Customer Technical Training Programs
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Welcome

With over 40 years of technical training experience we have pioneered the art of long-term skill development. Our techniques are proven and we have strong regional expertise with courses held at various GE training locations around the world, your local facility or on-line. All GE Measurement & Control Solutions product training is conducted by our core group of customer training instructors, or certified regional Field Service Engineer instructors to provide a world-class training experience for our customers.

Measurement and Control Solutions offers comprehensive, self-paced, and hands-on instructor led courses designed to enable the users to operate and maintain their machinery as well as protect and optimize performance. Our quality training enables your technicians to optimize your business’ performance by increasing productivity, accuracy and reliability.

We provide a training curriculum, and consulting services for applications involving all facets of power generation, mechanical drives and petrochemical industries. Our services include needs and gap analysis, objective development and skills based training solutions.

GE Measurement & Control Solutions technical educational programs provide customers the knowledge and skills required to optimize the performance of their equipment and maximize their investment.
GE Oil & Gas
Measurement & Control

NDT Training Programs

GE Inspection Technologies is a global technology-driven organization committed to delivering innovative and reliable training solutions that consistently bring value to our customers.
Course offerings and descriptions

**Ultrasonic Inspection**

**Level 1**
- Ultrasonic theory, instrument operation, inspection parameters, thickness testing, straight beam flaw detection and sizing
- Straight beam, dual element, delay-line, and angle beam transducers calibration

**Duration:** 5 days

**Level 2B (EU)**
- Immersion inspection basics, flaw sizing techniques, C-Scan and B-Scan, Spot-weld, DGS, TOFD and Phased Array

**Prerequisite:** Ultrasonic Level 1 Course
**Duration:** 5 days

**Level 2**
- Building from the level 1 course; angle beam, flaw location, evaluation and sizing
- Quality control, flaws and ultrasonic inspection procedures

**Prerequisite:** Ultrasonic Level 1 Course
**Duration:** 5 days

**Level 3—Exam Preparation**
- Philosophy, theory, mathematics, equipment, transducers
- Quality control, UT procedure familiarization, and study recommendations

**Duration:** 4 days

**Thickness Testing**
- UT theory, thickness equipment and transducers, insp parameters, data collection, and documentation

**Duration:** 2 days

**Welding Inspection**
- Welding flaw signatures, identification and sizing techniques, shear wave
- DAC curve, AWS, documentation and data storage

**Prerequisite:** Ultrasonic Level 1 Course
**Duration:** 5 days

**Basic Ultrasonic Inspection of Advanced Composite Materials**
- Theory, equipment and transducers
- Delamination, measurement, detection and flaw sizing

**Duration:** 2 days

**Resistance Weld Inspection**
- Principles, theory applied to spot weld inspection
- Inspection plan prep and usage. USLT2000

**Duration:** 5 days

**Notes:**
- Course is model to c/w with SNTC-1A 2011 course outline
Course offerings and descriptions

**Radiography**

**Level 1 (1)**
- Theory, generation, safety, Darkroom procedures
- Intro to theory and applications of Radiographic inspection

**Duration:** 5 days

**Prerequisite:** Radiography Level 1 Course or experience in conventional radiography techniques

**Intermediate Digital Radiography**
- Concentrates on film-less digital radiography. Detector types (computed radiography/direct radiography), image digitization and storage.
- Emphasis on system effectiveness and factors such as sensitivity, magnification, resolution, speed and throughput.

**Prerequisite:** Radiography Level 1 Course or experience in conventional radiography techniques

**Duration:** 5 days

**Advanced Digital Radiography**
- Greater depth of study, procedures and techniques. Supervised practical exercises
- Safety, darkroom procedures and radiographic interpretation

**Prerequisite:** Radiography Level 1 Course

**Duration:** 5 days

**Eddy Current**

**Level 1 (1)**
- Theory, advantages, limitations and applications, meter/impedance plane displays
- Types of coils, surface probes, flaw evaluation, conductivity, crack detection

**Duration:** 5 days

**Level 2 (1)**
- Advanced theory, calibration and inspection procedures, categories of discontinuities
- Single/multi frequency, applications, plating, coating, wall thickness, conductivity

**Prerequisite:** Eddy Current Level 1 Course

**Duration:** 5 days

[1] Course is model to c/w with SNTC-1A 2011 course outline
# Course offerings and descriptions

## Remote Visual

<table>
<thead>
<tr>
<th><strong>Visual Inspection Level 1/2/3</strong> <em>(1)</em></th>
<th><strong>Magnetic Particle Inspection Level 1/2/3</strong> <em>(1)</em></th>
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</thead>
<tbody>
<tr>
<td>• Theory, application, and tools. Defect recognition and classification. Codes, requirements, procedures</td>
<td>• Theory, magnetic domains, material characteristics, equipment utilization and applications. Codes, requirements, procedures</td>
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</tbody>
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**Duration:** 3 days

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*(1)* Course is model to c/w with SNTC-1A 2011 course outline
## GE Inspection Academy 2012 Training Schedule

<table>
<thead>
<tr>
<th>April</th>
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<th>May</th>
<th>June</th>
<th>July</th>
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</thead>
<tbody>
<tr>
<td>April 2-6</td>
<td>Derby, KS</td>
<td>May 7-11</td>
<td>State College, PA</td>
<td>July 9-13</td>
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<tr>
<td>April 9-13</td>
<td>Salt Lake City, UT</td>
<td>May 7-11</td>
<td>State College, PA</td>
<td>July 9-13</td>
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<tr>
<td>April 16-20</td>
<td>Salt Lake City, UT</td>
<td>May 14-18</td>
<td>Houston, TX</td>
<td>July 16-20</td>
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<td>April 16-20</td>
<td>State College, PA</td>
<td>May 21-25</td>
<td>Houston, TX</td>
<td>July 16-20</td>
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<td>April 16-20</td>
<td>Cincinnati, OH</td>
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<td>September</td>
<td>October</td>
<td>November</td>
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<tr>
<td>July 30-Aug 3</td>
<td>Houston, TX</td>
<td>Sept 10-14</td>
<td>Oct 1-5</td>
<td>Oct 29- Nov 2</td>
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<td>Aug 6-10</td>
<td>Longmont, CO</td>
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<td>Oct 1-5</td>
<td>Oct 29- Nov 2</td>
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<td>Aug 20-24</td>
<td>Houston, TX</td>
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<td>Sept 24-28</td>
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### To register, email us at: inspection.academy@ge.com

### For more information, visit: geinspectionacademy.com
Bently Nevada* Training Programs

GE Energy provides a comprehensive portfolio of training offerings designed to help customers get the most from our Bently Nevada* asset condition monitoring products and our thermodynamic performance software.

* denotes trademarks of Bently Nevada, LLC, a wholly owned subsidiary of General Electric Company.
Course offerings and descriptions

### 3500 Operation and Maintenance
- Overview of hardware components, rack configuration, operator display software, data acquisition software, and system troubleshooting and maintenance
- Workshops include practice with 'live' monitors and racks.

**Prerequisite:** To maximize the benefit of this course, we suggest that the student purchase the Data Acquisition CBT and review it prior to attending this course.

**Duration:** 3 days

### ADRE Sxp/408 DSPi
- Data acquisition and presentation using the ADRE diagnostic system. Basics in system configuration through advanced database manipulation tools.

**Prerequisite:** To maximize the benefit of this course, we suggest that the student purchase the Data Acquisition CBT and review it prior to attending this course.

**Duration:** 3 days

### GateCycle Plant Thermodynamics Modeling
- Designed for students who have little or no experience using GateCycle thermodynamics modeling software
- Covers basic and sophisticated models of thermal plant cycles

**Prerequisite:** General knowledge of basic thermodynamics and industrial plants (power generation, chemical plants, refineries, etc.)

**Duration:** 5 days

### Machinery Diagnostics
- Builds upon the Data Acquisition computer-based training, providing the foundation for machinery diagnostics.
- Interpreting machine vibration to determine machine condition

**Prerequisite:** To maximize the benefit of this course, we suggest that the student purchase the Data Acquisition CBT and review it prior to attending this course.

**Duration:** 5 days

### Leveraging Decision Support
- Decision Support tools within System 1® software

**Prerequisite:** To maximize the benefit of this course, we suggest that the student purchase the Data Acquisition CBT and review it prior to attending this course.

**Duration:** 1 day (users of Decision Support only)

3 days (users of DS Studio or DS Studio Developers Edition)

### Reciprocating Compressor Condition Monitoring, Diagnostics
- How to properly instrument a reciprocating compressor, interpret data plots and identify reciprocating compressor malfunctions.

**Prerequisite:** General knowledge of basic design and operating characteristics of reciprocating compressors is helpful, but not mandatory.

**Duration:** 3 days

### Fundamentals of Vibration and Transducer Operation
- Theory of operation, applications, installation, and troubleshooting of vibration transducers, including displacement (proximity), velocity (moving coil & piezoelectric), acceleration (piezoelectric), and optical phase reference sensors
Course offerings and descriptions

**Thermodynamic Machine Performance**

- Bently PERFORMANCE and System 1® Software; condition evaluation of gas turbines, centrifugal compressors and/or centrifugal pumps

**Prerequisite:** General knowledge of gas turbines, centrifugal compressor and/or centrifugal pump operation, including typical condition monitoring measurements (temperature, pressure, flow rate, etc.). Some familiarity with basic thermodynamic concepts is helpful.

**Duration:** 1-3 days

**Wind Turbine Condition Monitoring**

- ADAPT.wind condition monitoring solution for wind turbines and overview of 3701/60A monitoring instrument
- Explores typical drivetrain failure modes and their vibration symptoms

**Prerequisite:** There are no specific prerequisites for this course, although a background in asset condition monitoring and/or previous experience with wind turbines is desirable.

**Duration:** 2 days

**System 1 Fundamentals**

- System 1 software in a variety of practical daily use situations
- Can be tailored to specific asset types: hydro, wind, reciprocating compressors, motors, turbines, compressors and other machinery

**Prerequisite:** To maximize the benefit of this course, we suggest that the student purchase the Data Acquisition CBT and review it prior to attending this course.

**Duration:** 3 days

**Advanced Machinery Dynamics (available June 2012)**

- Designed for engineers who are responsible for managing rotating machinery assets
- Advanced rotor dynamic turbomachinery concepts, analytical concepts,

**Prerequisite:** Machinery Diagnostics is recommended, or ISO category 3 certified

**Duration:** 5 days

**Machinery Fundamentals/Applied Diagnostics**

- Review of machine types commonly encountered in industry
- Characteristics of design and construction that influence behavior under both normal and malfunction conditions.

**Prerequisite:** To maximize the benefit of this course, we suggest that the student purchase the Data Acquisition CBT and review it prior to attending this course.

**Duration:** 5 days

**Scout**

- Building machines for vibration data collection and analysis utilizing the Scout portable data collector and the accompanying Ascent software.
  
  - Software installation, database and route building, communications, basic skills for data collection, and manipulation of data within the software.

**Prerequisite:** None

**Duration:** 2 days

**Data Acquisition CBT**

- Self-paced computer based training (CBT)
- Proper use and application of vibration transducers
- Employs a multimedia environment to demonstrate concepts and challenge the user through interactive animations and quizzes.

**Prerequisite:** None

**Duration:** 2 days

To register for Bently training courses please visit; http://ge-energy.turnstilesystems.com/ProgramHome.aspx
Skills Development Programs

In addition to scheduled training programs, GE also works with you to develop a comprehensive skills development program specifically designed to address your needs. A comprehensive Skills Development program will help you to build sustainable competencies and maximize your return on investment on Condition monitoring technologies.

The first step in our skill development program is establishing a role based competency matrix. This will be achieved by combining your organization’s job descriptions and Condition monitoring best practices from GE. All members of team will be assessed against competency matrix specific to their role to identify skills and competency gaps. Based on the skill gaps identified, Condition Monitoring technologies deployed at site and site operational constraints a roadmap to build sustainable competencies will be developed.

By using customized training content and state of art training aids our certified instructors will conduct learner centered training sessions at your site. Later employees will work on identified on-job training opportunities under the mentorship of our subject matter experts to acquire valuable practical skills and build confidence in facing key challenges in your facility.

As we progress through the program, our subject matter experts from the regional offices and factory will mentor key personnel from your organization as “Power Users” of the products and systems. These power users equipped with plant specific knowledge and advanced awareness of the systems will be able extract maximum benefit from the systems deployed and improve the ROI.

If you think this would be of interest to you, we can start working on defining the competency matrix and developing the plan to make sure your teams are equipped with all the knowledge and confidence to efficiently manage your plant assets. Please contact your regional contacts or inquiries on Skills Development Program.
GE Oil & Gas
Measurement & Control

Measurement & Sensing Training Programs
Course offerings and descriptions

Flow Training

**Level 1**

**1-Day Course**
- Basics of GE’s liquid and gas ultrasonic flow meters.
- Theory, hands-on experience with respect to programming meters, downloading & interpreting diagnostic, signal data and troubleshooting.
- The focus will be on the application aspect of solving problems in the field.

**2-Day Course**
- In addition to the topics covered in the 1 day course, basic diagnostic training and troubleshooting are covered.

**3-Day Course**
- In addition to the topics covered in the 1 and 2-day courses, advanced troubleshooting, diagnostics, and programming are covered.

**Level 2**
- Advanced communications (i.e. Modbus, Field Bus, Hart) and firmware to diagnose signals.
- Case scenarios of applications and process opportunities
- The focus of this course will be hands on experience with respect to programming meters, downloading & interpreting diagnostic, signal data and troubleshooting.

**Duration:** 3 days

**Flow Level 1 Dates***

- May 28 – June 1  (Houston, TX - Westway)
- June 25 – 29   (Houston, TX - Westway)
- August 13 - 17  (Houston, TX - Deer Park)
- September 24 - 28  (Houston, TX - Deer Park)
- November 5 - 9   (Houston, TX - Deer Park)

To register for Measurement & Sensing courses please visit: [http://ge-energy.turnstilesystems.com/ProgramHome.aspx](http://ge-energy.turnstilesystems.com/ProgramHome.aspx)

* Actual training days vary depending on the length of course purchased. A general outline is listed below

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1-Day</strong></td>
<td>Travel</td>
<td>Flow Level 1 Basic</td>
<td>Travel</td>
<td></td>
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<tr>
<td><strong>2-Day</strong></td>
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<td>Flow Level 1 Basic</td>
<td>Flow Level 1 Intermediate</td>
<td>Travel</td>
</tr>
<tr>
<td><strong>3-Day</strong></td>
<td>Travel</td>
<td>Flow Level 1 Basic</td>
<td>Flow Level 1 Intermediate</td>
<td>Flow Level 1 Advanced</td>
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