GTI’s Tracking and Traceability Technologies with LocusView Solutions

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Business Development
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Company Overview

ESTABLISHED 1941

> Independent, not-for-profit established by the natural gas industry

> Providing natural gas research, development and technology deployment services to industry and government clients

> Performing contract research, program management, consulting, and training

> Wellhead to the burner tip including energy conversion technologies
### Addressing Key Issues Across the Energy Value Chain

<table>
<thead>
<tr>
<th>SUPPLY</th>
<th>DELIVERY</th>
<th>END USE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expanding the supply of affordable energy</td>
<td>Ensuring a safe and reliable energy delivery infrastructure</td>
<td>Promoting the efficient use of energy resources</td>
</tr>
</tbody>
</table>

- Reducing carbon emissions to the environment
- Supporting sustainable economic growth
Thank You to Our Members

<table>
<thead>
<tr>
<th>Alagasco</th>
<th>APGA Research Foundation</th>
<th>Pacific Gas and Electric Company</th>
<th>Atmos Energy</th>
<th>Avista</th>
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<tr>
<td>CenterPoint® Energy</td>
<td>conEdison</td>
<td>Duke Energy®</td>
<td>Enbridge</td>
<td>Entergy</td>
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<tr>
<td>integrys™</td>
<td>Intermountain Gas Company</td>
<td>National Fuel</td>
<td>National Grid</td>
<td>NiSource</td>
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<tr>
<td>NW Natural®</td>
<td>NYSEG</td>
<td>Oklahoma Natural Gas</td>
<td>Piedmont Natural Gas</td>
<td>Questar Gas</td>
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<td>TECO®</td>
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<td>People's Gas</td>
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Natural Gas Field Skills Training and Field Tablet Program

New GTI-developed app houses utility construction standards, work methods, procedures, drawings, bulletins and other reference materials.

Reference documents can be reformatted or linked into customized training modules.

Field Tablets are used both during and after training as a mobile performance support tool.

Train your field workers for safe, effective on-the-job performance and meet regulatory requirements.
National Grid Case Study

GTI created a fully integrated training program for National Grid’s contractor workforce, using 28 out of 77 available Natural Gas Field Skills training modules.
Intelligent Utility System

> Transition away from paper based data collection towards mobile, electronic data collection

> Reduce the cost of compliance
  – Hardware and software
  – Data management labor

> Decrease operational risk
  – Increased data quality
  – Enhanced awareness
Motivation

> Distribution Integrity Regulations
  - System Knowledge
  - Threat Identification
  - Risk Mitigation

> Pipeline Integrity Regulations
  - Traceable, Verifiable and Complete Records

> Industry Standards
  - ASTM F2897

> Technology
  - Mobile GIS, tablets, GPS, barcode scanning, cloud computing
Objectives

> Create an architecture that provides . . .
  
  ─ Low cost data collection devices (smart phones and tablet computers)
  ─ Simple software (iOS and Android)
  ─ Access to up-to-date engineering information (GIS)
  ─ Real-time data submittal from the field (cloud computing)
  ─ Minimal back-office processing (GIS)
Current Applications

> Exposed pipe surveys
> Marker ball installations (RFID tags)
> HCA field data capture
> CP readings
> One-call tickets (electronic whitelining)
> Excavation encroachment monitoring
> Asset Lifecycle Tracking
GTI’s Mobile GIS Technology

GTI’s technology for tracking and traceability with ASTM F2897:

- Android tablet device with mobile GIS data collection software
- High accuracy GPS receiver (connected via Bluetooth)
- Barcode scanner (connected via Bluetooth)
- Application to convert barcodes into asset attributes to auto populate the GIS
- Disconnected editing capability
- Beta: Fusion tracking and traceability
Asset Lifecycle Tracking

> Automates the entire data collection process for documenting new installations

> In less than one minute . . .

- The barcode scanner captures asset attribute information and causes a new feature to be created in the GIS
- GIS fields are automatically populated with asset attribute information (material type, batch number, etc)
- The location of the new asset is positioned with the sub-foot accurate GPS in real time
- Data is available in the back office immediately
Asset Lifecycle Tracking & Traceability

Information | Mfg. Values
---|---
Lot Number | 1234567
Production Date | 1/4/2010
Material Type | PE2708
Component Type | Electrofusion tapping tee with a stab outlet
Component Size | 2" IPS SDR 11 x 1" IPS SDR 11

Create GIS Features in the Field
Post to Enterprise GIS
Integrate Data into GIS System of Record
Asset Lifecycle Tracking

> New regulatory focus on asset tracking and traceability
  ─ Performance trending and tracking
  ─ Manufacturer recalls

> ASTM F2897-11a  *Standard Specification for Tracking and Traceability Encoding System of Natural Gas Distribution Components (Pipe, Tubing, Fittings, Valves, and Appurtenances)*
  ─ 16 digit alpha-numeric code
  ─ Standardizes
    > Manufacturer
    > Lot number
    > Date
    > Material
    > Size
    > Type
Distribution Pipe and Components

> Algorithms and ASTM Standard

- Develop a series of algorithms to create a unique identifier for distribution asset tracking and traceability
- ASTM F2897-11a
- Manufacturer implementation through barcoding
High Accuracy GPS

- Integrating external high accuracy GPS receivers
  - Sub-foot quality data in real time
  - No need for post processing or a base station
  - Field data directly inserted into the GIS (with controls)
  - Receivers integrated so far . . .
    - Navcom
    - Geneq
    - Trimble
Company

> GTI subsidiary to support the commercial deployment of advanced geospatial technologies for the natural gas industry

> Delivering field tested, customer validated, commercial products

> Providing turnkey implementation support to ensure successful integration of new technologies
LocusView Solutions

> GTI subsidiary to support the commercial implementation of advanced geospatial technologies

>Solutions

- Mapping with tracking and traceability for pipes, fittings, and fusions
- Survey and inspection tracking and reporting
Our Services

> Pilot projects and demonstrations

> Software licensing

> Turnkey software and hardware solutions

> Cloud and data hosting

> Customization and configuration

> System integration services

> Training and technical support
LocusMap

- Mobile GIS for mapping new installations with tracking and traceability for pipes, fittings, and fusions
  - Tablets and smartphones
  - High accuracy GPS
  - Barcode scanning
  - Integration with leak detectors, fusion machines, and other equipment
  - Cloud hosting options
Real-time Viewing of Inspections
Leak Surveying

Capturing leak survey routes and leak locations with GPS

- Captures GPS breadcrumb trail that is linked to pipe segments in GIS
- Creates digital, defensible records
- Captures abnormal conditions, emergencies, and no access situations
- Functionality for scheduling, assignments, and reporting
Gain a Broad Perspective on Methane Emissions

Policy
Environmental issues
Technical challenges and solutions

www.gastechnology.org/ch4
GTI is a company that solves important energy challenges, a company that truly has...

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...“the Energy to Lead”