

Flexible integrated automation solutions for retrofits and new substations.



DESCRIPTION

When it comes to managing your substation, the challenges can be difficult. Anything from unknown equipment status to unexpected outages can turn decision making into guesswork. Now, GE is bringing you an improved solution for your substation automation needs. With integrated solutions from GE Power Management and GE Harris Energy Control Systems, the total return on investment for your substation automation project can be even greater.

GE Substation Automation systems provide comprehensive automated power management, protection, control, and monitoring solutions for substation automation. Systems are scalable and upgradable, allowing for a minimal initial capital investment while maintaining the ability to upgrade.

In combining the hardware and software components required to efficiently integrate various power system IEDs, the GE Substation Automation system can seamlessly integrate IEDs of many sources with different protocols to the substation LAN. Additional substations may be added to the LAN to further leverage

remote access and control. In addition, by using a modular approach and common data structure for integration, the system is easily expandable.

The GE Substation Automation system provides standard network interfaces, open-layered multi-protocol support, and centralized network management to efficiently communicate between generating plants, substations, and operation centers. Legacy protocol devices can be combined with MMS/UCA2 and DNP 3.0 compliant IEDs or a host of other protocols including open ModBus®/TCP and ModBus® RTU over a high speed fiber optic communication network to accommodate the optimum combination of devices.

Comprised of communication equipment, protocols, gateways, HMIs, engineering tools, GE's multilingual UR (Universal Relay) family of IEDs and the D25 IED, the GE Substation Automation System directly interfaces with EMS and SCADA systems incorporating GUIs (Graphical User Interfaces) for local and remote control, application development, database management, and enterprise connectivity.



GE Substation Automation

3

Applications

- Substation automation and integration
- Powerhouse solutions
- Retrofits and new stations
- Industrial and utility solutions
- Protection, control and monitoring

System Solutions

- System responsibility
- Integration services
- Turnkey solutions and project management
- Consulting services
- Custom engineering and drawings
- Custom rackups and panels
- Equipment supply and manufacturing
- Screen programming
- Startup and commissioning
- Training, technical support and maintenance services
- Remote monitoring and diagnostics
- Project financing
- Partnerships

System Benefits

- Reduced total cost of ownership
- Deferred capital expenditures
- Improved performance and uptime
- Improved maintenance productivity
- High speed peer-to-peer LAN control
- Reduced wiring
- Hassle free integration
- Common modular platform
- Reduced training

Communications

- MMS/UCA2 for interoperability
- DNP 3.0 over serial or ethernet
- Legacy IED and SCADA protocols
- SDH/SONET based systems

Features

- Control/monitoring over the LAN
- System scalability
- Configurable schemes using FlexLogic™
- URPC software
- Open architecture design
- IED interoperability
- Programmable logic control
- Powerful diagnostics viewers for DFR and PQ analysis

DESCRIPTION

Around the world, competition continues to drive electrical utilities in search of economic solutions. The technology they turn to is "Substation Automation", and the company is GE.

GE Substation Automation seamlessly integrates the protection, monitoring, diagnostics, control, measurement, and software functions of your substation system. The results can include reduced capital and operating costs, increased reliability and asset utilization, enhanced operational efficiencies, reduced outages, easier regulatory compliance, and elimination of unnecessary equipment and resources. All of which add up to providing superior customer service. And that's the bottom line.

SYSTEM BENEFITS

With maintenance budgets tightening and power demands changing, real-time remote access to your substation equipment can save you time and money – without necessarily having to replace what you've got. Around the world, GE Substation Automation systems are providing the answer for cost-conscious utilities in several important ways.

Minimize Customer Outages

- Proactively identify faults before catastrophic failures occur
- Manage fault detection, auto-sectionalizing, and auto-restoration
- Enhance security and reliability with integrated protection, monitoring, and control
- Monitor power delivery equipment status to achieve peak operating performance
- Monitor status of all substation primary, protection, and control devices
- Reduce customer outages by 10% or more

Reduced Operating and Maintenance Costs

- Centralize equipment oversight through remote monitoring
- Optimize crew dispatch and work planning

- Perform condition-based maintenance rather than scheduled maintenance
- Upgrade equipment for life extension and improved performance
- Save considerably by remotely switching feeders

Improve Productivity

- Adjust voltage, transformer loads, and feeder loads from central office PC or remote laptop
- Improve equipment operating efficiencies through real-time monitoring and diagnostics
- Fine-tune operations in real-time over user-friendly, secure access
- Reduce crew trips to substations by 10% or more

Centralize Automation

- Immediate access to remote locations from a centralized location
- Enable predictive maintenance through analysis of operating conditions
- Lower costs through centralized communications to remote substations

- Common database enables predictive maintenance, volt/VAR control, and self-diagnostics
- Web-enabled design affords resource location flexibility

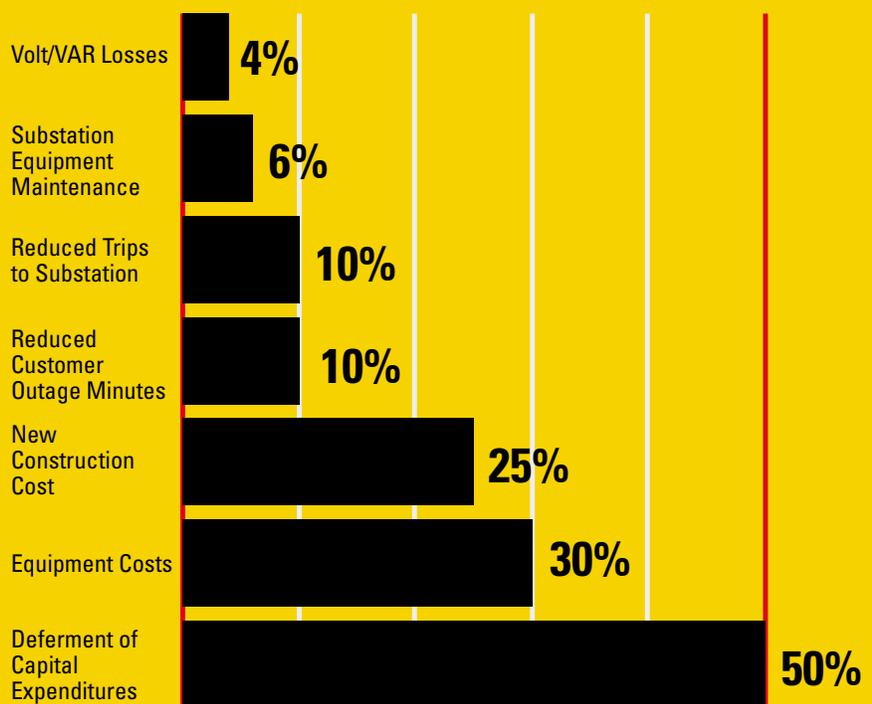
Improve Asset Management

- Achieve tight system control through transformer and feeder load balancing systems
- Extend equipment life and operate peak remote real-time performance monitoring
- Eliminate redundant transducers, meters, event recorders, annunciation, and RTUs
- Save 30% or more in capital upgrades through automation

Enhance Information Management

- Automatic analysis of key operating conditions for timely decision making
- Quickly assess load management, load shedding, reactor and capacitor switching

TYPICAL BENEFITS (% REDUCTION)



typical benefits.eps

Be it a retrofit or green field project...

GE has a substation automation solution that will deliver value.

GE SUBSTATION AUTOMATION COMPONENTS

Software Applications

A powerful suite of flexible, user-friendly software applications and graphical user-interface modules are available. These advanced user interfaces and easy to configure tools enable improved data reporting and database configuration management.

Network Communications

A range of network components are available to tie new and legacy equipment into one unified system. GE can provide secure and reliable communications media based on experience and expertise in numerous network systems.

Engineering Expertise

GE's industry leading expertise and experience are capable of completing all engineering facets of your automation project - from consulting and design to installation and commissioning.

Intelligent Electronic Devices

A family of modular and flexible intelligent electronic devices is available for solving the biggest challenge of integrating relays from existing substations and new systems. Our relay family provides the latest for relay integration, protection, and control, with high-speed, open standard peer-to-peer communication for connecting directly to the LAN.

Gateways/Servers

Robust systems for monitoring and controlling substation devices as well as for performance automation, IED gateways, and host communication functions. Our systems have the processing power to monitor and control over 40 IEDs and thousands of I/O points.

Monitors and Sensors

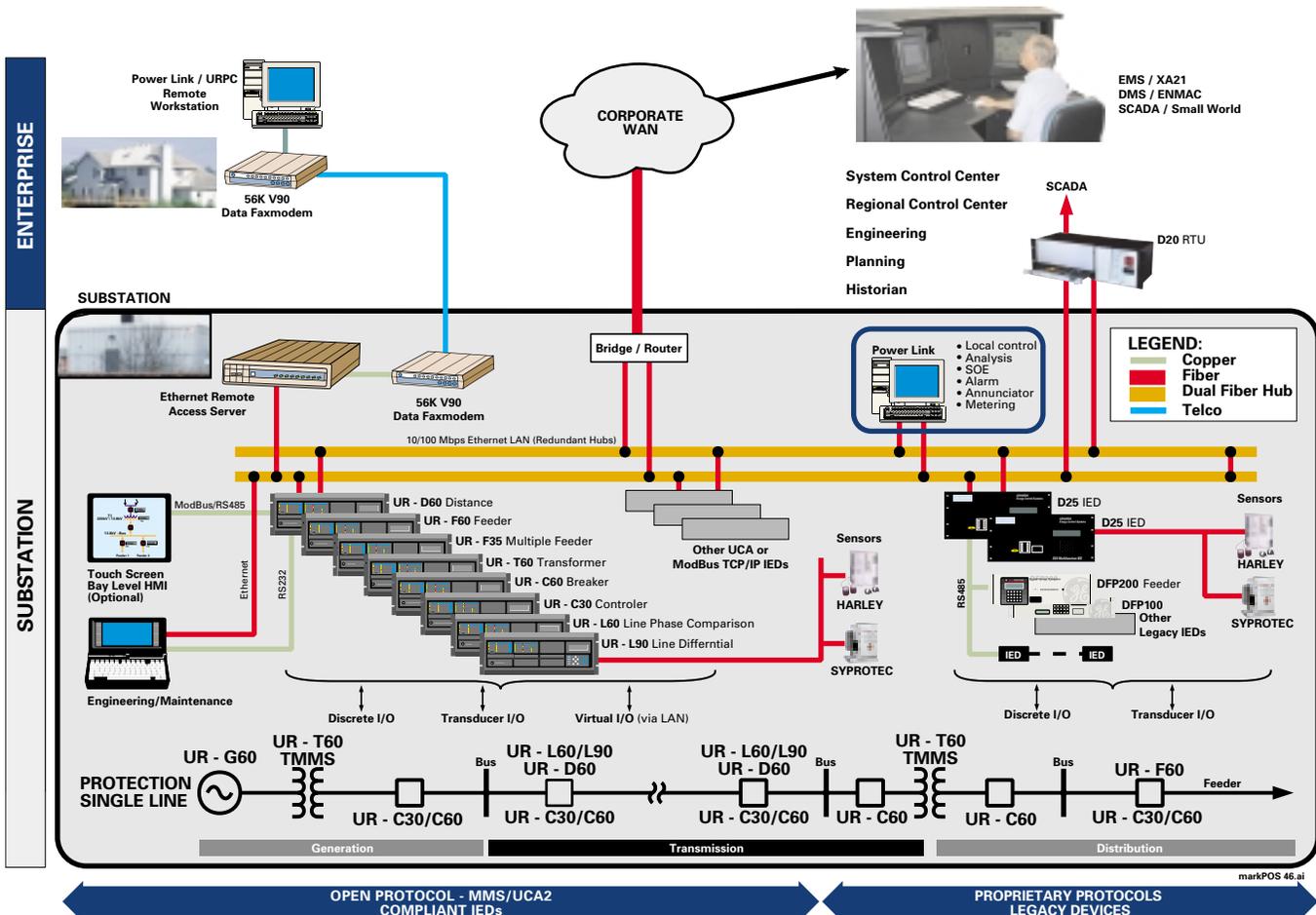
With a portfolio of sophisticated monitoring and diagnostics systems for critical substation equipment, remote monitoring of performance and critical fault detection is achievable. These advanced systems enable you to improve performance and service reliability as well as extend the useful life of critical assets.

Feeder Automation

Distribution Automation Remote Terminals equipped with auto-sectionalizing and automation restoration software can dramatically reduce a customer's outage frequency.

3

GE Integrated Substation Control System (iSCS).



GE CAPABILITIES

System Responsibility

GE can take full responsibility for system design, installation, and commissioning. GE works closely with the client to define the scope of supply and deliverables. The power of the package allows GE to pull together all our resources to make your project a success.

Integration Services

GE can help you with your integration challenges from concept to operation. Our team of experts has the experience and resources to integrate legacy devices, IEDs from various manufacturers, different protocols, and different communication equipment. Our integration solutions ensure that legacy investments will not be stranded or lost.

Turnkey Solutions and Project Management

We can coordinate your project from order to commissioning. We can manage all phases of the project and meet your project milestones on time and on budget.

Consulting Services

Need help to solve a specific problem? Our years of experience and in-house applications expertise in substation automation provide us with the resources to help you solve your problems.

Custom Engineering and Drawings

When you need expert engineering help to complement your team, we have the experience to help you bring your ideas to executable designs.

Custom Rackups and Panels

Panel solutions with high quality design engineering, materials and workmanship for custom rack ups or modifications, GE can suit your needs.

Equipment Supply

IEDs, gateways, hubs, communication equipment, computers, software and all necessary components for substation automation as well as the electrical equipment for your whole substation at the transmission and distribution level. Let GE show you the 'power of the package'.

Manufacturing

GE's equipment meets demanding international manufacturing and engineering standards such as ISO, UL, CSA, and CE Mark.

Startup and Commissioning

Our commissioning engineers have experience in solving problems under difficult situations, in different geographical areas and for a diverse range of projects. They can take responsibility or complement your team when you wish to ensure that the start up will be as smooth as possible.

Training

We are committed to bringing customers the highest quality training on a global scale. A combination of classroom lectures and hands-on lab exercises ensure knowledge that students can apply immediately.

Technical Support

We know our products intimately and we are available 24 hours a day 365 days a year to help you any time you need it.

Maintenance Services

When preventive or regular maintenance are required, we have the expertise to carry out a complete maintenance program for you, with specific check

points and reports. This will ensure the correct operation and prolong the life of your system.

Remote Monitoring and Diagnostics

We provide products, systems, and services to monitor your system remotely and diagnose problems that may arise in real time. This increases the availability, reliability, and longevity of your investment.

Long Term Full Service Agreements

This service goes above and beyond traditional offerings. What we can do for you is service all aspects of your system without you having to think about specialized equipment or expertise. We have it all.

Project Financing

When financing is required GE Capital can help you with very competitive rates and payment terms.

Partnerships

We want our customers to benefit from our capabilities which in turn makes us stronger. This allows us to continue to help our customers, creating a win-win circle of growth and competitiveness for both.



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