



GE Energy Management

January 2014

Imagination at work.

GE Works

GE works on things that matter. The best people
and the best technologies taking on the
toughest challenges. Finding solutions in energy,
health and home, transportation and finance.
Building, powering, moving and curing the world.
Not just imagining. Doing. GE Works.



ENERGY
MANAGEMENT



POWER &
WATER



OIL &
GAS



AVIATION



TRANSPORTATION



HEALTHCARE



CAPITAL



HOME &
BUSINESS
SOLUTIONS



Our business units



Energy Management

5% | \$7.6B



Power & Water

17% | \$24.7B



Oil & Gas

12% | \$17.0B



Aviation

15% | \$21.9B



Transportation

4% | \$5.9B



Healthcare

12% | \$18.2B



Capital

30% | \$44.1B



Home & Business Solutions

5% | \$8.3B

~\$146B Revenue in 2013

\$16.9B Operating Earnings



GE Energy Management



Imagination at work.

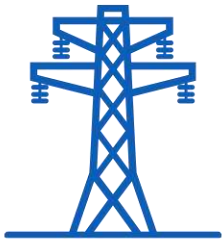
Who we are

As GE's electrification and automation business, we bring over 100 years of experience to our customers.

We help our customers...

- Generate
- Transmit
- Distribute
- Convert
- Protect
- Automate
- Control
- Optimize

electricity....reliably and efficiently.



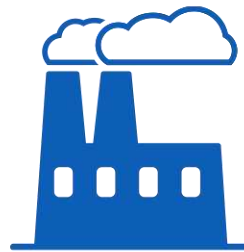
Utility



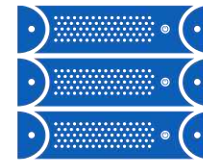
Oil & Gas



Marine



Heavy Industry



Telecom & Datacom



Commercial



Where we work



What we create

Our electrical and controls products,
solutions and services.



Motors & Generators



Power Delivery



Electrical equipment



Protection
and control



Software



Variable
frequency drive



Critical power



High performance
automation



Services



GE Energy Management

The industries we serve



Imagination at work.

Utility

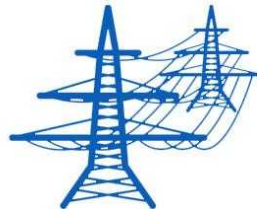
We enable a more reliable, efficient and resilient grid by preventing and detecting grid power failures, digitizing substations, and reducing outages.

Our Solutions **modernize the electrical grid** from the power plant to the power consumer:

- High quality high, medium, and low voltage primary equipment
- Power quality equipment
- Protection and control
- Advanced analytics & visualization
- Intelligent substation automation & control
- Real-time grid monitoring & control



Generation



Transmission & Distribution



Power Consumers



Grid Modernization

Powering the economy

Challenge

Power systems are interconnected, highly complex, and susceptible to instabilities. On August 14, 2003, cascading blackouts hit the northeast US and Canada leaving 50 million people without power and cost the economy in excess of eight billion dollars.

Solution

GE's grid modernization solutions enable self-healing power systems that detect instabilities and automatically reconfigure and restore networks in real-time.

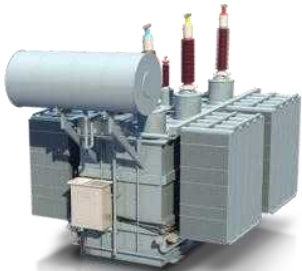
Benefit

More reliable and efficient power.



Utility Solutions portfolio

Primary Equipment



- Generators
- Motors
- Drives
- Primary equipment
- Power quality equipment
- HVDC (*large power transmission systems*)
- Medium/Low voltage equipment
- Series compensation

Grid Connectivity



- Dynamic grid support
- Grid converters
- Energy storage
- Electrical Balance of Plant
- Substations
- Power System Studies

Protection & Control



- Protection & Control
- Industrial Communication
- Smart Metering
- Monitoring & Diagnostic

System Software



- Asset Management
- Asset Control
- Solutions as a Service
- Advanced Analytics



Oil & Gas

A century of industry achievements and technology breakthroughs to electrify processes from upstream to downstream delivering high performance solutions.

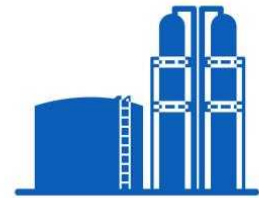
- High-power drives
- High-speed & integrated compression solutions
- Comprehensive LV/MV motor range
- Subsea electrification
- Electrical distribution
- Energy Management Systems & critical power
- Intelligent control platforms
- Predictive power asset analytics



Upstream



Midstream



Downstream





O&G Value Chain Electrification

Extract, Deliver and Process Results

Challenge

The Oil and Gas industry increasingly faces the challenge of safe and effective operations in a more demanding and regulated environment that requires highly-engineered equipment and well-informed decisions.

Solution

Full suite of integrated electrical and power data-management solutions to help our customers extract, deliver and process oil and gas.

Benefit

Safer, more reliable and efficient operations.



Oil & Gas

Solutions portfolio

Electrical rotating machines



- Induction and synchronous motors
- Power rating up to 100 MW
- High-speed up to 20,000 rpm
- Gas and steam turbine generators
- Integrated Compressor Line
- Critical environment technologies

Medium voltage drives



- Voltage up to 13.8 kV
- Load Commutated Inverter or Voltage Source Inverter
- Air or water-cooled

Electrification systems



- Protection and control
- Transformers
- Motor Control Centers
- Switchgear
- Data-management/analytics
- Offshore e-house modules



Marine

Partnering with you to power, propel and position the marine industry, enabling improved reliability, efficiency and precision.

We are at work, applying deep expertise and advancing smarter solutions, electrifying your performance:

- Power & Propulsion Systems
- Dynamic Positioning
- Drilling Systems
- Vessel Automation



Offshore



Merchant



Navy





We power, propel and position the Marine industry

Challenge

Deepwater drilling requires operating at 3,000+ meters of water depth, 300 km offshore in remote, harsh environments worldwide. Operators demand high reliability, responsive service and support, and increased availability to support safe, continuous operation.

Solution

Smarter engineering and a global presence coupled with GE's range of flexible systems in power, propulsion, automation and dynamic positioning ensures the best solutions are available to suit the precise needs of each vessel.

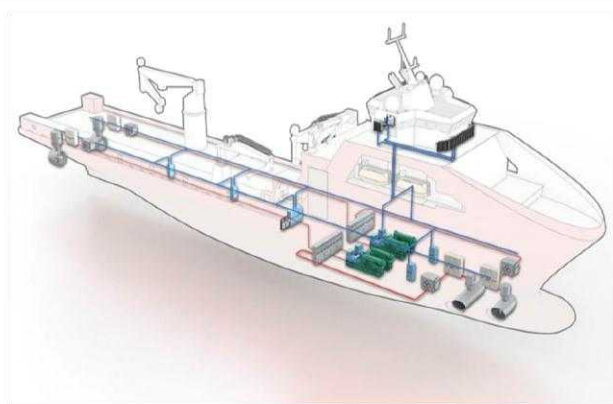
Benefit

GE provides asset availability, precision, operational efficiency and global service and support.



Marine Solutions portfolio

Power & Propulsion



- Power Generation
- Power Distribution
- Propulsion Motors and VFD's
- Drilling Systems
- PODs

Dynamic Positioning



- DP Class 1, 2 and 3
- Thruster Control
- Position Measurement
- Joystick

Automation & Control



- Automation System
- Integrated Bridge System
- Power Management
- Auxiliary Monitoring
- Propulsion Control



Heavy Industry

Improve both your processes and equipment availability to optimize throughput and recovery at minimum energy costs, in a sustainable, compliant manner.

Total solutions throughout the supply chain include:

- Real-time Operational Intelligence
- Advanced predictive asset analytics
- Motors, Generators
- High voltage, medium voltage, low voltage equipment
- Automation and Process Control
- Fleet Monitoring & Diagnostics
- Low and Medium Voltage Drives
- Protection and control



Power Quality



Metals



Mining



Material Handling



Test Systems



Water





Going Deeper Optimizing the future of mining

Challenge

Large mines today require working in deeper and more remote locations. These challenging environments demand larger and more powerful equipment across the entire mining process along with the right information at the right time to detect problems early and maximize operations.

Solution

Our range of proven remote monitoring & diagnostic software solutions, drives, motors, generators and automation are integrated throughout the mining process to improve reliability, power density, efficiency and balance process performance with equipment health.

Benefit

An entire system designed to optimize component interactions for efficient operations.



Heavy Industry Solutions portfolio

LV & MV Motors and Generators



- Induction Motors
- Synchronous Motors
- Small DC Motors
- Large Industrial Generators
- Generators

Drives and Converters



- Medium Voltage Drives
- Low Voltage Drives
- Switchgear
- Dynamic VAR compensators

Automation, Control and Software



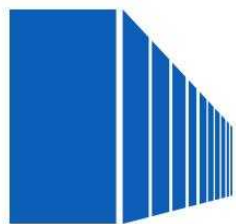
- Incident Reporting
- Remote Support & Diagnostics
- MaxxMine



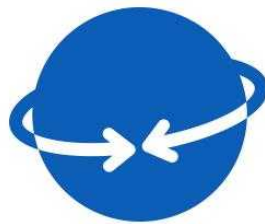
Telecom & Datacom

We provide unique solutions, technology, and services capability that help telecom & datacom operators, from the largest datacenters to the most remote off-grid mountaintop, keep their networks powered without interruption.

- DC power UPS, battery back up
- AC power UPS, battery back up
- 24/7 Services, Installation and Emergency Backup
- Total Efficiency* solutions
- Management software, digital communication
- Engineered Site Solutions (ESS)
- EcoPriority* solutions using renewable energy sources for off-grid/poor-grid sites
- Electrical distribution
- GE Capital Retrofit financing program
- Wireless cell site and DAS solutions



Datacenter



Mobile Data



Telecom





GE Datacenter

Building in life-saving reliability

Challenge

Unplanned power outages can cause millions of dollars of losses when processing credit card transactions gets interrupted. GE's datacenters need 99.9999% power availability delivered efficiently and with multiple levels of redundancy.

Solution

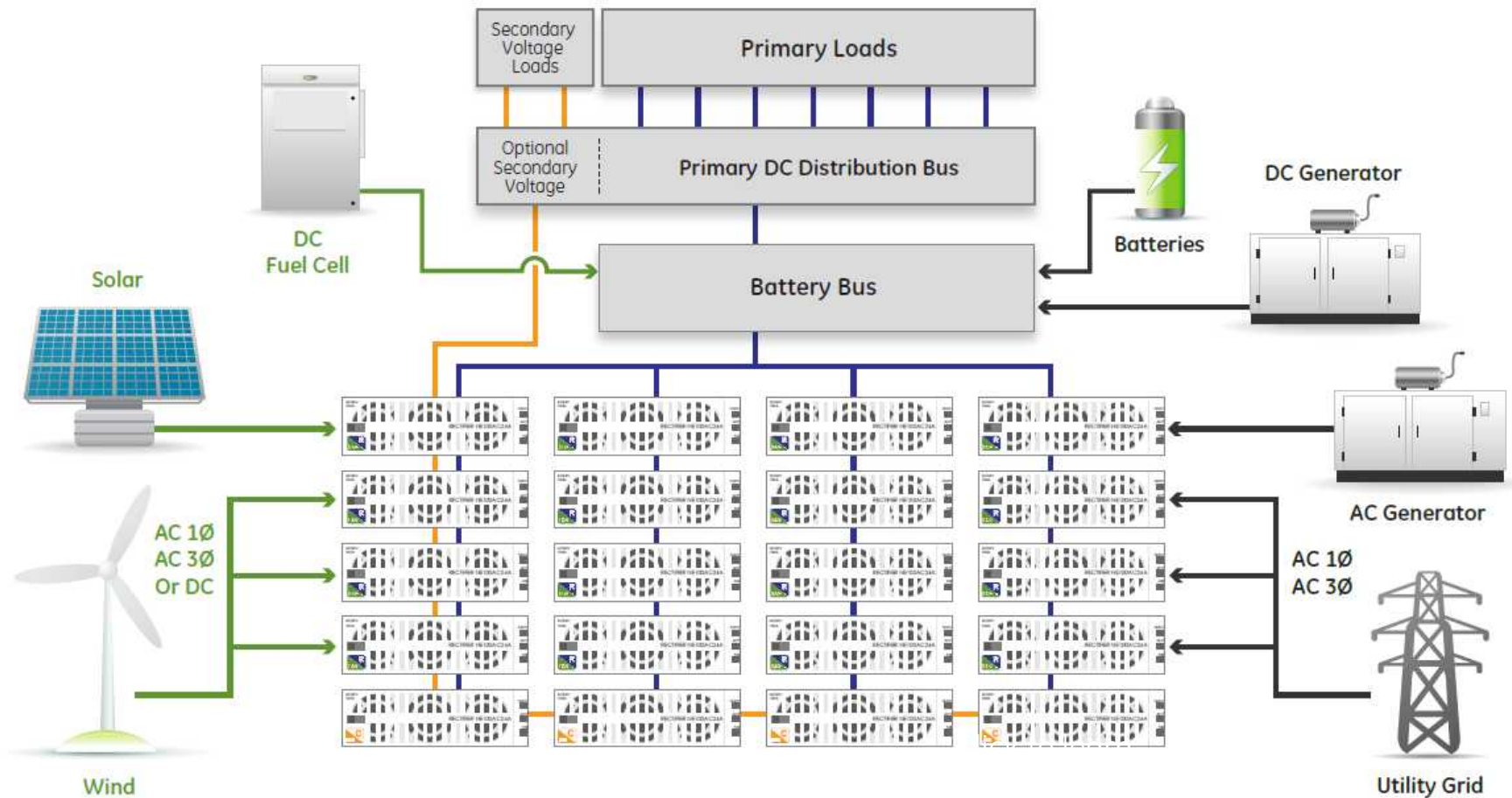
GE's Critical Power delivers fully configured power systems including switchgear, power transformers, unit substations, and SG UPS with eBoost, providing uninterruptible power with the industry's highest efficiency.

Benefit

We help customers (even when they're GE) maintain the highest availability, improve operational efficiency and expense, while preserving system reliability and lowering their risk with performance guarantees.



Telecom/Datacom Solutions portfolio



Commercial

We are leading the future of electrification with advanced technologies that protect and control the distribution of electricity throughout a facility's infrastructure.

Our Solutions are **cleaner, smarter, more efficient** and address **safety and reliability** – without compromising either.

- Maximizing facility uptime
- Minimizing dangers of electrical distribution
- Increased productivity – efficient sizes, ease of installation
- Focus on sustainability



A photograph of the Rush University Medical Center building at dusk. The building is a modern, multi-story structure with a prominent curved section on the upper floors. The interior lights are on, and the building's facade is illuminated. The sky is a deep blue, and the city lights are visible in the background.

Rush University Medical Center

Building in life-saving reliability

Challenge

Integrate the decentralized power systems that provide efficient normal and critical power.

Solution

Rush and GE collaborated on a plan to integrate the decentralized emergency electrical system by designing a Central Energy Plant to provide emergency loads to the campus's geographically dispersed buildings.

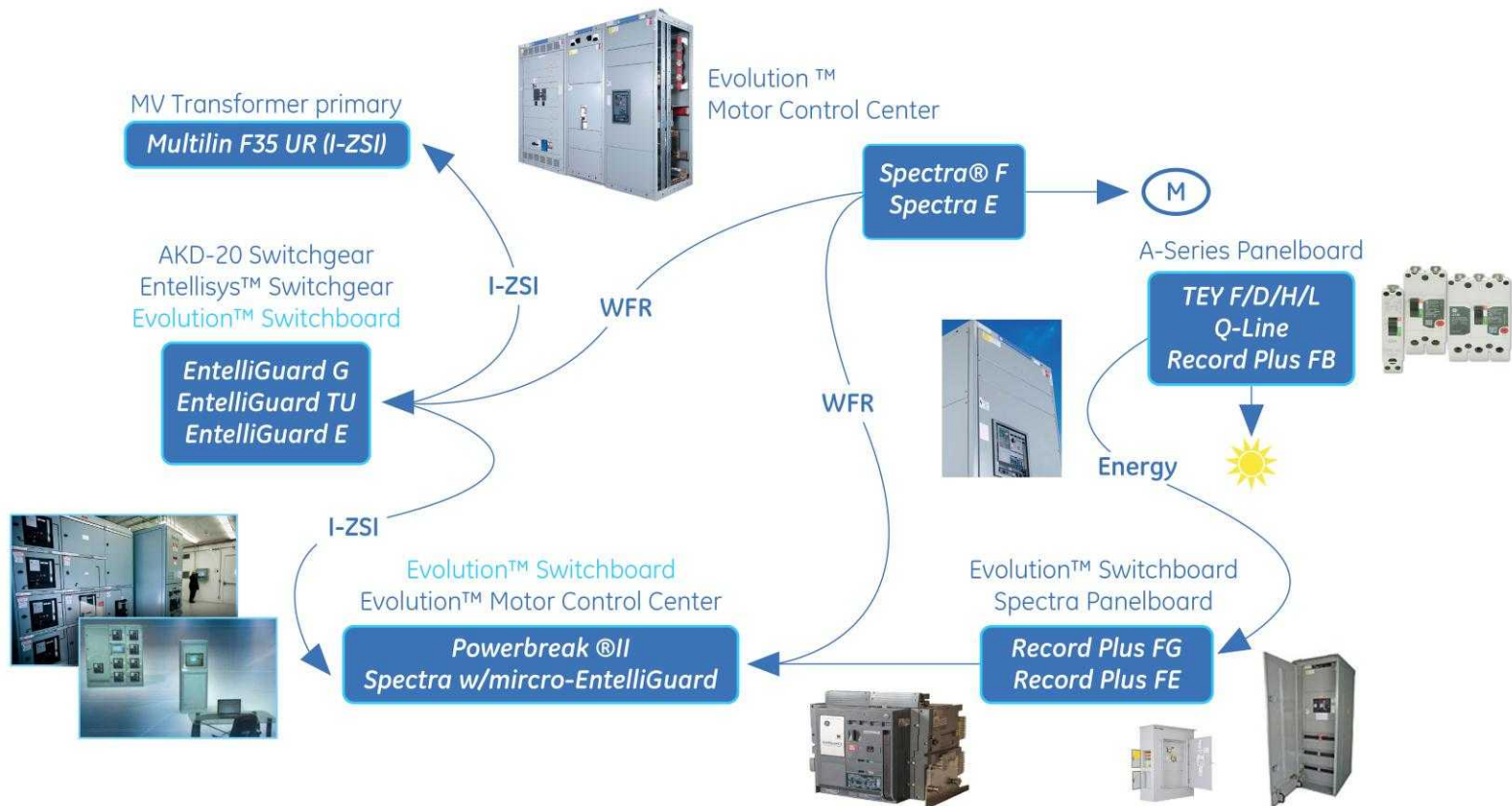
Benefit

The emergency power system is hardwired with redundancy to allow restoration of critical power within 8.4 seconds of an outage, beating the 10-second mark required by the state of Illinois.



Commercial Solutions portfolio

GE's technology combination of waveform recognition and i-zsi selectivity uniquely provides protection and reliability with its portfolio of products.

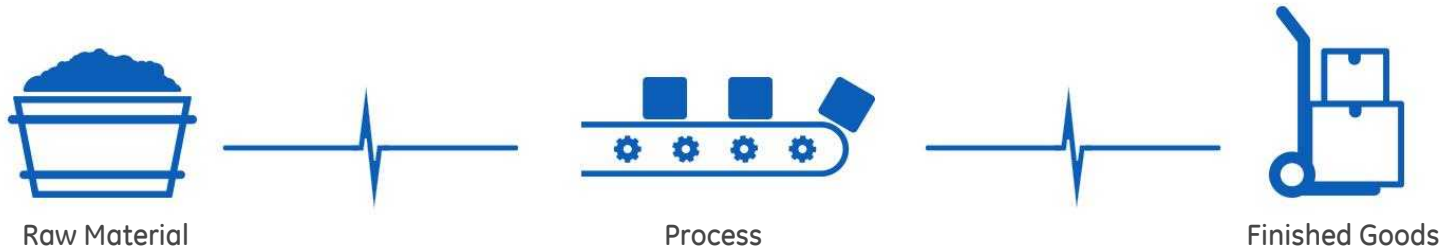


Manufacturing

Working with manufacturers for decades to help them maximize margins and increase asset utilization, while mitigating risk.

Total manufacturing solutions from raw materials to finished goods include:

- Process Control
- Operational Execution Management
- Real-time Operational Intelligence
- Advanced Predictive Asset Analytics





All Application Efficiency

Extract, Deliver and Process Results

Challenge

Rising raw material costs, increasing product complexity and regulatory pressures erode margins, while buyers demand better quality and cost containment. Manufacturers look to optimize their process and reduce waste to improve their bottom line.

Solution

GE Intelligent Platforms has a full suite of integrated data management and data analytic software solutions, enabling manufacturing customers to execute their process and capture, store, interpret and visualize real-time information.

Benefit

Increase productivity, reduce waste and mitigate risk.



Controls

Designing the future of industrial automation with integrated control platforms architected to deliver on your performance expectations and advance your business operations.

We are at work, applying deep expertise and forward-thinking solutions, connecting people and machines to the power of the Industrial Internet:

- Extreme Environments
- Plant Applications
- Safety Systems
- Advanced Process Control
- Mobile Visualization
- Real-time Operational Intelligence
- Asset Management
- Predictive Analytics
- Remote Monitoring & Diagnostics



High-Performance
Platforms



Connectivity



Remote access





GE Monitoring & Diagnostic Center

Challenge

Optimizing the performance and operation of 1,550 turbines in 57 countries from GE's Remote Monitoring and Diagnostics Center in Atlanta, GA.

Solution

Provide the complete automation stack starting with the turbine control through to balance of plant and visualization. Layer on Historian HD to provide advanced analytics and data management for collecting real-time data for equipment analysis and troubleshooting

Benefit

\$75mm cost avoidance and doubling of customer service satisfaction levels with improved early detection for fewer unplanned outages and reduced maintenance costs.



Controls Solutions portfolio

High-performance Platforms



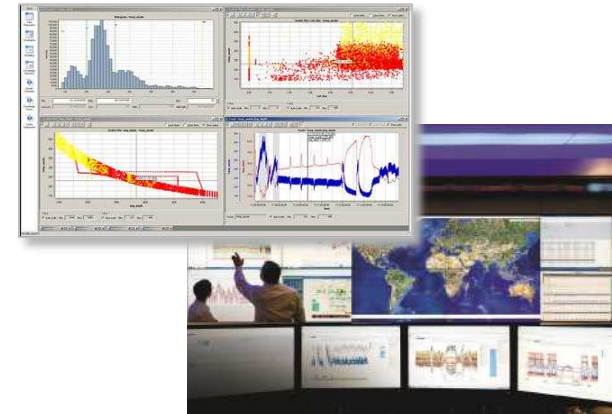
- PACSystems
- Mark VIe Control Systems
- Industrial Computers

Connectivity



- HMI / SCADA
- Mobile Visualization
- Operator Workflow

Remote Access



- Data Historian
- Predictive Analytics
- Remote Monitoring & Diagnostics



