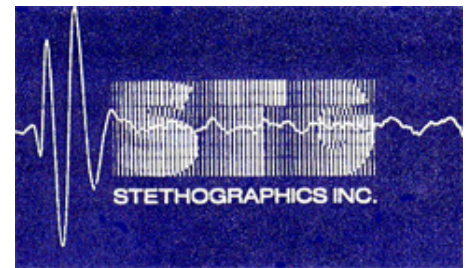


# Stethographics

## Multi-Channel Stethograph



### Overview

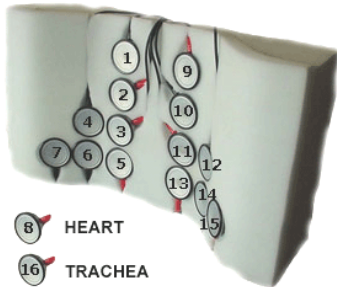
Stethographics automated lung sound analysis is a fast, effective, low cost, noninvasive means to diagnose and monitor disorders of the lung. These automated lung sound analysis products are more effective than current diagnostic methods and will significantly lower overall healthcare costs.

The Multi-channel Stethograph (STG) offers the following unique benefits:

- Provides objective evidence in place of the subjective information from a stethoscope, particularly effective in diagnosis of pneumonia, congestive heart failure and chronic obstructive pulmonary disease (COPD).
- Offers convenient and user-friendly testing for both patient and practitioner.
- Provides documentation of both normal and abnormal lung sounds not previously available.
- Enables three dimensional lung sound imaging - noninvasive and user friendly.
- Stethographics lung sound waveforms can be read like EKG's
- Clinical successes in lung sound analysis point to large potential in other areas, such as cardiac care, gastrointestinal diagnosis and others.

### Sound Capture and Processing

*Fast, non-invasive testing*



The Multi-channel Stethograph consists of pad containing microphones, a signal conditioning box, analog to digital converter and a standard PC with sophisticated software developed by Stethographics.

Sixteen microphones are embedded within the pad. The pad allows rapid capture of lung sounds, enabling the medical staff to complete an examination in two minutes vs. twenty minutes using traditional methods. Equally important, the 16 channels of input are captured concurrently, which provides the basis for three dimensional analysis and display by the Stethographics software.



STG systems can be delivered with a small cart, allowing movement within a hospital or clinic. The Stethograph can also be integrated into hospital rooms, such as in an ICU.

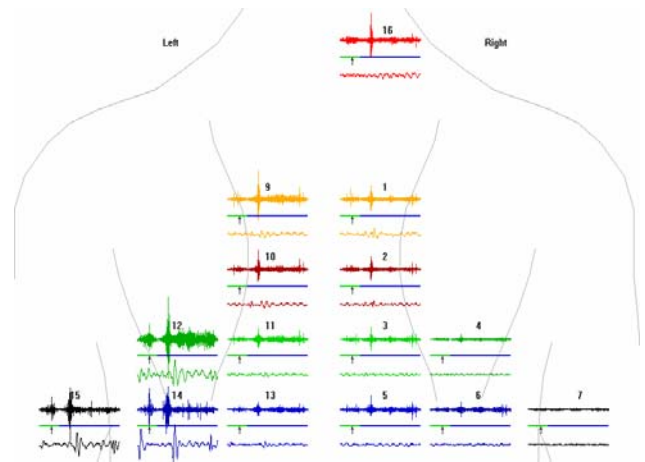


## Visual Waveforms

### *Immediate results*

Recorded lung sounds are displayed as a set of waveforms positioned according to chest cavity locations. This display allows visual examination of waveforms and time-expanded waveforms as well as audio playback of the data.

The display of the traces, similar to an EKG, allows direct visual detection of the abnormalities. Each channel can be examined for crackles, wheezes, and irregular patterns of inspiration and expiration. Contrast between abnormal data and data recorded for healthy individuals is pronounced.

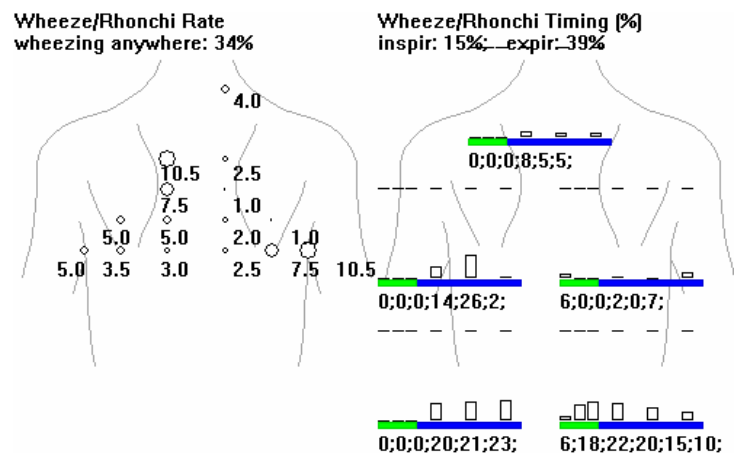


## Acoustic Analysis

### *Automated counting of wheezes, crackles and other sounds*

The computer automatically analyses acoustic energy vs. time and detects crackles, wheezes and rhonchi. Derived measures of the sound characteristics are displayed on an anatomical diagram to allow visualization of the spatial distribution of lung function and abnormalities.

Further information on the overall amplitude of breath sounds, timing of the abnormalities, and crackle and wheeze counts is included in this display. Differences in abnormal patterns among different diseases become apparent in this context.

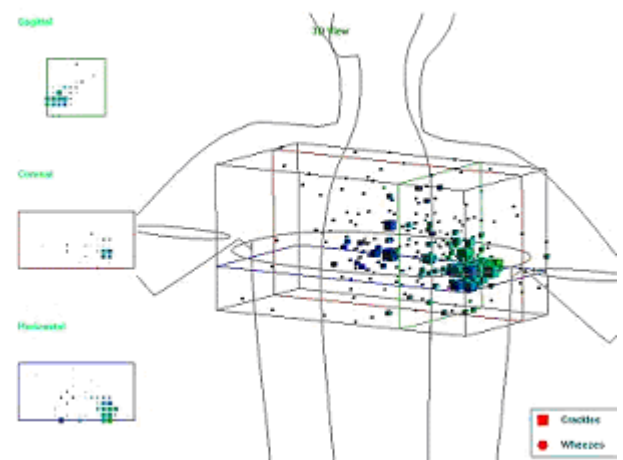


## Dynamic 3D visualization

### *Pinpointing disease locations*

Stethographics' automatic localization of intrathoracic sounds origin technology is used to integrate information from multiple channels to generate a dynamic, three dimensional diagram with crackles and wheezes localized to specific lung regions.

Advanced visualization software allows modeling of the observations, 360 degree rotation, extraction of sectional views, and comparative views. Synchronized lung sound recordings can also be played while examining the dynamic 3D display.



Stethographics, Inc.

Web: [www.stethographics.com](http://www.stethographics.com) Email: [info@stethographics.com](mailto:info@stethographics.com) Tel: 508.320.2841