



**WELLSITE  
PRODUCTION  
OPTIMIZATION  
SOLUTIONS**

**((ECHOMETER))**

**AUTHORIZED DISTRIBUTOR**

Senior Tech is now Hamdon Energy Solutions



# PRODUCTION OPTIMIZATION



## Increase production while reducing operating costs...

Senior Tech (now Hamdon Energy Solutions), is an authorized Echometer distributor in Canada and internationally, providing equipment sales, rentals, training and service. Echometer's Well Analyzer equipment is used to determine well productivity, reservoir pressure, overall efficiency, equipment loading and well performance, which are calculated based on a combination of measurements of surface pressure, acoustic liquid level, dynamometer, power and pressure transient response.

### Wellsite Optimization Services

Senior Tech (now Hamdon Energy Solutions) provides oil and gas well optimization services that both enhance and sustain well efficiency and production. With effective optimization solutions and a mobile service fleet, Senior Tech (now Hamdon Energy Solutions) offers professional expertise and a diverse selection of optimization equipment across Canada and internationally.

#### Production Optimization

Senior Tech's (now Hamdon Energy Solutions) wellsite production optimization services are designed to optimize a company's producing assets through data analysis and hardware/system reviews throughout the primary and secondary lifecycles of oil and gas wellsites. Our production optimization services, delivered by experienced engineers and technicians, ease the workload of production engineers, enabling them to quickly understand the current state of each wellsite. Services include:

- Acoustic Fluid Level Monitoring
- Dynamometer Surveys
- Foam Depression Tests/Fluid Depression Testing
- Plunger Lift Optimization
- Static Bottom Hole Pressure Calculations

#### Regulatory Compliance

As the demands placed on oil and gas companies by the government, private sector and environmental groups increase, it is important to ensure operations are current and meeting the ever-changing regulatory guidelines. In addition to production optimization, Senior Tech (now Hamdon Energy Solutions) provides a range of wellsite services that are conducted to maintain compliance within the parameters set out by the AER and other regulatory agencies. Typically these services are conducted on a yearly basis, reported and submitted to the local regulatory agencies. They include:

- AWS Pressure Transient Surveys
- Packer Isolation Testing
- Surface Casing Vent Flow Testing
- Gas Migration Testing

### Echometer Acoustic Well Analyzing Equipment

Senior Tech (now Hamdon Energy Solutions) is able to provide our customers with the full line of Echometer products. Our Well Analyzer systems can be sold as complete kits (recommended) or we can supply individual components. These units are typically in stock and can ship within 24 hours. In addition, SeniorTech (now Hamdon Wellsite Solutions) also offers equipment maintenance and training support. Our certified technicians have extensive experience in the repair of Echometer units and gas guns.



#### Echometer Maintenance & Repair

Senior Tech (now Hamdon Energy Solutions) provides a complete Echometer Maintenance and Repair Program to ensure the best performance and durability of your Echometer equipment.

Our certified specialists utilize original parts following the latest Echometer guidelines and practices. In addition, we carry a large inventory of replacement parts, allowing for a quicker turnaround on equipment repairs.

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### Echometer Model Comparison

FUNCTION	MODEL E (WELL ANALYZER)	WIRELESS WELL ANALYZER	MODEL H	MODEL M
Unit Image				
Readout	Digital	Digital	Digital	Dual Channel Paper Recorder
Data Storage and File Sharing	✓	✓	✓	✓
Intrinsic Safety Certification	ATEX Optional	Awaiting Certification	ATEX an IECEx	ATEX Optional
Fluid Level Determination	Automatic Collar Count Acoustic Velocity Downhole Marker	Automatic Collar Count Acoustic Velocity Downhole Marker	Automatic Collar Count Acoustic Velocity Downhole Marker	Manual Collar Count Acoustic Velocity Downhole Marker
Surface Pressure Acquisition	✓	✓	—	—
Dynamometer Testing	✓	✓	—	—
Motor/Power Current Data Acquisition	✓	✓	—	—
Pressure Transient Testing	✓	✓	—	—
Plunger Lift Analysis	✓	✓	—	—
BHP & IPR Calculations	✓	✓	AWP2000	AWP2000
Printing Reports	✓	✓	✓	AWP2000
Protective Case	✓	✓	✓	✓
Notebook Computer (Windows)	✓	Required/Not Included	—	—
Rechargeable Battery	✓	✓	✓	✓



# REAL-TIME DATA ANALYSIS

## ECHOMETER MODEL E WELL ANALYZER SYSTEM

Echometer's Model E Well Analyzer is an integrated artificial lift data acquisition and diagnostic system that allows an operator to maximize oil and gas production and minimize operating expense. It is a computerized instrument for acquiring liquid level data, acoustic pressure transient data, dynamometer data, and motor power/current data. Well productivity, reservoir pressure, overall efficiency, equipment loading and well performance are derived from the combination of measurements of surface pressure, acoustic liquid level, dynamometer, power and pressure transient response.

This portable system is based on a precision analog to digital converter controlled by a notebook computer with Windows-based application. The Well Analyzer acquires, stores, processes, displays and manages the data at the well site to give an immediate analysis of the well's operating condition. It is compact, rugged and designed for use in any climate.



### Well Analyzer System Specifications:

- Dustproof Plastic Case
- Notebook Computer (Windows)
- Wireless Base Station (for Wireless Option)
- Sigma-Delta Analog to Digital Converters
- Precision Sensors
- Shielded Cables
- Total Well Management Software (TWM)
- Total Asset Monitoring Software (TAM)
- Total Weight - 75 lbs (35 kg)
- Approximate Dimensions - 20" x 20" x 20"  
(51 cm x 51 cm x 51 cm)

### WIRELESS WELL ANALYZER

Echometer's Wireless Well Analyzer consists of a Wireless Base Station (with GPS wellsite location) directly connected to the USB port of a laptop computer that communicates with multiple wireless sensors. The station allows for the simultaneous acquisition of liquid level, dynamometer and pressure records as controlled by the user via the Total Asset Monitor (TAM) software either at the laptop or sensor location.

### Advantages of the Echometer Wireless Well Analyzer:

- Elimination of cables and connectors improves the reliability of the hardware and data while speeding up the set-up/tear-down process with increased safety for the operator.
- Battery powered wireless sensors for fluid level, pressure and dynamometer data acquisition are easily deployed and quickly installed on the well.
- The laptop manager software (TAM) automatically recognizes and commissions the sensors.
- Work flow is streamlined and acquisition of valve tests are seamless.



- Powering up a sensor is detected automatically by the software, enabling the user to install the sensor, perform calibration and initiate acquisition directly at the sensor using its membrane switches with no need to interact with the software at the computer.
- Simultaneous acquisition of fluid level, dynamometer, pressure and power data is accomplished without cable switching or user intervention.
- System provides real time analysis and visualization of the performance of the pump, rods and surface unit.
- Scheduling of un-attended fluid level and dynamometer measurements allows continuous monitoring of well performance.



- The user sees at a glance, how the well and pump are operating.
- Acquired data, wellbore description and pumping system characteristics are saved as a historical database creating a continuum of the well's information and performance.
- Easy to identify and retrieve past records for direct comparison and detailed analysis.
- Accurate description of wellbore construction, well completion, lift system, fluid properties, production records and performance.

(((ECHOMETER)))  
SOFTWARE

Echometer had developed software programs (when used in conjunction with the Echometer units) to analyze well performance and determine bottomhole pressures from acoustic data including:

- **Total Asset Monitor (TAM)** - Enhanced software for use with wireless equipment.
- **Total Well Management (TWM)** - Integrated software used to analyze oil and gas wells.
- **Analyzing Well Performance 2000** - Used for the analysis of fluid level data acquired with a strip chart recorder.
- **QRod 3.0** - For the design and prediction of the performance of Sucker Rod Beam Pumping Installations.
- **Gas Separator Simulator** - For the design and prediction of the performance of Downhole Gas Separators.

All software is Windows compatible and available for download from [www.hamdon.net](http://www.hamdon.net)



# REDUCE OPERATING COSTS



## ECHOMETER MODEL H DIGITAL RECORDER

The Echometer Model H is a stand alone, battery powered microprocessor controlled digital acoustic signal processor, recorder and display unit that is certified for use in hazardous environments. It has been designed to facilitate and speed up acquisition of data by minimizing the number of steps to obtain a liquid level depth measurement.

The Echometer Model H permits better interpretation of reflections from downhole anomalies through application of digital filtering and processing that improve the ability of the operator to distinguish downhole obstructions from enlargements.



### Features:

- Advanced acoustic liquid level depth instrument.
- Digital signal acquisition, processor and display unit.
- Large internal memory for data storage.
- Wellfile data management for file organization.
- Software can be installed on a laptop for data transfer and analysis.
- Enhanced interpretation of acoustic data.

- New anomaly marker analysis for gas and gas lift wells.
- Certified for use in hazardous environments.
- Interpretation of reflections.
- Filter operation.
- Minimal number of steps to obtain a liquid level depth measurement.
- User manages the data acquisition and controls the flow of the program.

### Model H System Specifications:

- Weatherproof
- Dustproof Plastic Housing
- Panel Incorporates Both Soft-keys and Navigational 5-button Star Input Keypad
- Self-contained Rechargeable Battery
- Battery Rated at 9 Amp-Hour
- Current Drain is .825 Amps Operating and .325 Amps Standby
- Battery Operating On-time is Approximately 10.9 Hours
- Unit Dimensions: 11" x 10" x 5" (28 cm x 25 cm x 13 cm)
- Unit Weight: 11 lbs (5 kg)



**Senior Tech (now Hamdon Energy Solutions) maintains an inventory of Echometer units and accessories. Units typically ship within 24 hours of order confirmation.**

## ECHOMETER MODEL M STRIP CHART RECORDER

The Model M is a portable dual-channel strip chart recorder that uses acoustics to obtain the distance to the liquid level in the casing annulus of a well. The device consists of a microprocessor controlled dual channel amplifier/recorder, a dual-channel paper chart recorder and a gas gun/microphone wellhead attachment.



### Features:

- Stand-alone acquisition instrument.
- Acoustic trace prints out on strip chart paper.
- Dual channel recorder.
- Automatic gain setting and control.
- One second timer with date stamp.
- Built-in self-test.
- Operates from self-contained 12V rechargeable lead-cell battery or 12V external outlet.

### Model M System Specifications:

- Compact Plastic Case
- 5' (1.5 m) Microphone to Amplifier Cable
- 110/220 VAC Automatic Battery Charger
- 12 VDC Automobile Cigarette Lighter Power Cord
- 11 Point Dividers
- 10 Rolls of Paper
- 200 PSI Gauge with Quick Connector
- Set of O-Rings / Miscellaneous Parts
- Comprehensive Operating Manual
- 5 lbs (2.3 kg) CO<sub>2</sub> or N<sub>2</sub> Cylinder (unless other option requested)
- Hose and Filler Connector Supplied for CO<sub>2</sub> and N<sub>2</sub> Cylinders
- Shipping Dimensions: 15" x 15" x 18" (38 cm x 38 cm x 46 cm)
- Approximate Shipping Weight: 50 lbs (23 kg) shipped in one crate



**Maximize your oil production while  
minimizing operation costs.**



Senior Tech is now Hamdon Energy Solutions

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The image shows several oil pumpjacks in silhouette against a dramatic sunset sky. The sun is low on the horizon, creating a warm orange and yellow glow that transitions into a deep blue as it rises. The pumpjacks are arranged in a line, with one in the foreground on the right and others receding into the distance. The overall mood is industrial yet serene.

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