



GE's Control System Lifecycle Management Offerings



GE Oil & Gas

The industrial control system (ICS) is the digital center of plant operations, and is essentially responsible for keeping the facility running safely and efficiently. These digital assets must be maintained and updated on a regular basis to ensure the overall performance of the turbine and auxiliary systems. In addition, control systems are a top target of cyber threats which makes maintaining them a critical component of an operation's cyber security posture.

Whether you are ready for an upgrade or need to prolong the life of your system, GE's lifecycle management offerings can help. Our OEM expertise provides you the experience and partnership you need to get the best out of your control system and keep it running.



CONTROLS LIFECARE

Controls LifeCare, a lifecycle subscription offering, is a new partnership from GE to help maintain the health of turbine and plant control, generator control and static starter systems. It includes parts availability and replacement, 24/7 phone technical support, and software updates (TILs) and ControlST* upgrades. This subscription-based offering also includes an annual visit from a Controls Field Engineer (FE) and ControlsCare Service Manager.

Subscribers benefit from GE expertise and a true partnership in the maintenance and servicing of control systems with a simple, packaged approach. Customizable options can be added to the service based on subscriber needs.

APPLICABILITY

- Mark*Vle
- EX2100e
- LS2100e

BENEFITS

- A subscription-based model simplifies the customer process, requiring only one PO with GE for a variety of control system needs.
- A complete asset management partnership means GE expertise is available to you, when you need it throughout the year.
- Customizable options to limit the risk and provide the most proactive support for your operations

CONTROLS CARE

ControlsCare is designed to help reduce the risk and cost of maintaining your turbine, generator and plant-wide controls. ControlsCare includes tailored agreements that strengthen your partnership with GE throughout the life of your asset. Items included in ControlsCare are Technical Support Agreements (TSA), Controls Connect access, Health Advisor, PartSmart and Mark V revitalization.

TECHNICAL SERVICE AGREEMENTS (TSA)

Technical Support Agreements (TSAs) connect you to the right expert at the right time to deliver the appropriate level of support to your operations by phone, email or a Field Engineer (FE) at site. The scope of the TSA covers all aspects of controls.

SERVICES INCLUDE

- Annual health check for control system
- On-site training
- Troubleshooting and maintenance support
- Alarm management and resolution
- 24/7 phone support

HEALTH ADVISOR

Health Advisor is a consultative software tool that uses data files on a customer's installed HMI to generate a custom recommendation list of GE upgrade opportunities. This complete health assessment provides the current condition of equipment and provides a report on recommended repairs and maintenance.

MARK V REVITALIZATION

The Mark V Revitalization Program provides a support option for Mark V control customers who are not ready to retrofit or migrate to the Mark VIe platform. Customers can benefit from features like panel refurbishment, parts support, extended warranty, technical assistance and Health Advisor assessment – all designed to lengthen the lifecycle of Mark V controls.

As the world's leading manufacturer of turbines – and OEM of the Mark V – GE has the engineering experience, access to original design data, product documentation and long-term commitment to uniquely support this value-added program.

BENEFITS

- Extend the life of the Mark V control with high reliability and consistent performance
- Provide guaranteed fast access to Mark V parts
- Provide cost savings by replacing life-limited components
- Improve reliability and reduce unplanned downtime



PARTSMART

With PartSmart, you can operate with more confidence, knowing that you're covered on parts for your critical system when you need them. We understand that one of your biggest challenges in dealing with spares is the balance between high investment and lifecycle risk. PartSmart helps you lower both investment costs and lifecycle risk, by partnering with GE to achieve a shared inventory management strategy.

With PartSmart, the customer purchases access to spares "kits" through subscription. GE manages the kits, allowing the customer to hold a reduced level of inventory onsite with spares shipped as needed.

The customer determines the method of shipment, and the part is shipped from factory within 72 hours, or the part is free. Full warranty coverage begins upon shipment.

BENEFITS

- Warranty starts when parts are ordered not while in inventory
- Life limited components and obsolescence risk are managed by GE
- Reduced inventory carrying cost

CONTROLS CONNECT

Controls Connect is a secure, self-service knowledge management portal that provides instant access to GE's control knowledge base, from your plant or anywhere in the world. This newly re-designed customer portal features an intelligent search capability so user can rapidly research product information or find answers to technical questions.

BENEFITS

- Controls Connect offers access to a wide array of content such as technical documents, frequently asked questions, troubleshooting resources, industry best practices and GE news and events.
- This portal features an intelligent search capability so customers can rapidly research product information or find their own answers to technical questions.
- Controls Connect is an access point for Technical Information letters (TILs). GE's global Controls Care service numbers are available for your reference.



PARTS AND REPAIR

As an integral part of your Lifecycle Management strategy, GE brings a high degree of parts and repair expertise and capability through a dedicated regional and HQ parts team. Our expertise is delivered through dedicated Centers of Excellence. Our experienced team provides you support for over 17,000 active part numbers.

NEW

Customers can purchase new genuine GE replacement parts from our extensive inventory. To order new parts, please visit www.gemeasurement.com/machinery-control for more information on how to contact our centralized parts business.



REMANUFACTURED, EXCHANGE, REPAIR & RETURN

GE is proud to offer a wide range of alternative solutions for your circuit card/electronic sub-assembly requirements.

- Remanufactured (RM):

Customers can purchase refurbished circuit cards/electronic sub-assemblies without the need to return a defective unit. Remanufactured items are repaired and tested to the same standards as Repair and Return.

- Exchange (EX):

Customers can receive refurbished circuit cards/electronic sub-assemblies from our extensive inventory in exchange for their defective core. Exchange items are repaired and tested to the same standards as Repair and Return.

- Repair & Return (R&R):

Customers send their defective circuit cards/electronic sub-assemblies to GE for R&R. These items will be repaired to the most current revision level available and service report will be included.

Email controlsmodificationquote@ge.com to submit a "Request for Quote" from our team of experts. We will respond in a quick manner to your inquiry.

Note: Multi-scope (mix of New, RM, EX, R&R) requests can be placed through this process as well.

WARRANTY

All New, RM, EX, and R&R support options carry a full 18-month edge to edge warranty.

MAINTAIN YOUR SPARES INVENTORY

Our experts are available to work with you to assess your spares inventory to reduce risk in the event of an unplanned outage. Email controlsmodificationquote@ge.com to submit a request for more information.

MODKITS

GE's modification kits can address concerns related to compliance or obsolescence to accommodate the ever-changing technology of control systems. We offer packaged Modkits to seamlessly upgrade your system with the latest Controller Cards. In addition to the latest controller hardware, Modkits include any necessary software upgrades, engineering changes to the application/configuration files, and site services to implement the upgrade.

BENEFITS

- Gateway to more capabilities: The latest cards are compatible with options such as DLN
- Better performing cards: Greatly increased processor speed and RAM
- Guaranteed availability: Spares are widely available for the newest cards, meaning shorter outages



HMI UPGRADES

GE's Human Machine Interface (HMI) enables more efficient and productive control system and unit performance. These HMIs are the window into your operations, providing the intelligence that operators and maintenance technicians need to maintain and improve the productivity of assets in the plant.

Whether existing HMIs are used for operation of gas or steam turbines, generator excitation, compressors, heat recovery steam generators or the balance of plant equipment, GE's HMIs can be configured to match existing and future needs with customizable upgrade options meant to enhance existing functionality for operations while reducing operational impact.

Upgrading your HMI provides the latest in GE's HMI technology to create even more benefit to the e-technology platforms, represented through the enhanced modular-based technology of the Mark* VIe, EX2100e and LS2100e. GE offers a variety of HMI hardware options to meet your specific needs. These options include the Control Server HMI solution, traditional Commercial Towers, Rack Mount Servers (2U), Industrial Units (4U), and HMIs mounted directly in the panel of the control system.

BENEFITS OF UPGRADING

- Keep updated with the latest control system firmware and software to keep your assets as productive as possible
- Gain access to GE's latest HMI technology, ActivePoint*, designed specifically to improve operator efficiency when the HMI is used with a Mark VIe, EX2100e or LS2100e.
- Upgrade to newer Windows® Operating System to alleviate the challenges of supporting older systems.
- Versatile trending and data analysis tools deliver real-time monitoring and improved asset performance.
- Improved security posture with enablement of Cyber Asset Protection subscription service

CYBER SECURITY

In a complex world of ever-changing technologies, GE realizes the importance of having an experienced partner to guide successful cyber security implementation. As a global leader of industrial controls, GE is well-equipped to help customers improve their security posture and support compliance efforts. Our products are built with security in mind and are easily integrated into broader plant-level systems and IT architectures.

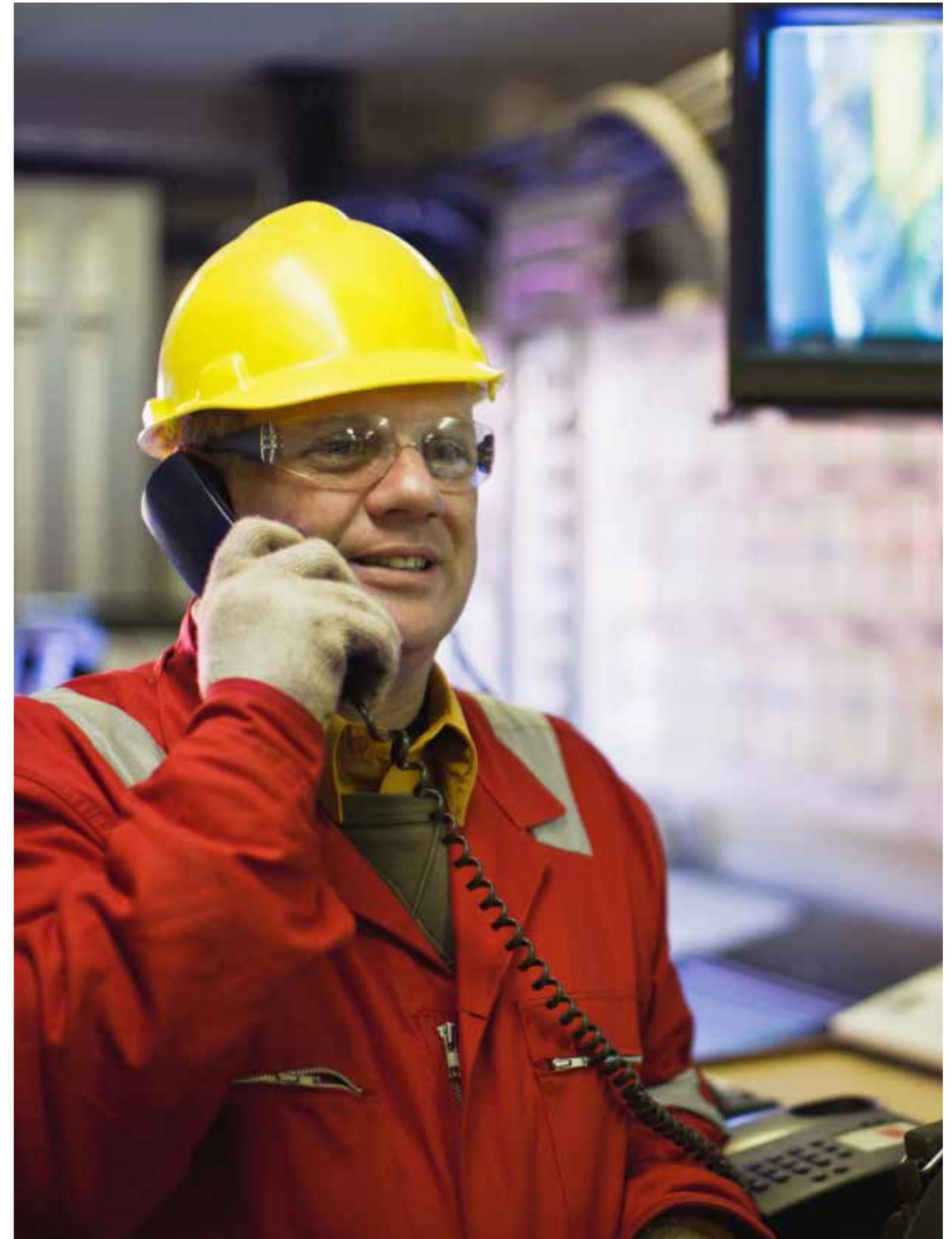
GE's SecurityST and Cyber Asset Protection Subscription solutions are a key part of a defense-in-depth system for turbine, plant, and generator controls environments. Both solutions are part of the SecurityST Mark VIe Solution and Commissioning Services, which is Achilles® Practice Certified – Bronze, indicating the solution has undergone strict cyber security evaluation demonstrating to customers that systems are developed and implemented with best security practices. GE's solutions and related services are designed to support the plant operation's compliance to cyber security standards and guidelines including NERC CIP, NEI 08-09 and ISA99/IEC 62443.

SECURITYST

GE's SecurityST centralized security management solution employs modular defensive services and technologies. This centralized system gives companies a single vantage point to see their cyber security posture, implement proactive strategies and policies to protect critical control system and related networks, and provide a centralized reporting capability to manage cyber risk. This solution helps mitigate cyber vulnerabilities at the network, endpoint and controller levels.

FEATURES

- Network Intrusion Detection and Prevention Systems
- Role-Based Access Control
- Security Information and Event Management (SIEM)
- Remote Access Security
- Backup and Recovery
- Patch Update Service
- Endpoint Protection
- Secure Implementation and Chain of Custody



CYBER ASSET PROTECTION SUBSCRIPTION

GE's Cyber Asset Protection Subscription solution includes operating system and application patches as well as anti-virus/intrusion detection signatures to cover updates for HMIs, servers, switches, and network intrusion detection. Monthly updates can be applied to individual HMIs or via the SecurityST* appliance for network-wide deployment.

BENEFITS

- Provides tested updates to keep your legacy critical infrastructure running
- Reduces downtime by providing validated patches which are tested in an environment to assure applicability and compatibility
- Keeps your risk profile updated and increases your security posture by protecting your critical assets from known vulnerabilities on a monthly basis
- Helps you meet regulatory requirements and avoid fines
- Improves safety and reliability by preventing loss of view
- Provides a dedicated service manager for cyber issues



CYBER VULNERABILITY ASSESSMENTS

GE offers cyber risk assessments to identify weaknesses and vulnerabilities with your control system so they can be addressed early and help prevent the exploitation of devices.

BENEFITS

- Assist customers in understanding their current security posture
- Delivers prioritized, actionable insights in order to mitigate security risks
- Prevent lost production and downtime
- Recommendations to enhance reliability and security – based on customer's own risk profile
- Increase incident response capability



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