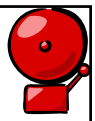
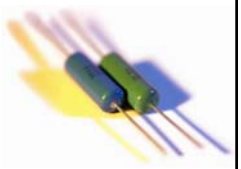


NEW TECHNOLOGIES and NFPA 72 FIRE ALARM SYSTEMS

2002 to 2010 Editions

Presented by Advanced Electronics Systems

- Barry Rickert
- Don Taylor



- In cooperation with:
- Honeywell
- ATI – Acoustic Technology, Inc.
- Fike Alarm Systems

NFPA 72 Origin and Development

- Dates back to 1898 – Committee on Fire Alarms
- 1905 – NFPA 71A – Rules and Requirements
- 1993 – NFPA 72- consolidation of NFPA Guides and Standards; 71, 72, 72E, 72G, 72H, & 74
- 2002- Extensive editorial and technical revisions
- 2007-Significant changes; protection of systems and qualifications of service personnel

NFPA 72- 2010
NEW TECHNOLOGIES

- Carbon monoxide detection
- Video Image Flame Detection
- Video Image Smoke Detection
- Mass Notification
- Inspection, Testing, and Maintenance

CARBON MONOXIDE

Odorless, Colorless, Tasteless Toxic Gas

Connecticut Legislation:

2005 Required in NEW 1 & 2 Family Homes

2011 Required in Schools

U.S. Legislation – 35 States have some form of legislation

Earliest reported legislation – 1998 West Virginia

NFPA Standard 720 – 2012 edition available for reference

VIDEO IMAGE FLAME DETECTION

VIFD

NFPA 2007 Edition

- Section 5.8.5 - NEW TO THE CODE
- May be used for other applications
- Must be protected from unauthorized use.

VIDEO IMAGE SMOKE DETECTION

- VISD
- NFPA 72 2007 Edition
- Section 5.7.6
- May be permitted for other applications
- Must be protected from unauthorized use

MASS NOTIFICATION

- NFPA 2007 Edition
- Section 6.8.4
- Can be interconnected with Fire Alarm systems
- May be used for all hazards notification
- Chemical
- Biological
- Radiological
- ETC.

NFPA 72
Connecticut Fire Safety Code

References 2002 Edition
240 pages
NFPA 2010 Edition
361 Pages
What and Where are the changes?

NFPA 72

- 2010 Standard contains many changes and additions reflecting new challenges, technologies, detection and devices to address our concerns.
- Records of Completion
- Records of Testing and Inspections

NFPA 72

2002
FIRE ALARM SYSTEM –RECORD OF COMPLETION
4 page document

2010
FIRE ALARM AND EMERGENCY COMMUNICATION SYSTEM – RECORD OF COMPLETION
12 page document

NFPA 72

- 2002 Inspection and Testing Form
- 4 Page document

- 2010 Fire Alarm and Emergency Communication System Inspection and Testing Form
- 11 page document

NFPA 72

- Central Monitoring
- 2002 Section 8.2.5.1
- Shall conform to Underwriters Lab/ANSI 827, Standard for Safety Central-Station Alarm Services.
- 2010 section 26.3.5.1
- Same language.

Carbon Monoxide

Symptoms, Solutions and State Legislation

SYSTEM SENSOR

What is **Carbon Monoxide?**

Odorless, colorless, tasteless

Deadly

SYSTEM SENSOR

Carbon Monoxide **Facts**

CO is the leading cause of **home gas fatalities** in the U.S.

More deaths occur in **December and January** than any other month

A **two-pack a day smoker** has ~40ppm of CO in their blood at any time

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Carbon Monoxide **Incidents**

61,000 Number of Non-Fire Related CO Incidents in 2002

20,636 Number of People Treated for accidental CO Exposure from 2004-2006

439 Average Number of CO Deaths Per Year*

*Center for Disease Control and Prevention

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advanced ideas. advanced solutions.

Potential Sources of **Carbon Monoxide?**

Camp Stove

Generator

Combustion Engine

Furnace

Cook Top

Gas Range

Clothes Dryer

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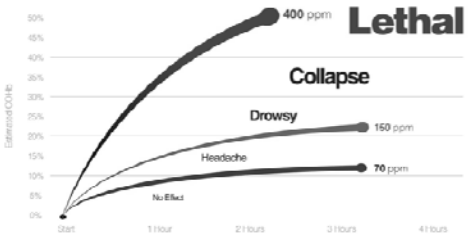
Carbon Monoxide **Symptoms**



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Types of Carbon Monoxide Sensors
Biomimetic
Semiconductor
Prone to nuisance issues.
Electrochemical
Cost effective and reliable.
SYSTEM SENSOR

CO1224T
CO Detection
Products
from System Sensor
CO1224TR
SYSTEM SENSOR

RealTest® Overview
Both the CO1224T and CO1224TR offers RealTest™ technology. The first true field functional CO test fully compliant with NFPA 720: 2009
• Reliable
• Simple test procedure
• Immediately know the detector works
• Meets NFPA 2012 requirements
solo
SYSTEM SENSOR

Electrochemical CO Sensor

System Sensor CO detectors use the **latest** electrochemical sensing technology to provide the most accurate CO detection available.

These devices detect low levels of CO that may be harmful over long periods of time and high concentrations that pose an **immediate** danger.

SYSTEM SENSOR

End of Life

All CO detectors include a limited-life CO cell that **must be replaced** at end of life.

System Sensor recommends replacing the CO1224T and CO1224TR at **six years** from the date of manufacture.

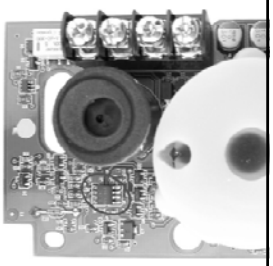
This date of replacement is clearly marked inside the unit.

SYSTEM SENSOR

Trouble Relay

Unlike other detectors, the trouble relay in System Sensor detectors **will notify** the central station of cell trouble and at end of life. This enables service providers to make proactive service calls to meet customer needs.

Our detectors also include an **end-of-life timer** that begins counting upon power-up and tracks the sensor's days only when powered.



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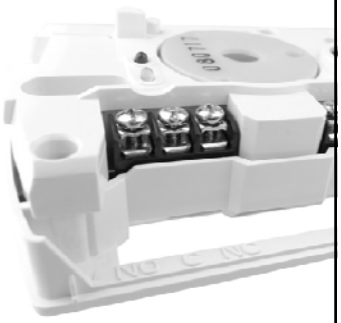
SEMS Terminals

SEMS terminals provide electrical supervision and **fast, easy wiring.**



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Alarm LEDs

Red and **green** LEDs help differentiate between normal conditions and alarm conditions.

SYSTEM SENSOR

Multiple Mounting Options

Multiple mounting options for **mounting** to a single-gang electrical box or surface mounting to the wall or ceiling.

SYSTEM SENSOR

Low Current Draw

Low current draw, with **20 mA** in standby and **40 mA** in alarm.

This means that more CO detectors can be **connected** to the panel, without purchasing a more expensive panel or extra auxiliary power supply.

SYSTEM SENSOR

CO1224T and CO1224TR CO Detectors

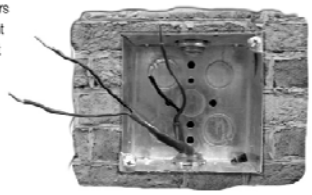
Our **award-winning** line of system-connected CO detectors includes the rectangular CO1224T and round CO1224TR. These detectors include RealTest — the first and only field functional CO test fully compliant with NFPA 720: 2009.

These detectors also provide **multiple mounting** options, enable **24/7 central station monitoring**, require a **low current draw**, and are quick and easy to install, test, and maintain.

SYSTEM SENSOR

CO-PLATE Accessory

In cases when you would like to **upgrade** competitive detectors to the CO1224T, but the footprint of the competitive detector must be covered, the CO-PLATE CO Detector Replacement Plate perfectly covers the outline of the previously installed detector. The CO1224T then mounts to the CO-PLATE for a clean, low-profile finish.



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Code & Legislation **Updates**

SYSTEM SENSOR

New Trends in CO Legislation

On 7/13/11, Governor Dan Malloy signed **HB 5326, Public Act No. 11-248** into law. The Act requires newly constructed public or nonpublic **school buildings** to install CO detection on or after 1/1/12.

The Act permits either **UL 2034** or **UL 2075** CO detection devices to be installed.

It directs the State Fire Marshal and the Codes & Standards Committee to publicize regulations on the **location**, **power requirements**, **testing and maintenance** for carbon monoxide detection equipment.

NOTIFIER

California State Building Code Update – 2010

California Residential Code (CRC):

- New detached one- and two-family dwelling, townhouse not more than three stories

California Building Code (CBC):

- New Group-R and Group-I occupancies
  - Apartment houses
  - Dormitories
  - Fraternities and sororities
  - Hotels, motels and boarding houses

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International Residential Code Update – 2009

Adoption of CO detection requirements:

Iowa

- Provisions apply only to buildings and facilities owned by the state

New Hampshire

North Dakota

- Provisions are only adopted by local governments/jurisdictions

Pennsylvania

South Carolina

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International Building/Fire Code – 2012

New section was added to the 2012 edition of the IBC and IFC **requiring CO detection** to be installed in new and existing Group R and Group-I occupancies:

- Containing a fuel-burning appliance
- Which has an attached garage
- An open parking garage, as defined in the IBC, or enclosed parking garage ventilated in accordance with Section 404 of the International Mechanical Code shall not be deemed to be an attached garage

International Building/Fire Code – 2012

Exception: Sleeping units or dwelling units which do not themselves contain a fuel-burning appliance or have an attached garage, but which are located in a building with a fuel-burning appliance or an attached garage, need not be provided with single station CO alarms provided that:

- The sleeping unit or dwelling unit is located more than one story above or below any story which which contains a fuel-burning appliance or an attached garage;

International Building/Fire Code – 2012

- The sleeping unit or dwelling unit is not connected by duct work or ventilation shafts to any room containing a fuel-burning appliance or to an attached garage
- The building is provided with a common area carbon monoxide alarm system

International Building/Fire Code – 2012

New requirements permit system-connected CO detectors to be installed:

- Carbon monoxide detectors shall be installed and maintained in accordance with NFPA 720
- Carbon monoxide detectors shall be listed as complying with UL 2075

SYSTEM SENSOR

advanced ideas. advanced solutions.™

Systems That Save®

ATI Systems

ADVANCED ELECTRONIC SYSTEMS, LLC

Manufacturer of Mass Notification Systems

Emergency Alarm and Warning Systems

Acoustic Technology, Inc.

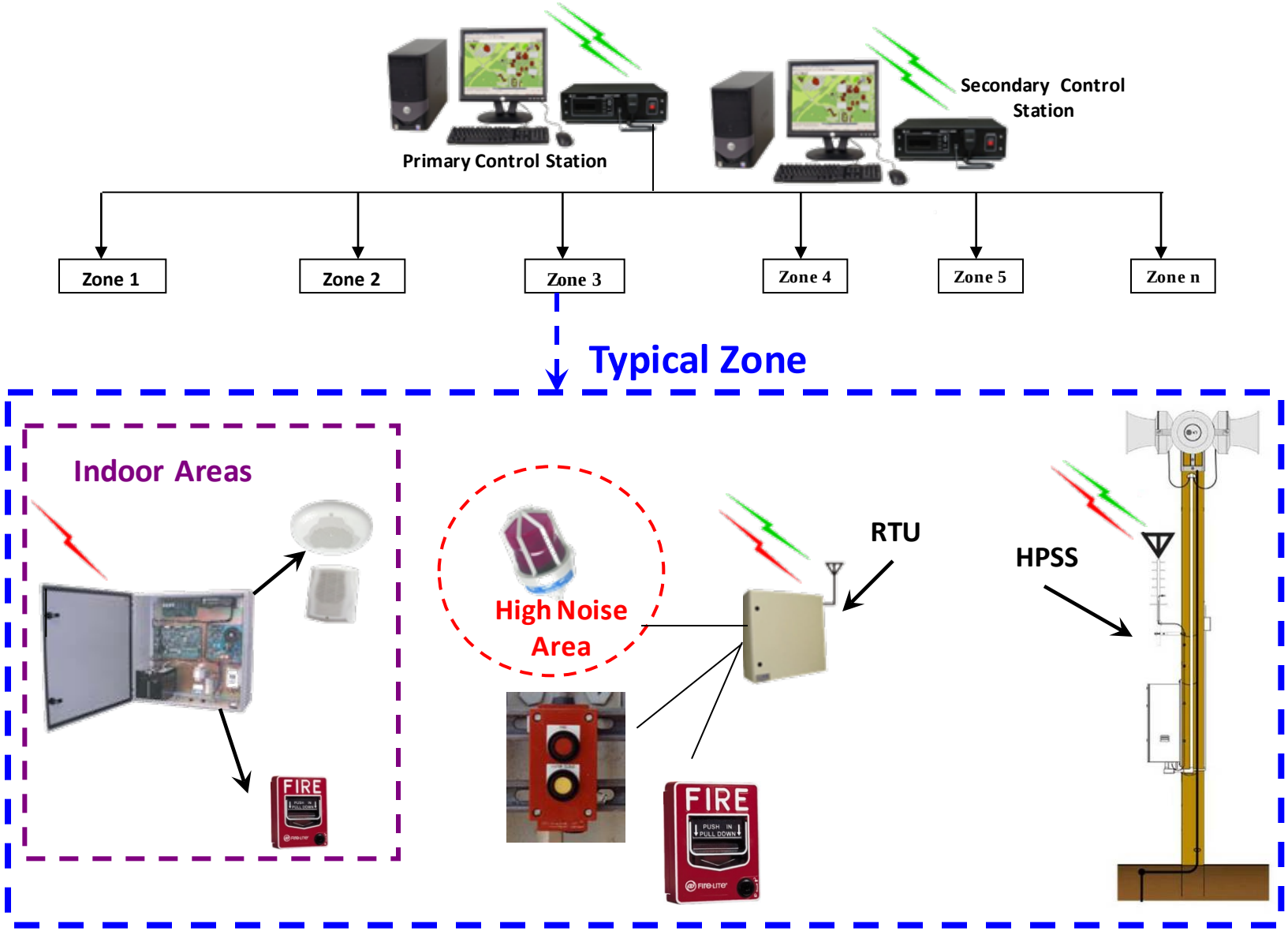
30 Jeffries Street, East Boston, MA 02128

617-567-4969 x305 tbyrne@atisystem.com

Systems That Save®

ATI Systems

System Overview



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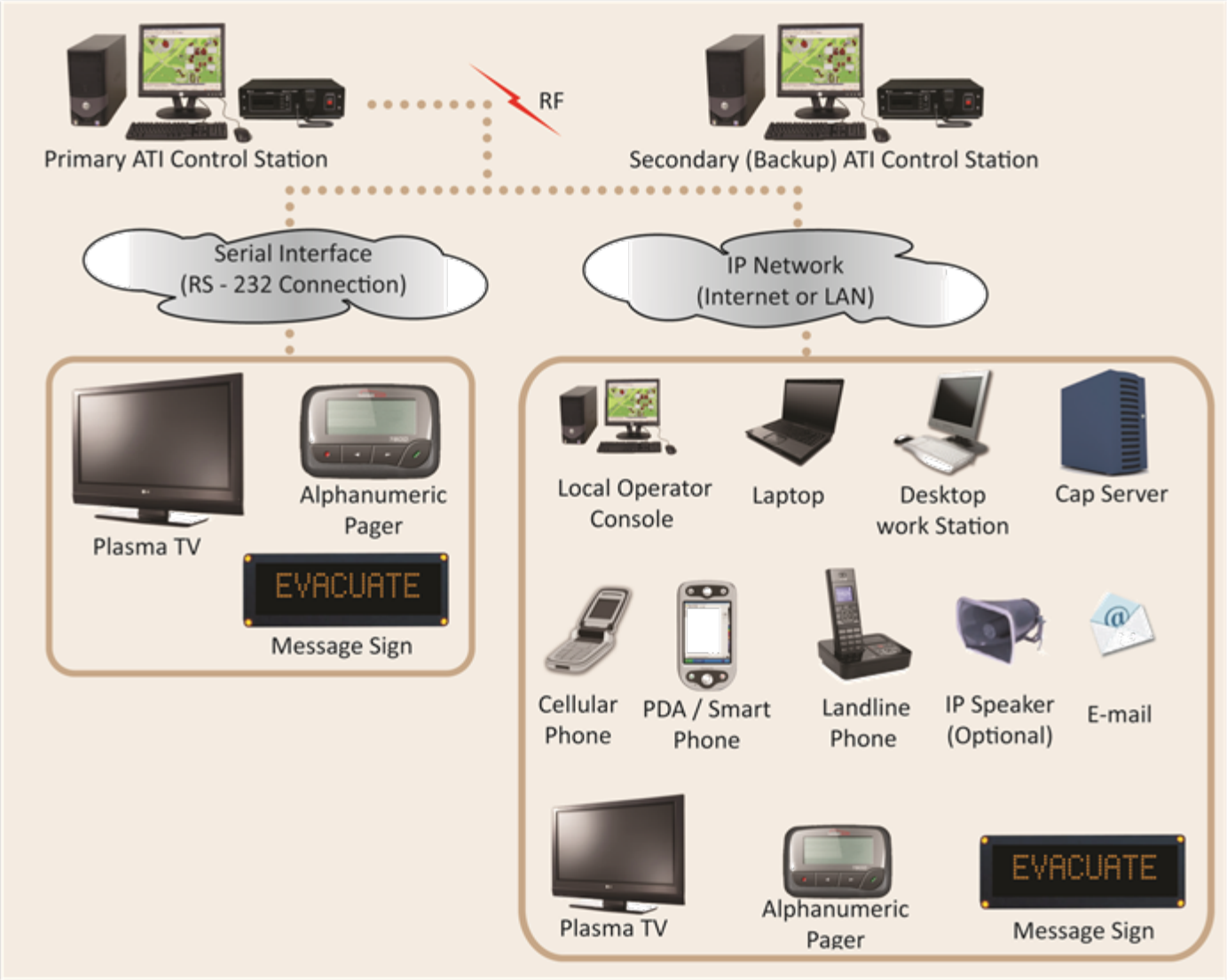
Advanced Integrations



How the ATI system works

- System activations are initiated from the control stations either manually or by detection of remote devices such as pull stations and hardwired and/or wireless pushbuttons.
- Activations are sent from the control station to the field units using RF communication and/or IP communication. Hardwired as twisted pair or fiber optics can also be used.
- Remote devices such as control stations and pushbuttons are monitored by remote terminal units (RTU).
- The notifications will be broadcast as alert tones, audio messages and/or live PA through outdoor units and/or indoor units.
- The system can send notification to beacons, strobes, pagers, electronic message signs, cell phones, text messages, networked computers, etc…
- The system can broadcast audio on existing indoor PA or fire alarm voice evacuation systems.

Systems That Save®

Systems That Save®

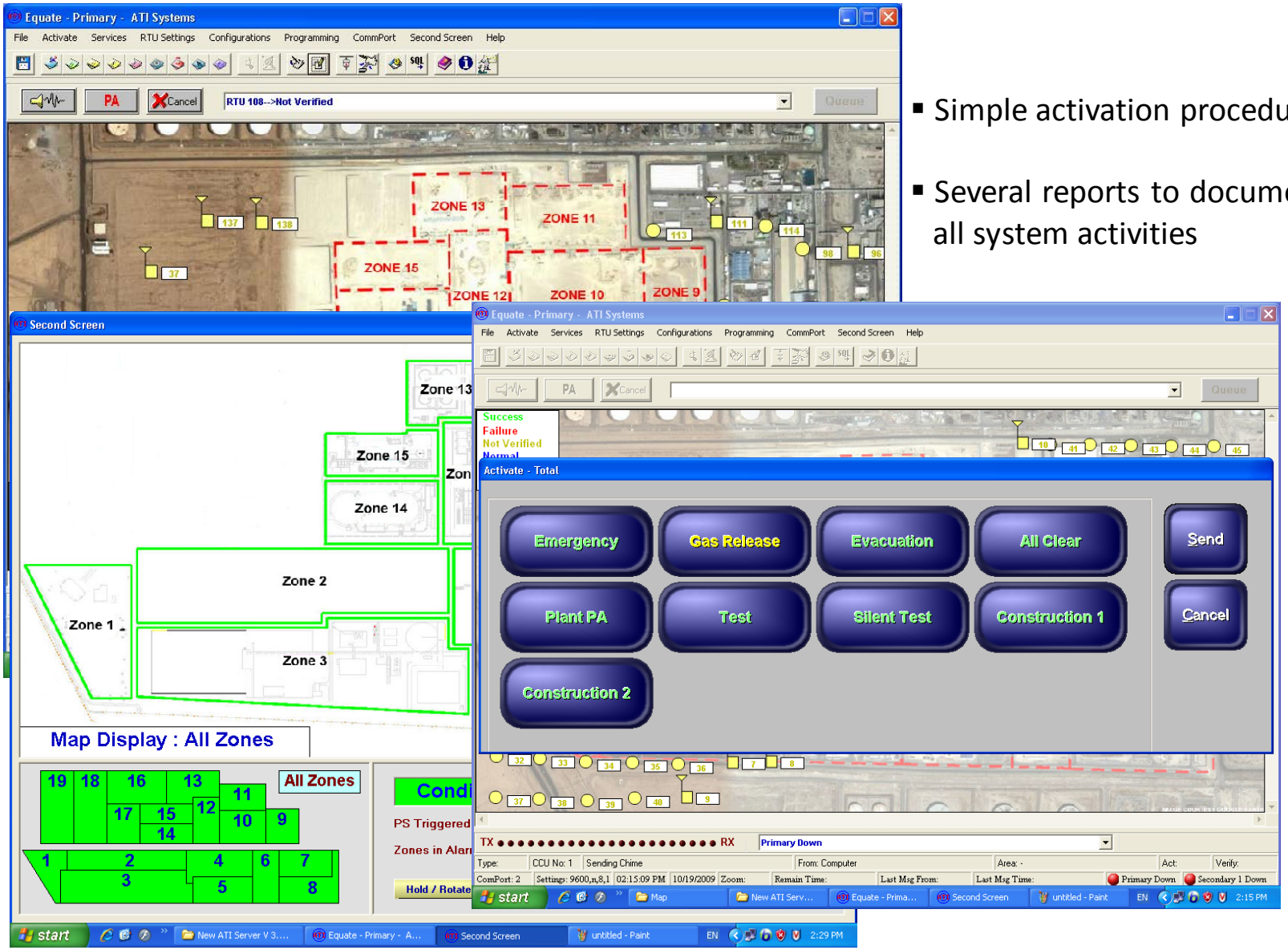
ATI Control Station

- Easy-to-use software
- Customized display map
- Total, zone and individual activations
- Activates tone alerts and voice messages
- Live PA

Mobile Control Station also available

- Lightweight, transportable control station
- Includes the same features as our stationary control station

ATI Customized Software

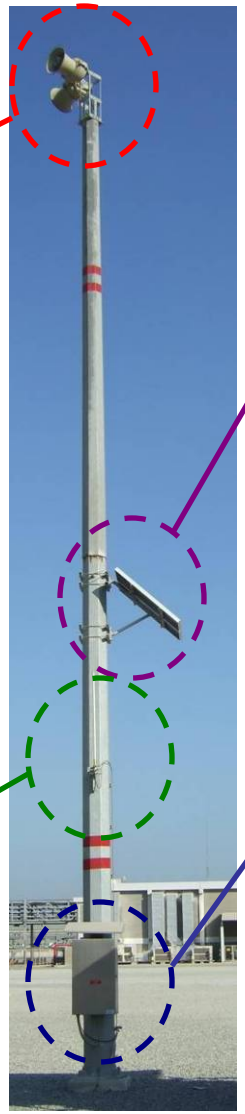


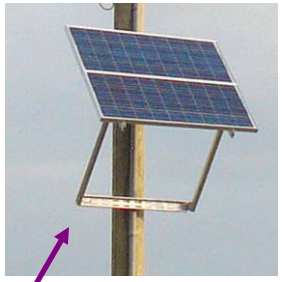
- Simple activation procedures
- Several reports to document all system activities

Systems That Save®

Outdoor High Powered Speaker Station HPSS16/HPSS32

- HPSS16 - 1600 Watts Audio Output
- HPSS32 - 3200 Watts Audio Output
- Directional to reduce sound reflection
- Tilt function to eliminate multiple sound arrival





Solar option

- Batteries are trickle charged using solar power
- Dual ac-solar charging system

- Radio communication
- Optional wired communication using fiber-optic or IP
- Optional wireless IP communication

- NEMA stainless steel enclosure
- High-efficiency Class D amplifier
- Ability to monitor system functionality
- Easy to maintain
- Battery Operated
- Single board design

Systems That Save®

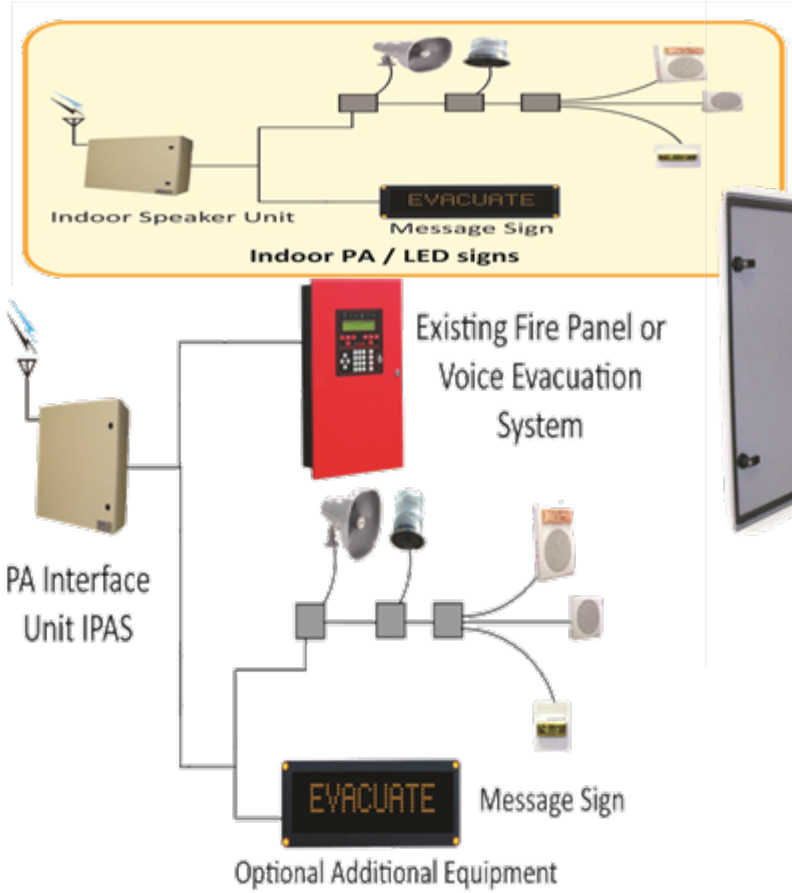
Systems That Save®

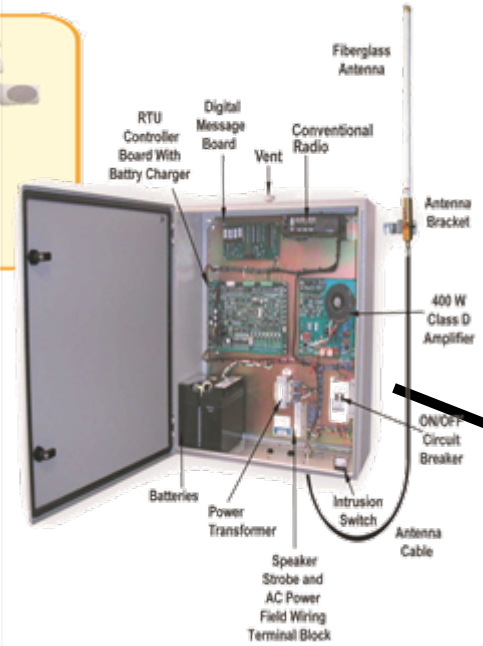
Mobile High Powered Speaker Station MHPSS

- CARC paint
- NATO hitch available

Remote Terminal Units (RTU)/PA Interface/Indoor Speaker Unit(ISU)/Outdoor Speaker Unit(OSU)

- Used to initiate alarms and activations through multiple remote devices
- Control gates, traffic lights, message signs, strobes. Interface Fire Alarm or PA Systems.
- Initiate total or specific area activations. Remote activation supports devices including pull-stations, push buttons, local operator console, etc. Enables system monitoring.





Major Achievements - Notable Contracts Awarded:

- Indian Point Energy Center, the World Trade Center NY, Hudson County NJ, the City of San Francisco, CA, the City of Nashville, TN, NASA Langley Research, MASSPORT Authority, Region of Durham, ON Canada
- US Army Presidential Compound Bagdad Iraq, Bagdad Regional Hospital, Bagram Air Force Base Afghanistan, US Army Training Center Fort Huachuca, Fort Drum, Fort Leonardwood, Fort Lee, Fort Story, Fort Jackson, Fort Stewart, Fort Sill, Fort Ruckers, Fort Sam Houston, Fort Harrison, Fort Riley, Carlisle Barracks, Blue Grass Army Depot, the White Sand Missile Range, Groton Naval Base, Uokonsuka Naval Base, Naval Medical Center, Military Ocean Terminal, Eglin AFB, Whiteman AFB, Columbus AFB, Laughlin AFB, Vance AFB, Maxwell AFB, Goodfellow AFB, Sheppard AFB, Randolph AFB, Luke AFB, Barksdale AFB, Tyndall AFB, Lackland AFB, Kessler AFB, Little Rock AFB, Malmstrom AFB, Altus, AFB, Shaws AFB, Kirtland AFB, Ingleside NAS, Corpus Christi NAS, Pensacola NAS, Kingsville NAS, Jacksonville NAS, JRB New Orleans NAS, Stewart ANG, Bangor ANG, Nebraska Air National, Seal Beach, NAS Fallen
- Westpoint, Virginia Tech University, Virginia Military Institute, Texas A&M University, San Diego State University, University of Massachusetts, Brandeis University, University of South Carolina, North Carolina State University, Washington State University, Oklahoma City Community College, University of the Virgin Islands, New Mexico Highlands University, Queen's University
- Hovensa, Marathon Ashland Petroleum, Kinder Morgan, PPL Martins Creek, Valero Refining, Sunoco, Amtrak, Domtar Industries, Tesoro Refinery, Chevron Refinery, Imperial Oil, E.I. DuPont, Conoco Phillips, Imperial Sugar

Systems That Save®