

ATTACHMENT 2

**GridSense LineTracker Intelligent
Grid Monitoring, LT 40 Fact Sheet.**

**GridSense LineTracker Intelligent
Grid Monitoring, LT 50 Fact Sheet.**

**J. Payne, "Isolated Area Reliability,"
Transmission & Distribution World,
at 54-58 (Sept. 2009).**

GridSolar, LLC

**State of Maine Public Utilities
Commission
Docket No. 2010-267**

LineTracker

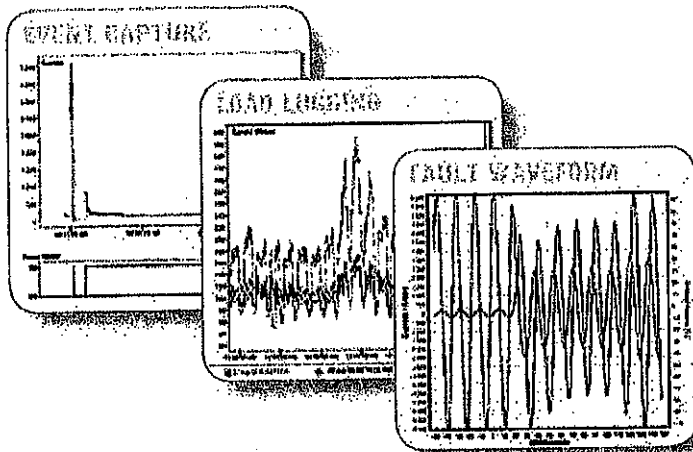
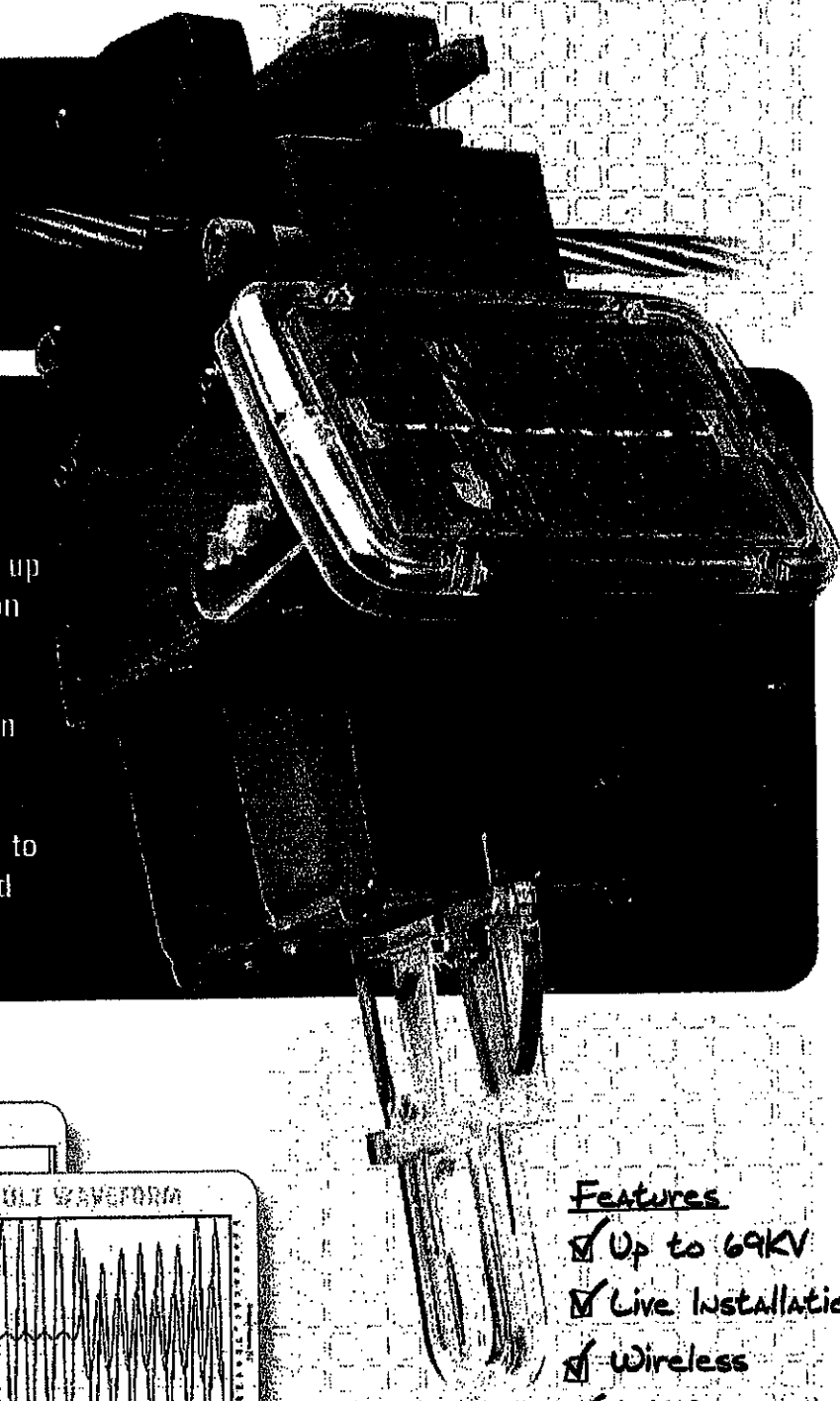
Intelligent Grid Monitoring

LT40

Distribution Load Logger
& Fault Recorder

Distribution Monitoring
Substation Monitoring
Fault Finding
Line Balancing
Capacity Planning

The LT40 System offers cost effective, real-time wireless Smart Grid monitoring of overhead distribution circuits up to 69KV. Critical line condition and performance parameters, including Fault, Protection Operation, Outage, Restoration and Loading are captured providing the data needed to optimize asset utilization and to improve system reliability and quality of supply.



- Features
- ✓ Up to 69KV
 - ✓ Live Installation
 - ✓ Wireless
 - ✓ Self-Powered
 - ✓ Easy to use

LineTracker LT40

Intelligent Grid Monitoring

The LineTracker series of overhead line recorders are the most versatile, powerful and the only self-powered intelligent devices available to Power Utilities. The LineTracker provides accurate information on the performance and condition of the lines allowing utilities to quickly respond to failing equipment, over-loading conditions and reliability issues.

LineTracker recorders can be quickly installed on live lines at any point on the overhead distribution system (e.g. substation busbar, beyond non-intelligent reclosers, switches, risers, taps, midpoints etc.) to measure and record critical load, fault and operational parameters.

With the LineTrackers built-in wireless communications, utilities can wirelessly download data onsite or remotely without removing the recorders from the line or waiting for available line crews. The solar cell and battery power system provides the means for long term monitoring without the risk of battery failure, high maintenance costs or lost data.

The LineTracker System is a proven, smart and versatile monitoring solution for Power Utilities and is used daily by System Planners, Distribution Engineers, Troubleshooters, and Protection and Substation Engineers.



Sensing & Detection

The LT40 Current and E-field sensors continuously monitor and adapt to line conditions. A hierarchy of algorithms is used to capture data when a Fault, Power-Loss or Power-Return occurs. Upon event trigger, a 60 sec RMS and 12-Cycle Waveform snapshot are captured and recorded to memory. Visual fault indication is provided for patrolling line crews. In parallel to event recording, the LT40 also functions as a distribution load logger.



Wireless Communications

The LineTracker uses license-free radio communications for wireless link-up. The LT-DataLink reader is connected to a laptop and, with the software, the user can retrieve data within 150ft of the LineTracker without the need or expense of scheduling a line crew or bucket truck. Utilizing flash memory firmware the LineTracker can also be upgraded wirelessly whenever new features are made available.



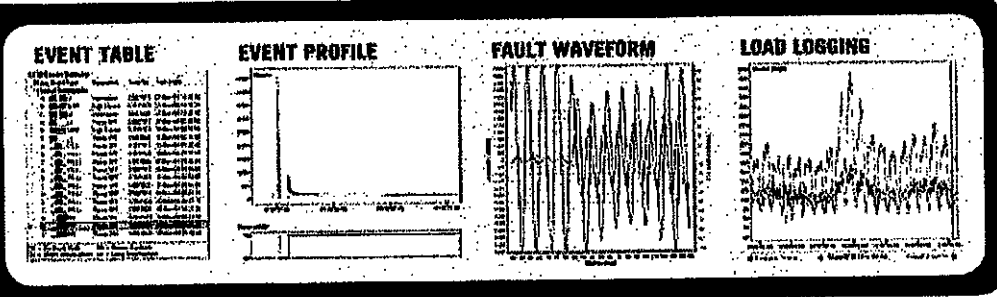
Remote Monitoring

Remote monitoring is achieved by simply installing a Pole Attached Concentrator (PAC) within 150ft of the LineTrackers. The PAC wirelessly links up with the LineTrackers to retrieve data and facilitates unsolicited and scheduled remote data transfer using Cellular, Satellite, TCP/IP or Radio communications. The sites can be queried by operators and the data can be integrated seamlessly to SCADA, Historians and other third party systems.



Viewing & Analysis

The intuitive LineView software is used to analyze LineTracker data files and provides graphical and table displays of event captures, waveforms and load profiles. Individual or multiple files can be viewed on the same graph and can be exported to Excel.



Technical Specifications

Line Voltage 11-138KV Three-Phase
 Frequency 45-60Hz
 Circuits One to four
 Conductor Range 0.5" (12.7mm) to 2" (50.8mm) diameter
 Visual Indication High Intensity Red and Amber LEDs
 Fault Indication Red LED every 10 seconds
 Fault or Location Reset Audible LED, every 30 seconds
 Communications Two Base Stations for remote data return
 Wireless Fault and Remote updates
 Solar Powered. Two year life cycle. 1000 Mount
 1000 Mount. 1000 Mount. 1000 Mount. 1000 Mount
 Solar Panel 1000 Mount. 1000 Mount. 1000 Mount
 Energy Storage 1000 Mount. 1000 Mount. 1000 Mount
 Power Source 1000 Mount. 1000 Mount. 1000 Mount
 Operating Temperature 1000 Mount. 1000 Mount. 1000 Mount
 Survival Temperature 1000 Mount. 1000 Mount. 1000 Mount
 Housing Material 1000 Mount. 1000 Mount. 1000 Mount
 Ingress Protection 1000 Mount. 1000 Mount. 1000 Mount
 Dimensions 1000 Mount. 1000 Mount. 1000 Mount

Measured Parameters

Fault & Event Capture
 Protection Operations
 Power Outage
 Power Restoration
 Load Profiling
 Sample Rate
 Accuracy
 Memory Storage Capacity
 RMS Records (60sec)
 Fault Waveforms
 Load Profiling
 Weight

Current and Power (On/Off)
 60 Sec RMS Profile (I & E-Field)
 Present Line Loading
 Fault Current Magnitude up to 25kA
 Fault Current Waveform (12-cycles)
 E-Field Waveform 12-Cycles
 Post-Event Line Loading
 Line to Tap
 Number of Tap
 Inrush Current
 Time of Power-On
 Time of Power-Off and Garage Period
 User defined averaged profile (1-60 min)
 Current 1200Hz E-Field 600Hz
 Current ±1% of reading ±2A
 Rolling published memory
 10k - 60kAS
 32
 Up to 85 days
 4 Amps (max)

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GridSense
 www.gridsense.net

LineTracker

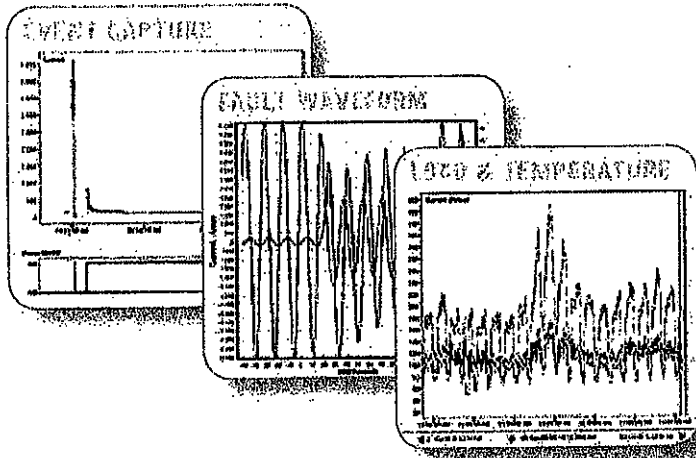
Intelligent Grid Monitoring

LT50

Transmission Temperature,
Load & Event Recorder

Transmission Monitoring
Line Capacity Ratings
Troubleshooting
Capacity Planning
Asset Optimization

The LT50 System offers cost effective, real-time wireless Smart Grid monitoring of overhead distribution circuits up to 138KV. Critical line condition and performance parameters, including Fault, Protection Operation, Outage, Restoration and Loading are captured providing the data needed to optimize asset utilization and to improve system reliability and quality of supply.



Features

- ✓ Up to 138KV
- ✓ Live Installation
- ✓ Wireless
- ✓ Self-Powered
- ✓ Easy to use

GridSense™

T&D Solutions Since 1974

LineTracker LT50

Intelligent Grid Monitoring

The LineTracker series of overhead line recorders are the most versatile, powerful and the only self-powered intelligent devices available to Power Utilities. The LineTracker provides accurate information on the performance and condition of the lines allowing utilities to quickly respond to failing equipment, over-loading conditions and reliability issues.

LineTracker recorders can be quickly installed on live lines at any point on the overhead distribution system (e.g. substation busbar, beyond non-intelligent reclosers, switches, risers, taps, midpoints etc.) to measure and record critical load, fault and operational parameters.

With the LineTrackers built-in wireless communications, utilities can wirelessly download data onsite or remotely without removing the recorders from the line or waiting for available line crews. The solar cell and battery power system provides the means for long term monitoring without the risk of battery failure, high maintenance costs or lost data.

The LineTracker System is a proven, smart and versatile monitoring solution for Power Utilities and is used daily by **System Planners, Distribution Engineers, Troubleshooters, and Protection and Substation Engineers.**



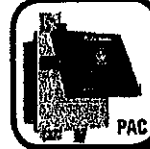
Sensing & Detection

The LT50's Current, E-field and temperature sensors continuously monitor and adapt to line conditions. Advanced algorithms identifies when a Fault, Power-Loss or Power-Restore, Overload or Over-Temperature occurs recording a 60 sec RMS and 12 Cycle Waveform snapshot to memory. Visual fault indication is provided for patrolling line crews. The LT50 also functions as a transmission load, and conductor and ambient temperature recorder.



Wireless Communications

The LineTracker uses license-free radio communications for wireless link-up. The LT-DataLink reader is connected to a laptop and, with the software, the user can retrieve data within 150ft of the LineTracker without the need or expense of scheduling a line crew or bucket truck. Utilizing flash memory firmware the LineTracker can also be upgraded wirelessly whenever new features are made available.



Remote Monitoring

Remote monitoring is achieved by simply installing a Pole Attached Concentrator (PAC) with a 150ft of the LineTrackers. The PAC wirelessly links up with the LineTrackers to retrieve data and facilitates unsolicited and scheduled remote data transfer using Cellular, Satellite, TCP/IP or Radio communications. The sites can be queried by operators and the data can be integrated seamlessly to SCADA, Historians and other third party systems.



Viewing & Analysis

The intuitive LineView software is used to analyze LineTracker data files and provides graphical and table displays of event captures, waveforms and load profiles. Individual or multiple files can be viewed on the same graph and can be exported to Excel.

EVENT TABLE

Time	Event	Value	Unit
10:00:00	Power On	0.0	A
10:00:05	Current	10.0	A
10:00:10	Temperature	25.0	C
10:00:15	Power Off	0.0	A
10:00:20	Power On	10.0	A
10:00:25	Current	15.0	A
10:00:30	Temperature	30.0	C
10:00:35	Power Off	0.0	A
10:00:40	Power On	10.0	A
10:00:45	Current	12.0	A
10:00:50	Temperature	28.0	C
10:00:55	Power Off	0.0	A
10:01:00	Power On	10.0	A
10:01:05	Current	11.0	A
10:01:10	Temperature	26.0	C
10:01:15	Power Off	0.0	A
10:01:20	Power On	10.0	A
10:01:25	Current	13.0	A
10:01:30	Temperature	29.0	C
10:01:35	Power Off	0.0	A
10:01:40	Power On	10.0	A
10:01:45	Current	14.0	A
10:01:50	Temperature	31.0	C
10:01:55	Power Off	0.0	A
10:02:00	Power On	10.0	A
10:02:05	Current	16.0	A
10:02:10	Temperature	33.0	C
10:02:15	Power Off	0.0	A
10:02:20	Power On	10.0	A
10:02:25	Current	17.0	A
10:02:30	Temperature	35.0	C
10:02:35	Power Off	0.0	A
10:02:40	Power On	10.0	A
10:02:45	Current	18.0	A
10:02:50	Temperature	37.0	C
10:02:55	Power Off	0.0	A
10:03:00	Power On	10.0	A
10:03:05	Current	19.0	A
10:03:10	Temperature	39.0	C
10:03:15	Power Off	0.0	A
10:03:20	Power On	10.0	A
10:03:25	Current	20.0	A
10:03:30	Temperature	41.0	C
10:03:35	Power Off	0.0	A
10:03:40	Power On	10.0	A
10:03:45	Current	21.0	A
10:03:50	Temperature	43.0	C
10:03:55	Power Off	0.0	A
10:04:00	Power On	10.0	A
10:04:05	Current	22.0	A
10:04:10	Temperature	45.0	C
10:04:15	Power Off	0.0	A
10:04:20	Power On	10.0	A
10:04:25	Current	23.0	A
10:04:30	Temperature	47.0	C
10:04:35	Power Off	0.0	A
10:04:40	Power On	10.0	A
10:04:45	Current	24.0	A
10:04:50	Temperature	49.0	C
10:04:55	Power Off	0.0	A
10:05:00	Power On	10.0	A
10:05:05	Current	25.0	A
10:05:10	Temperature	51.0	C
10:05:15	Power Off	0.0	A
10:05:20	Power On	10.0	A
10:05:25	Current	26.0	A
10:05:30	Temperature	53.0	C
10:05:35	Power Off	0.0	A
10:05:40	Power On	10.0	A
10:05:45	Current	27.0	A
10:05:50	Temperature	55.0	C
10:05:55	Power Off	0.0	A
10:06:00	Power On	10.0	A
10:06:05	Current	28.0	A
10:06:10	Temperature	57.0	C
10:06:15	Power Off	0.0	A
10:06:20	Power On	10.0	A
10:06:25	Current	29.0	A
10:06:30	Temperature	59.0	C
10:06:35	Power Off	0.0	A
10:06:40	Power On	10.0	A
10:06:45	Current	30.0	A
10:06:50	Temperature	61.0	C
10:06:55	Power Off	0.0	A
10:07:00	Power On	10.0	A
10:07:05	Current	31.0	A
10:07:10	Temperature	63.0	C
10:07:15	Power Off	0.0	A
10:07:20	Power On	10.0	A
10:07:25	Current	32.0	A
10:07:30	Temperature	65.0	C
10:07:35	Power Off	0.0	A
10:07:40	Power On	10.0	A
10:07:45	Current	33.0	A
10:07:50	Temperature	67.0	C
10:07:55	Power Off	0.0	A
10:08:00	Power On	10.0	A
10:08:05	Current	34.0	A
10:08:10	Temperature	69.0	C
10:08:15	Power Off	0.0	A
10:08:20	Power On	10.0	A
10:08:25	Current	35.0	A
10:08:30	Temperature	71.0	C
10:08:35	Power Off	0.0	A
10:08:40	Power On	10.0	A
10:08:45	Current	36.0	A
10:08:50	Temperature	73.0	C
10:08:55	Power Off	0.0	A
10:09:00	Power On	10.0	A
10:09:05	Current	37.0	A
10:09:10	Temperature	75.0	C
10:09:15	Power Off	0.0	A
10:09:20	Power On	10.0	A
10:09:25	Current	38.0	A
10:09:30	Temperature	77.0	C
10:09:35	Power Off	0.0	A
10:09:40	Power On	10.0	A
10:09:45	Current	39.0	A
10:09:50	Temperature	79.0	C
10:09:55	Power Off	0.0	A
10:10:00	Power On	10.0	A
10:10:05	Current	40.0	A
10:10:10	Temperature	81.0	C
10:10:15	Power Off	0.0	A
10:10:20	Power On	10.0	A
10:10:25	Current	41.0	A
10:10:30	Temperature	83.0	C
10:10:35	Power Off	0.0	A
10:10:40	Power On	10.0	A
10:10:45	Current	42.0	A
10:10:50	Temperature	85.0	C
10:10:55	Power Off	0.0	A
10:11:00	Power On	10.0	A
10:11:05	Current	43.0	A
10:11:10	Temperature	87.0	C
10:11:15	Power Off	0.0	A
10:11:20	Power On	10.0	A
10:11:25	Current	44.0	A
10:11:30	Temperature	89.0	C
10:11:35	Power Off	0.0	A
10:11:40	Power On	10.0	A
10:11:45	Current	45.0	A
10:11:50	Temperature	91.0	C
10:11:55	Power Off	0.0	A
10:12:00	Power On	10.0	A
10:12:05	Current	46.0	A
10:12:10	Temperature	93.0	C
10:12:15	Power Off	0.0	A
10:12:20	Power On	10.0	A
10:12:25	Current	47.0	A
10:12:30	Temperature	95.0	C
10:12:35	Power Off	0.0	A
10:12:40	Power On	10.0	A
10:12:45	Current	48.0	A
10:12:50	Temperature	97.0	C
10:12:55	Power Off	0.0	A
10:13:00	Power On	10.0	A
10:13:05	Current	49.0	A
10:13:10	Temperature	99.0	C
10:13:15	Power Off	0.0	A
10:13:20	Power On	10.0	A
10:13:25	Current	50.0	A
10:13:30	Temperature	101.0	C
10:13:35	Power Off	0.0	A
10:13:40	Power On	10.0	A
10:13:45	Current	51.0	A
10:13:50	Temperature	103.0	C
10:13:55	Power Off	0.0	A
10:14:00	Power On	10.0	A
10:14:05	Current	52.0	A
10:14:10	Temperature	105.0	C
10:14:15	Power Off	0.0	A
10:14:20	Power On	10.0	A
10:14:25	Current	53.0	A
10:14:30	Temperature	107.0	C
10:14:35	Power Off	0.0	A
10:14:40	Power On	10.0	A
10:14:45	Current	54.0	A
10:14:50	Temperature	109.0	C
10:14:55	Power Off	0.0	A
10:15:00	Power On	10.0	A
10:15:05	Current	55.0	A
10:15:10	Temperature	111.0	C
10:15:15	Power Off	0.0	A
10:15:20	Power On	10.0	A
10:15:25	Current	56.0	A
10:15:30	Temperature	113.0	C
10:15:35	Power Off	0.0	A
10:15:40	Power On	10.0	A
10:15:45	Current	57.0	A
10:15:50	Temperature	115.0	C
10:15:55	Power Off	0.0	A
10:16:00	Power On	10.0	A
10:16:05	Current	58.0	A
10:16:10	Temperature	117.0	C
10:16:15	Power Off	0.0	A
10:16:20	Power On	10.0	A
10:16:25	Current	59.0	A
10:16:30	Temperature	119.0	C
10:16:35	Power Off	0.0	A
10:16:40	Power On	10.0	A
10:16:45	Current	60.0	A
10:16:50	Temperature	121.0	C
10:16:55	Power Off	0.0	A
10:17:00	Power On	10.0	A
10:17:05	Current	61.0	A
10:17:10	Temperature	123.0	C
10:17:15	Power Off	0.0	A
10:17:20	Power On	10.0	A
10:17:25	Current	62.0	A
10:17:30	Temperature	125.0	C
10:17:35	Power Off	0.0	A
10:17:40	Power On	10.0	A
10:17:45	Current	63.0	A
10:17:50	Temperature	127.0	C
10:17:55	Power Off	0.0	A
10:18:00	Power On	10.0	A
10:18:05	Current	64.0	A
10:18:10	Temperature	129.0	C
10:18:15	Power Off	0.0	A
10:18:20	Power On	10.0	A
10:18:25	Current	65.0	A
10:18:30	Temperature	131.0	C
10:18:35	Power Off	0.0	A
10:18:40	Power On	10.0	A
10:18:45	Current	66.0	A
10:18:50	Temperature	133.0	C
10:18:55	Power Off	0.0	A
10:19:00	Power On	10.0	A
10:19:05	Current	67.0	A
10:19:10	Temperature	135.0	C
10:19:15	Power Off	0.0	A
10:19:20	Power On	10.0	A
10:19:25	Current	68.0	A
10:19:30	Temperature	137.0	C
10:19:35	Power Off	0.0	A
10:19:40	Power On	10.0	A
10:19:45	Current	69.0	A
10:19:50	Temperature	139.0	C
10:19:55	Power Off	0.0	A
10:20:00	Power On	10.0	A
10:20:05	Current	70.0	A
10:20:10	Temperature	141.0	C
10:20:15	Power Off	0.0	A
10:20:20	Power On	10.0	A
10:20:25	Current	71.0	A
10:20:30	Temperature	143.0	C
10:20:35	Power Off	0.0	A
10:20:40	Power On	10.0	A
10:20:45	Current	72.0	A
10:20:50	Temperature	145.0	C
10:20:55	Power Off	0.0	A
10:21:00	Power On	10.0	A
10:21:05	Current	73.0	A
10:21:10	Temperature	147.0	C
10:21:15	Power Off	0.0	A
10:21:20	Power On	10.0	A
10:21:25	Current	74.0	A
10:21:30	Temperature	149.0	C
10:21:35	Power Off	0.0	A
10:21:40	Power On	10.0	A
10:21:45	Current	75.0	A
10:21:50	Temperature	151.0	C
10:21:55	Power Off	0.0	A
10:22:00	Power On	10.0	A
10:22:05	Current	76.0	A
10:22:10	Temperature	153.0	C
10:22:15	Power Off	0.0	A
10:22:20	Power On	10.0	A
10:22:25	Current	77.0	A
10:22:30	Temperature	155.0	C
10:22:35	Power Off	0.0	A
10:22:40	Power On	10.0	A
10:22:45	Current	78.0	A
10:22:50	Temperature	157.0	C
10:22:55	Power Off	0.0	A
10:23:00	Power On	10.0	A
10:23:05	Current	79.0	A
10:23:10	Temperature	159.0	C
10:23:15	Power Off	0.0	A
10:23:20	Power On	10.0	A
10:23:25	Current	80.0	A
10:23:30	Temperature	161.0	C
10:23:35	Power Off	0.0	A
10:23:40	Power On	10.0	A
10:23:45	Current	81.0	A



Isolated Area Reliability

Georgia Power brings next-generation system protection to St. Simon's Island.

By Jason T. Payne, Georgia Power Co.

EVEN IN THE AGE OF INTELLIGENT, FAULT-DISTANCE-SENSITIVE RELAYING, ISLANDS and other isolated areas still present a major restoration hurdle because of radial taps on radial lines. Islands can be fed through several different conventions, but the fact remains that it is extremely expensive to build redundancy. And in the event of an outage, restoration efforts are usually both difficult and time consuming. To reduce the time it takes to restore power on a prominent resort island, Georgia Power Co. (Atlanta, Georgia, U.S.), a Southern Company subsidiary, has implemented new technology to assist in load restoration.

GOLDEN COAST OF GEORGIA

Heavily protected century-old oak trees decorated with Spanish moss line the streets and yards of every lot on St. Simon's Island, Georgia, and the transmission right-of-way is no exception. Local ordinances prohibit the removal of any oak tree on the island without approval, and trimming is heavily discouraged. Most outages on the high-profile line are caused by tree contacts in medium to high winds. The beautiful moss-covered oaks, which live and grow within the transmission right-of-way, wrap their branches around the distribution and transmission circuits.

Fortunately for Georgia Power, the hurricane activity has

been very forgiving to the Golden Coast of Georgia over the past few decades. The coast has had several brushes with violent hurricanes, direct hits from tropical storms and the occasional tornado. Hurricane season in Georgia is generally mild compared to that of neighboring states, but in anticipation of a large-scale storm, Georgia Power has installed LineTracker technology from GridSense (West Sacramento California, U.S.) on a 115-kV line on St. Simon's Island. The Smart Grid device records and transmits information from the longest and most-exposed line tap on the island.

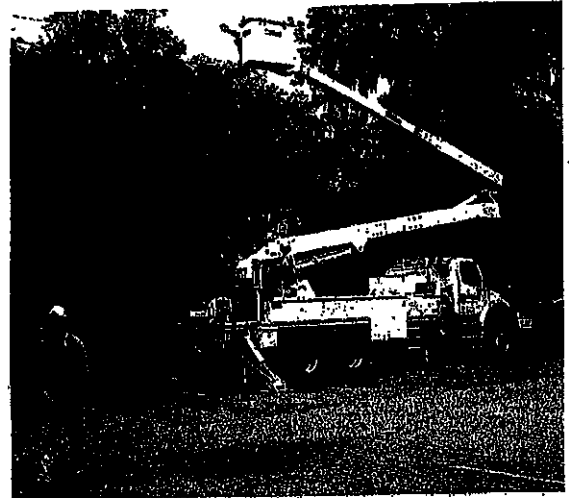
LineTracker is a simple-to-install device that clamps onto bare transmission or distribution conductors up to 1.85 inches (47 mm) in diameter at voltages up to 138 kV. Installation does not require the line to be de-energized, and these devices can be installed and removed using hot-stick or live-line methods in a short amount of time. Three spring-loaded fingers hold the LineTracker securely to the conductor, and facilitate the voltage and conductor temperature measurements. The spring-loaded fingers automatically close, and the Rogowski coil circuit connection is completed when the LineTracker presses against the conductor and a safety mechanism is manually engaged.

The devices are unobtrusive, versatile and self-powered by a solar panel. They can be used in practically any location or

SMARTSwitching



A view from the switch structure down the right-of-way. The oaks are beautiful but can cause interruptions on the island to both residents and tourists alike.



Travis Watts prepares for hot line work on site. He is the crew leader at the local Brunswick Transmission Maintenance Center and performed the LineTracker installation on the conductors.

eliminating the need for a solar or battery source. In this installation, the DataPAC is attached to the switch pole, using stainless straps, just above the RTU cabinet for local power access. GridSense also has initiated discussions with a major switch manufacturer to integrate this receiver system into the manufacturer's motor operator enclosure to optimize and streamline both the installation and application.

In addition to communicating with GridSense's LineMan Remote and GServer software, the newly redesigned DataPAC includes DNP3 protocol for supervisory control and data acquisition (SCADA) integration. The DataPAC can be configured in a fully polled mode, a report-by-exception (unsolicited) mode or a combination of the two modes. This allows the information to be broadcasted back to generate real-time data on a screen and to record alarms such as a fault indication, which is the primary function in the pilot project.

Given this alarm, the control center has the knowledge needed to make the decision on which switch to open in order to restore service to the most customers within the shortest amount of time. This not only decreases system average interruption duration index (SAIDI) numbers as a whole, but it assists in eliminating damage to breakers, switches, transformers and other hardware by preventing the accidental closure of a switch or breaker into an unisolated line fault.

In addition to the wireless data communication, the LineTracker devices also have red and amber LEDs on the bottom that provide a good visual indication for field personnel, as any standard fault indicator would. The amber LED advises when voltage and current are present through three flash sequences, and the red LED advises self-clearing short and long interruptions through three flash sequences.

FUTURE APPLICATIONS

Georgia Power is using this technology on St. Simon's Island in a pilot case, in preparation for a broader rollout. In addition to simply being a smart fault indicator, the LineTracker has the ability transmit other real-time data that may



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The complete installation with the inconspicuous LineTrackers hanging on the conductors to the left of the switch.

revolutionize the power grid. Additional uses include transmission monitoring, line capacity ratings, troubleshooting, capacity planning and asset optimization. Currently, the LineTracker devices are configured to monitor and transmit:

- Event types (momentary, sustained, power restoration and fault current detected)
- Voltage presence
- Current (real-time current in addition to pre- and post-fault current)
- Temperature (ambient and conductor surface temperature)
- DataPAC and LineTracker battery voltage.

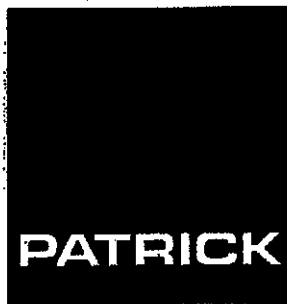
Twelve-cycle fault waveforms (current and relative voltage) and load profiles (current, power factor and phase angle) are also available through the DNP3 protocol. It is highly recommended the LineTracker devices be installed on the load (normally energized) side of the switch, so they not only indicate fault currently flowing through the switch, but also verify that voltage is present on the load side of the switch. This confirms the line leading to the switch is in service, even with the switch in the open position because of a downstream fault.

SMART SWITCHING AND RATINGS

Georgia Power also has been experimenting with the expansion of this technology in the area of real-time line capacity rating, or dynamic line capacity rating, which is the real-time rating of a conductor due to environmental conditions (i.e., wind, ambient temperature, rain, sun, etc.). This would

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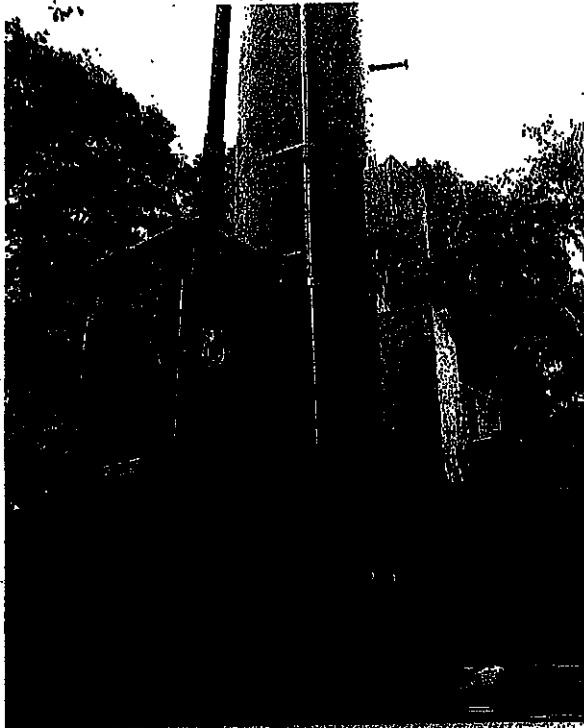


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SMARTSwitching



In this complete installation, the DatâPAC is attached just above the RTU enclosure with two 1/2-inch stainless-steel straps.


allow a conductor to possibly have an increased capacity at different times or under different climatic conditions. LineTracker devices have the potential to move the industry a step further in the direction of this theory by reporting the real-time current and temperature to the control desk.

Additional plans include the possible expansion of integrating a third-party system to create an automated line scheme on the radial line. This automated system would control the switches automatically to restore power by isolating the section of line with the fault on it between breaker operations, thus allowing the breaker to return to normal after a reclose. Other options would include the line to continue to lock out and then for the system to take over, isolate the fault and automatically close the breaker to restore power to the line.

Much of the automation has been pioneered in the distribution arena, and transmission has been limited because of the inherent characteristics of the system, such as the distances between switches and breakers on the line and the limitations of an automated system. Several different systems have been researched to perform this automation, and the application of the Linetracker devices in this system is still in analysis.


SMART INVESTMENT

One of the primary benefits of the GridSense system is the financial savings over other conventional potential and current transformers at transmission voltages, allowing for more units on the system for the same price as conventional methods. This investment in the grid will then allow for more cost savings in the future by increasing reliability to sensitive customers, reducing the number of customers involved in a long-term outage, and by providing accurate information needed to isolate a fault to prevent additional exposure to valuable equipment on the system. TDW



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