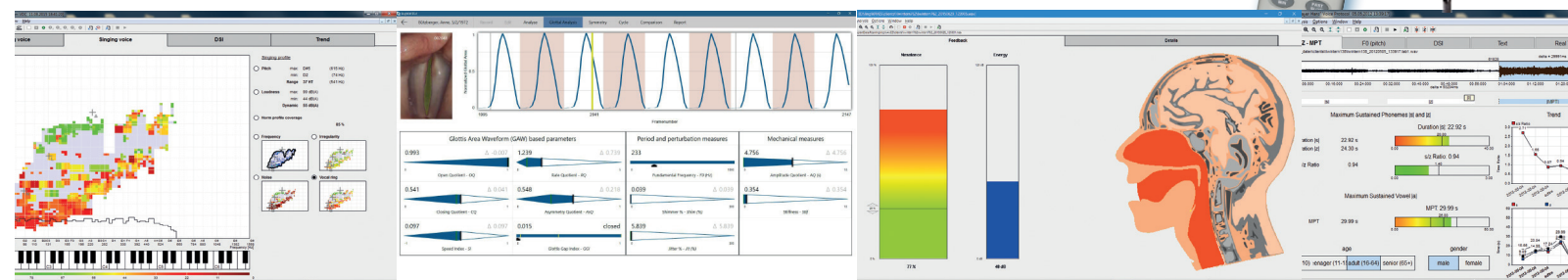


lingWAVES



The international modern standard for clinical acoustic-video speech and voice assessment, analysis and biofeedback

2023-10

lingWAVES - Modular Systems for Voice and Speech

lingWAVES is one of the most frequently used systems for professional voice and speech analysis, biofeedback and documentation worldwide. A combination of standard and new technology for analysis and processing together with easy operation are the key features of this unique system.

One system consists of different acoustic modules and the other one of video modules managed by a client based application with complementary and tested hardware for high level standardization and comparability. A client manager organizes pa-

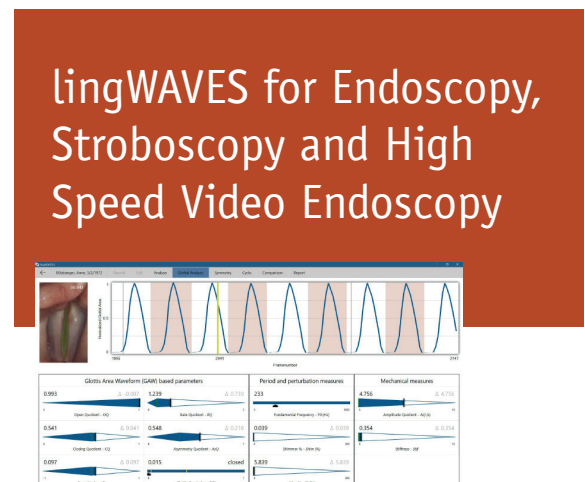
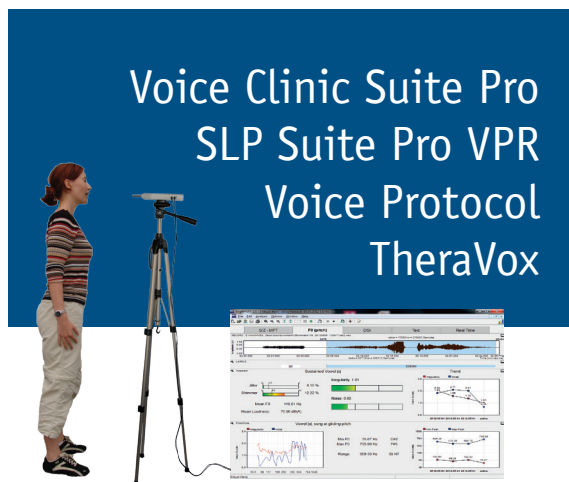
tient/client based analysis and documentation with the benefit of comparing and tracking clinical assessment over time.

The modular character of lingWAVES allows a choice of different module combinations (suites), so the system can be used by a wide range of professionals, including speech/language therapy/pathology, otolaryngology/ENT/phoniatrics and services for professional singers and speakers. lingWAVES modules can also be upgraded at any time.

Visit our web page for up-to-date information:

- ▶ Reference for more than 400 articles/books > [see latest publications: WEVOSYS > knowledge](#)
- ▶ 100% conform to ASHA > ["Recommended Protocols for Instrumental Assessment of Voice"](#)

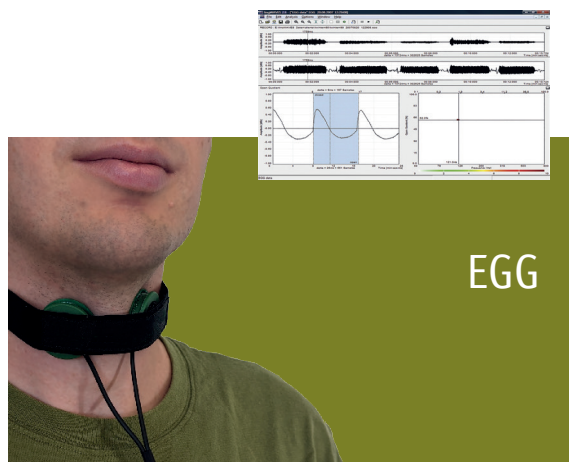
acoustic assessment



endoscopy - stroboscopy - FEES - HSV

lingWAVES

electroglottography



nasalance assessment



lingWAVES Acoustic Sets & Suites

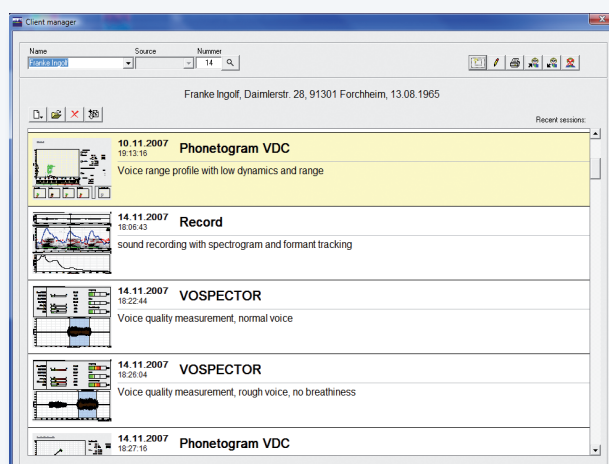
	TheraVox	Voice Protocol	SLP Suite Pro VPR	Voice Clinic Suite Pro
Upgrade Option	→			
Hardware				
HiFi USB microphone	✓			
 lingWAVES Connector USB + SPL meter-microphone - real SPL		✓ + table tripod	✓ + table tripod	✓ + large tripod
Basis				
Voice Recording	✓	✓	✓	✓
Comparison of Recordings	✓	✓	✓	✓
Client Manager	✓	✓	✓	✓
Report/Print Out Function	✓	✓	✓	✓
Screen Shot Function	✓	✓	✓	✓
Client and Database backup	✓	✓	✓	✓
Voice Disorder Index/VHI-12	✓	✓	✓	✓
Visual Biofeedback				
TheraVox	✓		✓	✓
Spectrogram Real Time	✓		✓	✓
Extended Voice Analysis				
Spectrogram Pro, Jitter, Shimmer			✓	✓
LPC, AMDF, Cepstrum, Autocorrelation, LTAS			✓	✓
Voice Protocol (with s/z, MPT, voice quality, pitch, DSI, speaking profile, real-time pitch/loudness)		✓	✓	✓
Vospector voice quality measurement			✓	✓
Göttingen Hoarseness Diagram (GHD)				✓
Multi Real Time			✓	✓
Motor Speech (Diadochokinetic)				
Motor Speech Disorder Assessment			✓	✓
Voice Range Profile (UEP normed and EU MPG Certification)				
VDC - Extended Singing Voice Range Profile with Voice Quality Profile (Irregularity, Noise, Overall Severity, Vocal Ring/Singer's Formant)				✓
VDC - Extended Speaking Voice Range Profile with Profile Slope Calculation				✓
Vospector - DSI (Dysphonia Severity Index)				✓
Vocal Load Test				
Vocal Load Test				✓
can optional combined/upgraded with	Nasality, Electroglottography			
<i>System Requirements (2023-05)</i>	Desktop/notebook with Windows 10 or 11, 16 GB RAM, i5/i7 processor, 500 GB hard drive, one free USB port - tested and recommended desktop/notebook can be offered - ask your distributor			

lingWAVES Acoustic Modules - Overview

Client Manager

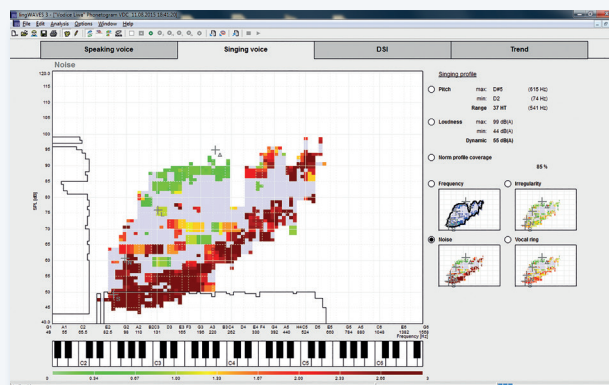
A basic feature within lingWAVES for all modules is an easy to use client management, especially useful for clinical applications. Setup a new client or choose an existing one within the manager and perform your sessions. All data will be stored automatically in a database.

Based on this client management system you will be able to compare assessment and diagnostic results over time as pre/post or time line. Use the built-in backup function for data protection.



Phonetogram VDC

Latest and most advanced technology for extended voice range profile measurement can be found in lingWAVES Phonetogram VDC. Speaking and singing profile in combination with DSI and time line tracking are outstanding features. This worldwide unique commercial system tracks also voice quality during singing profile assess-

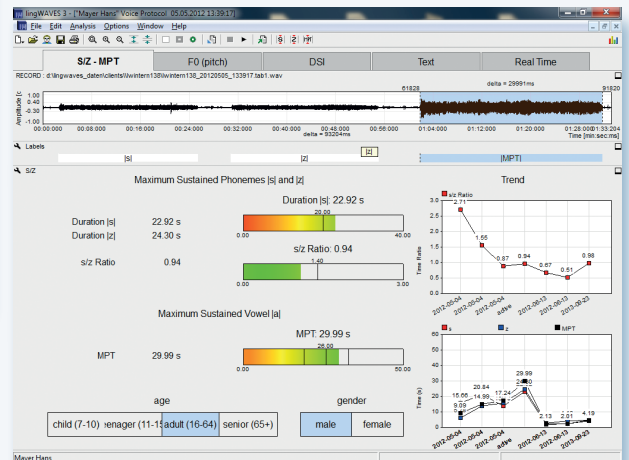


ment in real-time. Software and included recording hardware comply with international norms (UEP, NCVS).

Voice Protocol

Revolutionary and Unique - a quick and easy 10 minute standard voice assessment protocol - gives reliable and objective measures for voice assessment tasks used worldwide.

A must - have for every clinic - whether you are a voice specialist or only see an occasional voice or Parkinsons client. Saves time in gathering and analyzing data instantaneously and provides a clear instant printed report including progress tracking, norms and outcomes.

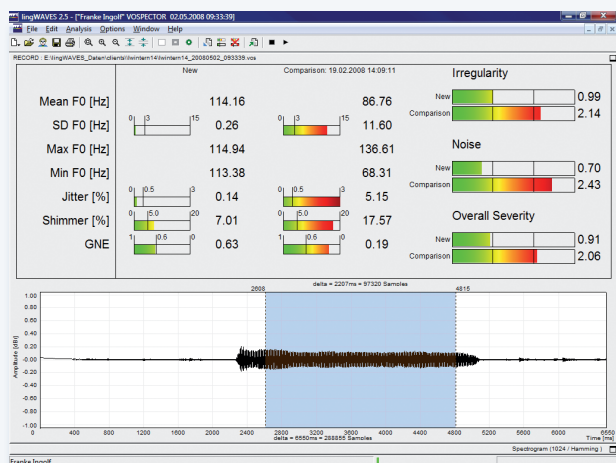


Vospector

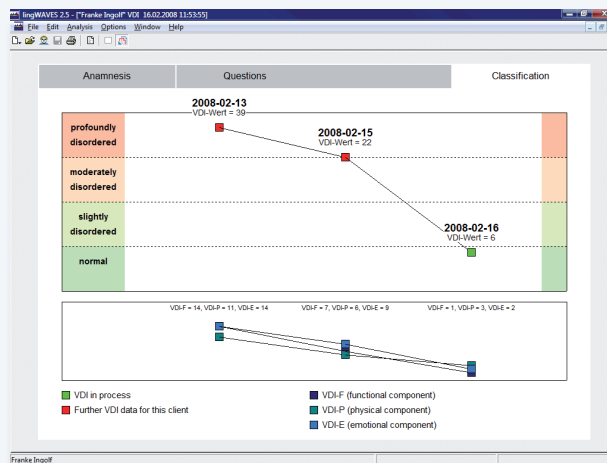
The Vospector measures the voice quality of a patient and objectively represents it analogous to the RBH scale. lingWAVES Vospector measurements made on sustained vowels include minimum, maximum, average and standard deviation for fundamental frequency, jitter, shimmer and GNE (glottal to noise excitation ratio - the new reliable clinical measurement of vocal fold airstream noise).

Separate measurements "add up" to yield further voice parameters like irregularity, noise and overall severity of dysphonia that can be regarded as objective counterparts to R (roughness), B (breathiness) and H (hoarseness) components of

the RBH/ORB (Cape-V) rating system for the perceptual evaluation of dysphonia.

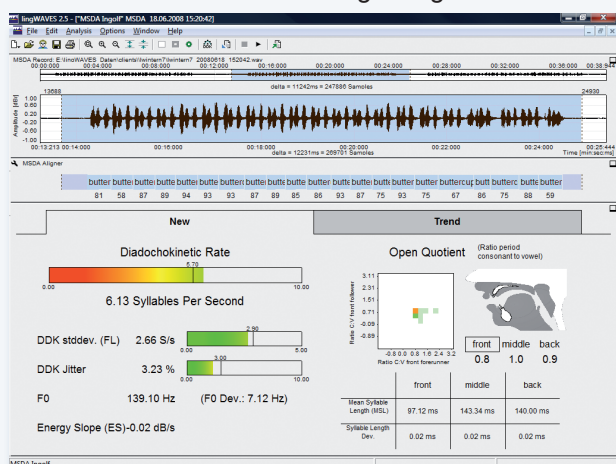


is more easy to use for patients and clinicians because of the reduced amount of questions.



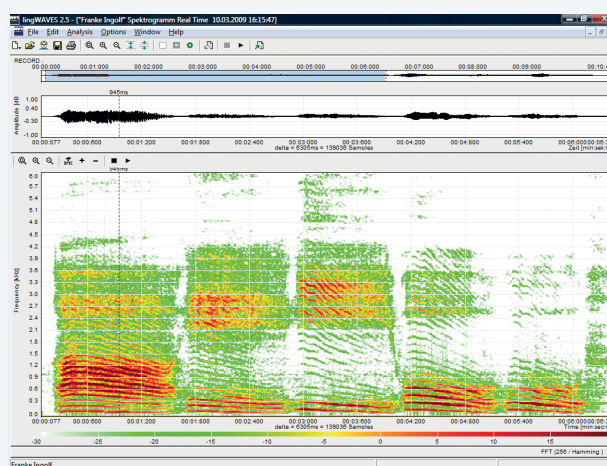
Motor Speech Disorder Assessment

Motor Speech Disorder Assessment (MSDA) is a latest technology tool to analyse speech parameters of motor speech disorders automatically. The new technology enables analysis of speech in a diadochokinetic (DDK) tasks within seconds. The result is an understandable report of numerical parameters and time line tracking at a glance.



Spectrogram Real Time

Sound spectrographs are a standard tool in voice diagnostics and also used as biofeedback. With lingWAVES Spectrogram Real Time, you can create a real time spectrograph while you are recording a patient's voice. The display shows a spectrogram - in real time.



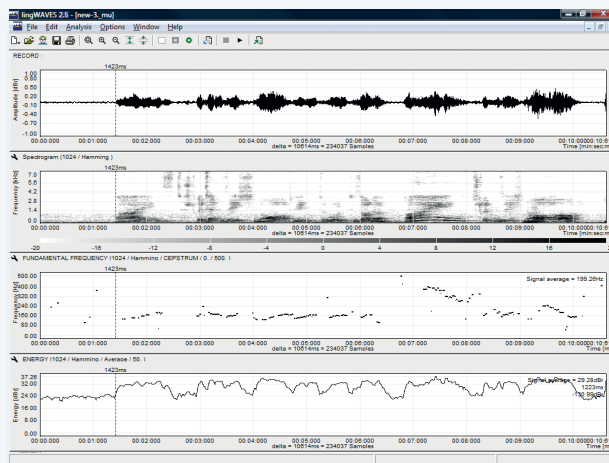
Multi Real Time Display

Multi Real Time is an extended Real Time Spectrogram which also displays fundamental frequency/pitch and energy during signal recording. Multi Real Time shows acoustic parameters such as time signal, spectrogram, pitch and energy during voice and speech production without time delay in real time. This tool is often used to compare vocalization and pronunciation between speech pa-

Voice Disorder Index (VHI-12)

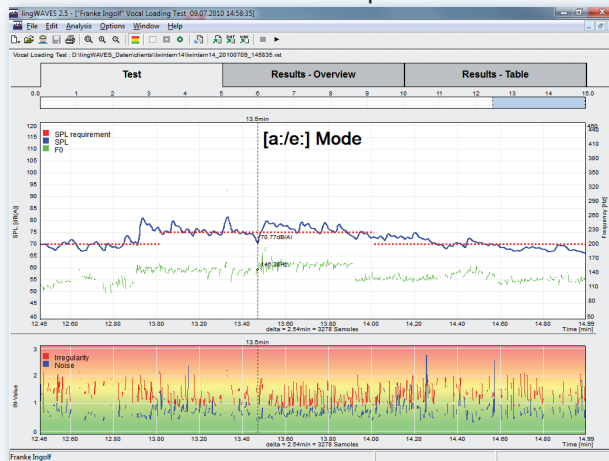
The Voice Disorder Index (VDI/VHI-12) has been established as a reliable tool for measuring voice related quality of life. The purpose of the VDI is to provide some preliminary information regarding the severity of voice problem as it relates to the most common activities in daily life. The VDI/VHI-12 correlates well with the original VHI ($r=0.98$), but

thologist (target) and client (trial) with the benefit of both visual and auditory feedback.



Vocal Load Test

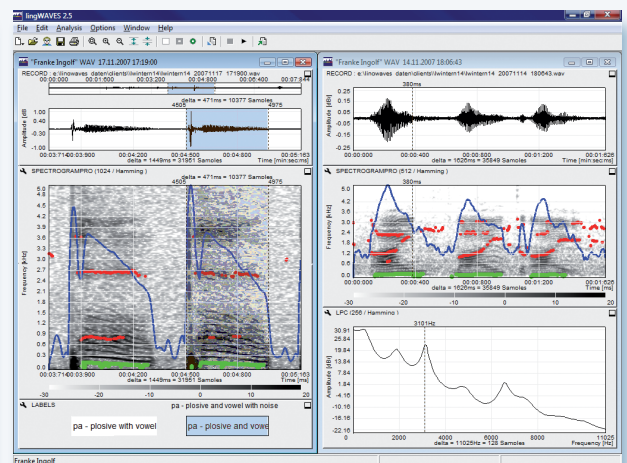
The new lingWAVES vocal load test controls vocal load and endurance of the speaking voice. This test gives important and reliable information about voice constitution, now tracking voice quality information as well as volume and pitch in real-time.



Standard and Extended Voice and Speech Analysis

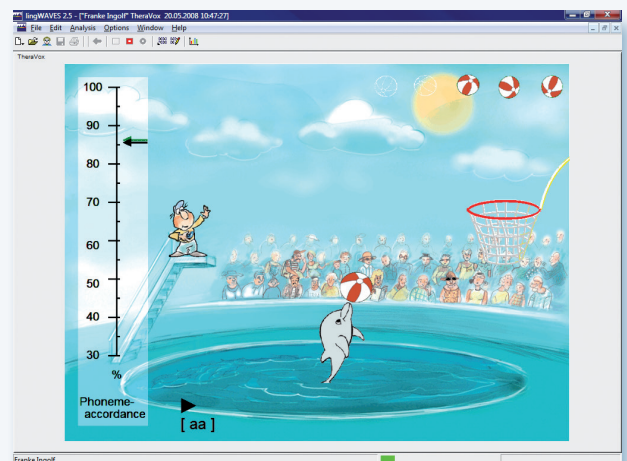
lingWAVES offers several modules for standard and extended voice signal analysis like long term (energy, spectrogram, spectrogram pro, pitch, shimmer, jitter) and short term analysis (FFT, LPC, LTAS, AMDF, autocorrelation, cepstrum). It is easy to add voice analysis to each recorded voice signal. The whole analysis will automatically be saved in a project file. This means that you can reopen

the voice record with the same analysis you have done before.



TheraVox Visual Biofeedback

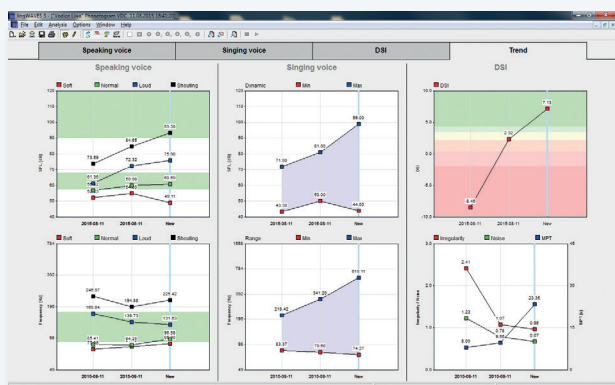
TheraVox is a delightful highly recommended computer speech therapy tool made with beautiful graphics for both children and adults. It is a series of motivating games/activities in which voice and speech elements like voicing, voice onset, loudness, articulation, co-articulation and prosody are transformed into real time graphics. The patient gets visual feedback for qualitative and quantitative attributes of his voice and speech, which is of crucial importance for enhancing self-monitoring skills within the context of speech therapy.



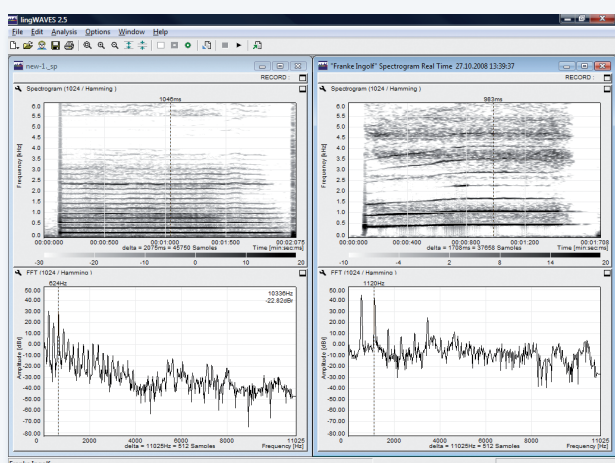
Clinical Pre/Post Comparison

Almost all acoustic modules within lingWAVES are made for clinical practice. This includes be-

side a reliable voice assessment also functionality for pre/post documentation. Voice Protocol, Phonetogram VDC, Vospector, MSDA are such modules offering pre/post and/or time line displays.



It's a breeze to compare and document two recordings with the multi-window view of lingWAVES. You can arrange 2 or more recordings in different windows with additional acoustic analysis.



lingWAVES Hard- und Software

If we say lingWAVES is a "system", it means that you not only get a piece of software and you have to take care about recording hardware - lingWAVES systems are delivered with tested, standardized and advanced audio capture plug-and-play USB hardware optimized for clinical recordings (UEP, ASHA and NCVS conform*). The complete set makes sure that you can do reliable and comparable assessment, diagnostics and documenta-



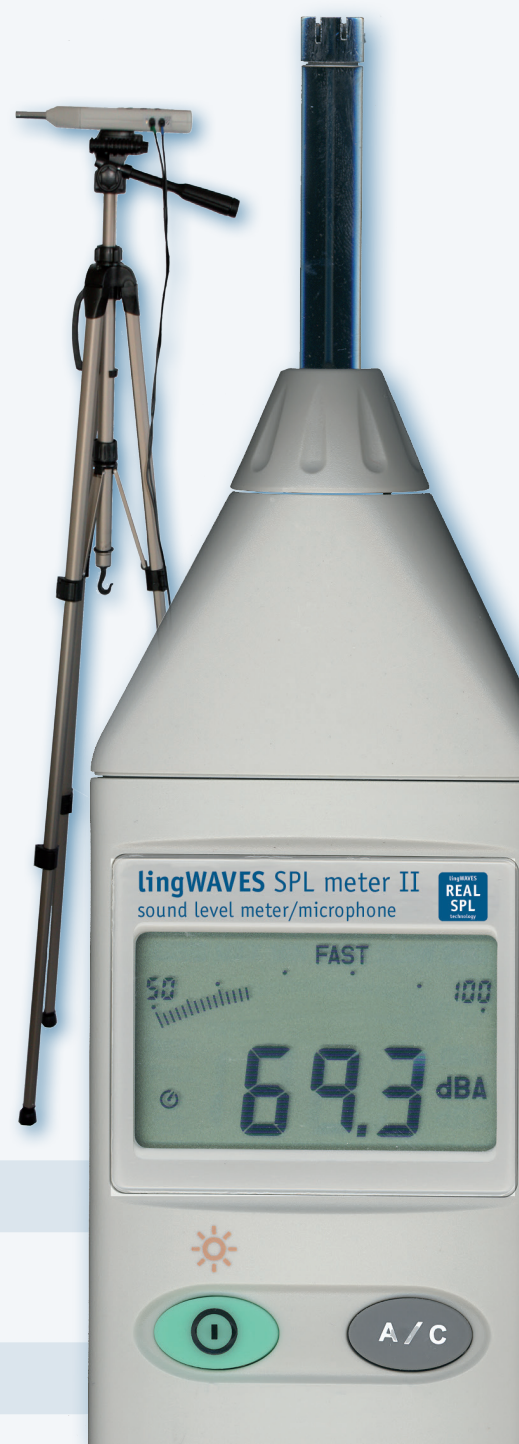
tions - even if you use different computers or you do your assessment at different places.

lingWAVES is a CE marked and a certified EU medical product class.

Service and Support

Our professional service and support is a big advantage for all lingWAVES customers. Find the latest lingWAVES updates, FAQ and remote support on our web page. Contact our worldwide distributors or us for a short term help for problems and questions.

www.wevosys.com - www.lingWAVES.com



lingWAVES Nasality

Nasality - Nasalance

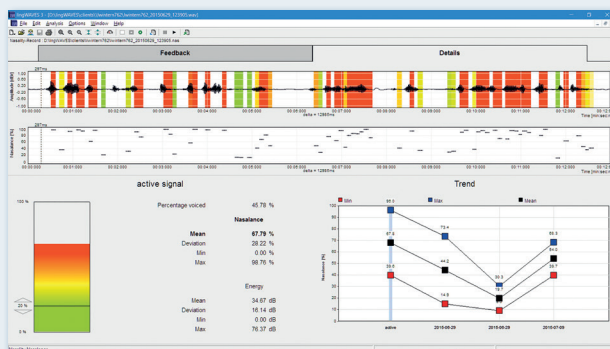
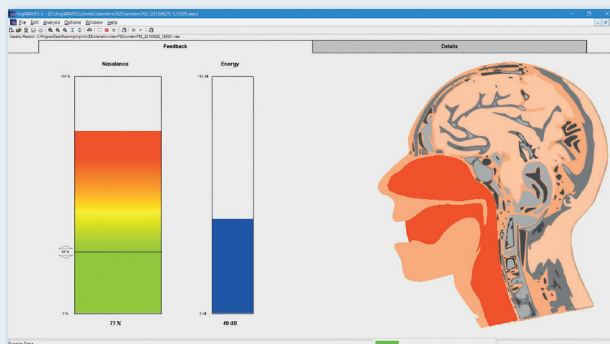
lingWAVES Nasality is a new high technology module within the lingWAVES voice and speech system for professional users. It is non-invasive and measures and gives feedback about the presence of nasality in speech production. It measures the degree of velopharyngeal opening during voiced speech - also known as nasalance.

New Mask System

Compared to other traditional systems which have some form of plate separation between the mouth and nose, lingWAVES Nasality uses a new dual wall cushion nose mask with a lightweight durable flexi-tube for a higher acoustic separation between nose and mouth signal. It also uses an improved measurement algorithm for nasalance with real time calculation.

Nasalance Measure & Display

The insufficiency of velopharyngeal closure during vowels and sonorants that causes nasal resonance can be estimated



System requirements: Desktop/notebook with Windows 10 or 11, 16 GB RAM, i5/i7 processor, 500 GB hard drive, one free USB port

and displayed for evaluation/measurement or bio-feedback in speech training of the nasalance of the voice, with nasalance defined as a ratio of acoustic energy at the nares or nostrils to that at the mouth.

Biofeedback

After starting the module, users can display clients' nasalance level in real time re-presented by colored bar graph and sagittal head view for bio-feedback exercises. This gives an clear and intuitive display for monitoring velopharyngeal activity during speech.

Measurement & Trend

By switching to a measurement/trend display, users are able to record clients' speech (e.g. syllable/word repetitions, passages, SNAP test for kids or any other internationally used standardized speech norm data). The application automatically calculates an instant easily interpretable and objective nasalance score for the whole recording or manually labeled parts of it.

See more:

www.wevosys.com



lingWAVES EGG

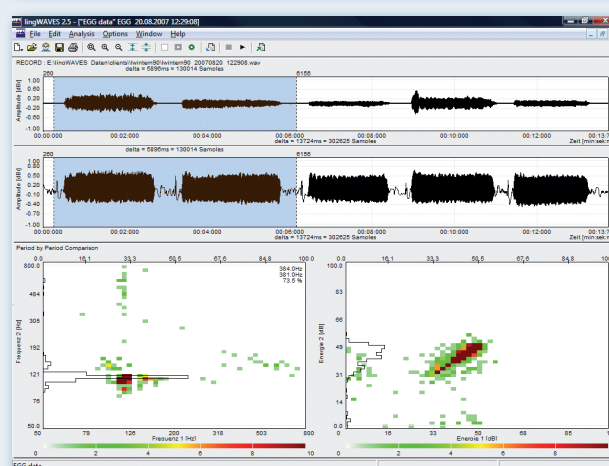
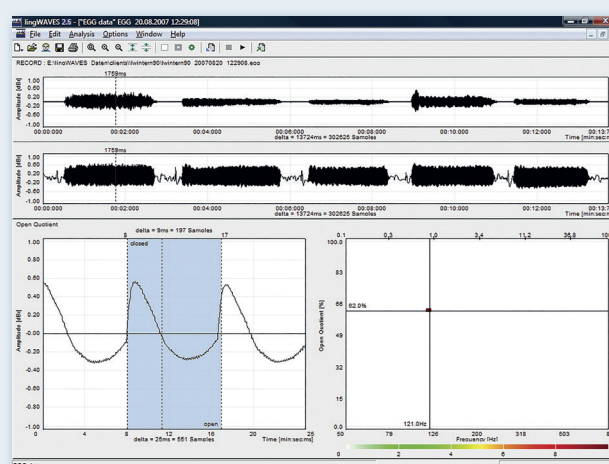
A Complete System

Electroglottography allows for laryngographic assessment of phonatory function during connected speech, soft and loud singing. It gives qualitative and quantitative information about the contact, separation and open phase of vocal fold vibration and is therefore of great use in the interpretation of pathological conditions and follow-ups after surgical treatment or conservative voice therapy. It has proved particularly useful in assessment and documentation of organic voice disorders.

lingWAVES EGG - real time

The lingWAVES EGG module fits seamless in the modular lingWAVES speech software package. It can be added as an upgrade to existing lingWAVES sets/suites or purchased as a stand alone system. lingWAVES users will definitely benefit working with a uniform and friendly software user interface for clinical voice analyses.

Analysis can be done in record or real time mode. The real time mode offer e.g. a real time display of a single period (one opening and closing phase).



EGG Hardware

The lingWAVES EGG comes with the best available and EU medical product certified EGG hardware on the market. In cooperation with Laryngograph Ltd. we offer a high quality standard for hard- and software.



System requirements: Desktop/notebook with Windows 10 or 11, 16 GB RAM, i5/i7 processor, 500 GB hard drive, one free USB port

lingWAVES 4 Endoscopy, FEES, Stroboscopy & High Speed Videoendoscopy

WEVOSYS keeps development and customer service going since more than 20 years. Take a look at www.wevosys.com for latest product & development news.

lingWAVES 4 - A Digital Management System

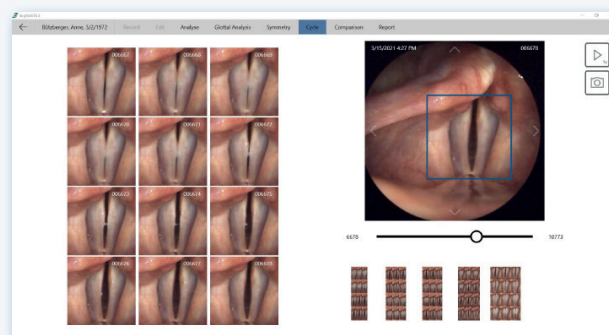
lingWAVES 4 was developed to provide our customers a high-level modern, flexible, mobile and easy-to-use system for clinical assessment of the larynx and other endoscopic tasks based on latest standards for application development, data security, fast and secure database management, client-server/stand alone and flow user interfaces. There are different modules for endoscopy, stroboscopy, snap shot, FEES and HSV.

Key Features

- light and dark modus
- excellent image quality
- record, edit, analyze, comparison, report in all modules available
- LED light source for endoscopy and stroboscopy
- usable for rigid and flexible endoscopes
- snapshot, cycle frame-by-frame
- updates and support for lingWAVES application
- footswitch for easy controlling
- interfaces like HL7 and GDT

Distributing Hardware

WEVOSYS is distributing the LED lightsource Demuth Laryngostroboscope and hardware from orlvision, like flexible laryngoscope for endoscopy, stroboscopy and FEES.



WEVOSYS

WEVOSYS medical technology GmbH
Department for Outstanding Endoscopy
Kronacher Str. 11, 36152 Bamberg
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www.wevosys.com



Doe, Jane, 7/22/1970
Gender: Female
Street: Street 1
City: City 1
Country: Germany
Insurance policy number: HAM-97211534

General Session Information
Examination: Endoscopy
Examiner: Ingrid Franke
Examination Date: 7/29/2021
Report Created: 5/18/2023

REPORT DATA



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Image 1

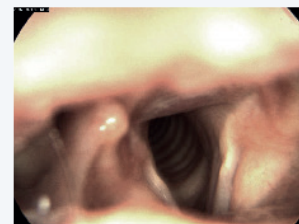


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Image 2

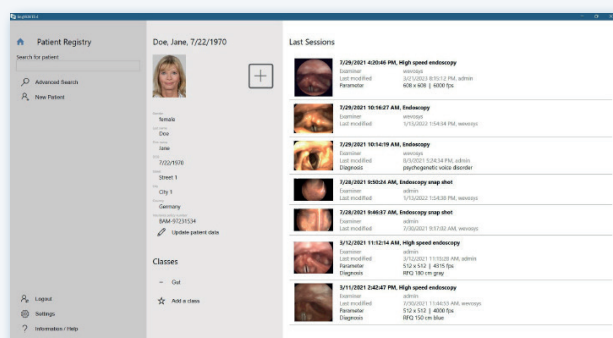
COMPARISON



Current - 7/29/2021 10:16:27 AM



Compared - 7/29/2021 10:14:19 AM



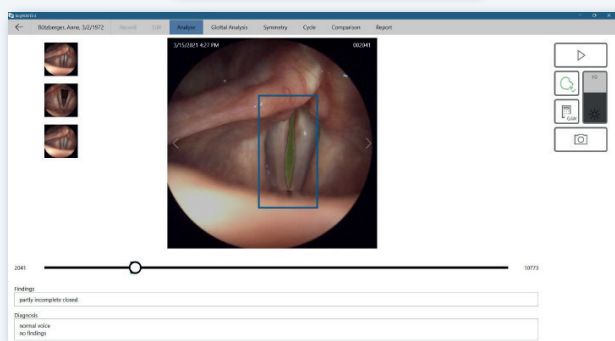
lingWAVES 4 High Speed Videoendoscopy (HSV)

Main Features

High speed video endoscopy (HSV) captures the true intra-cycle vibratory behavior of the vocal folds based on high-speed-imaging, which allows for overcoming the limitations of videostroboscopy for more accurate objective quantification methods.

System Components

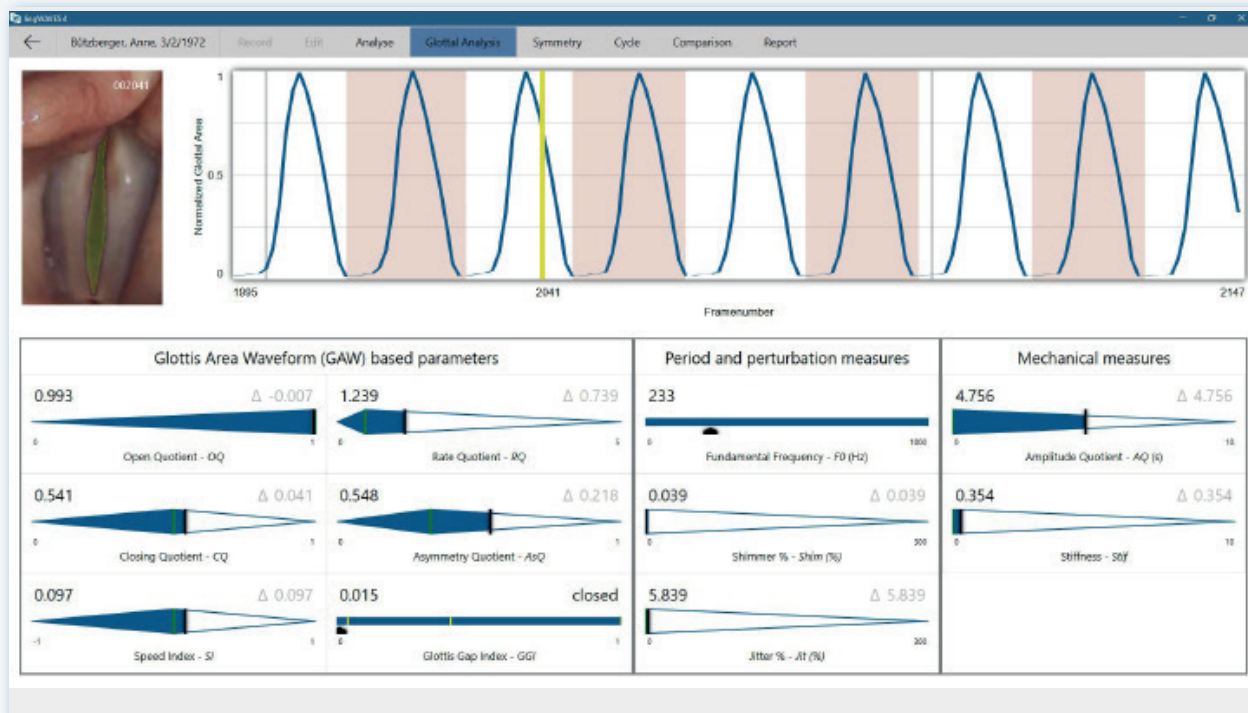
The HSV system comes with hard- and software. Special hardware are the camera, the lightsource, and the foot switch.



At a glance

- outperforms stroboscopy
- real time high speed video endoscopy
- true intra-cycle vibratory behavior of the vocal folds
- best in between 4000 fps to 8000fps
- automatic glottal area segmentation
- based on artificial intelligence (AI)
- GAW and parameter

See recent information at: www.wevosys.com



WAVES

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