithms, process management and monitoring tools. Critical areas, potential threat scenarios and unexpected behaviors are detected in real-time and 'flagged' for attention, together with potential mitigating actions and problem resolution strategies.



SCADA AND INTEGRATED C2 CENTRE: WHERE CONTROL MATTERS

The increasing focus on optimisation of service quality requires the use of extremely efficient and flexible tools capable of managing large systems in stable and safe conditions.

Selex ES's GRS SCADA system has been designed and implemented to optimise command and control functions in modern Oil & Gas plants.

The GRS is developed in open structure to support ease of upgrade and the introduction of the latest IT tools, as required. The system engine is extremely reliable and well consolidated, with the flexibility to support both geographically distributed and conventional solutions.

The growing complexity – due to multiplicity of subsystems that need to be integrated – requires a platform capable of managing the flow of information between heterogeneous systems either as built or add-on capabilities.

Using an Enterprise Service Bus architecture, Selex ES is able to produce integrated diagnostic tools capable of producing a high-level overview of the managed infrastructures: consolidating data gathered from the heterogeneous systems and providing operators with specific, actionable, information thanks to the smart algorithms and incident correlation tools.

COMMAND & CONTROL (C2)

The same layered approach characterises our approach to security management in the integrated control centre, where threats are identified and the optimal counter-measure established. C2 modules perform analysis, data fusion, and event/incident correlation in order to develop and maintain complete situational awareness and help support the appropriate reaction to potential or arising threats.



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