

Experienced specialists in the field of medical multimedia data



Software and equipment for medicine

We develop pioneering products in the field of specialist software and equipment for diagnostics. We provide comprehensive customer support: from analysis of the needs with a review of possessed equipment, through the delivery of optimally chosen software and equipment, the system of trainings and service care, to consulting and services in analysis of the obtained medical data.

ABOUT US

Our main activity is related to development and introduction of non-invasive, innovative and cost-competitive solutions for medicine at all stages of diagnostics and treatment. Our research and development division, in the framework of Smart Growth Operational Programme works on combining different diagnostic methods in order to achieve maximum diagnosing efficiency.

Data acquisition

We are able to record images from any medical device which generates video data, including HD video. In particular, we have developed the techniques related to recording endoscopic images. The technologies developed by us include:

- ▶ advanced endoscopic light sources – high intensities, stroboscopy, different wavelengths (tissue penetration depth), photodynamic detection;
- ▶ specialized endoscopic optics with enhanced functionality (advanced electronically controlled focusing, autofocus, aiding distance and object size measurements);
- ▶ recording rapid processes and phenomena with the help of a high-speed camera or stroboscopy (particularly, very precise visualization of vocal folds vibration).

We also offer software and equipment enabling recording audio data for special purposes (vocal loading test, examination of singers' voices).

Analysis

We analyse and parameterize image data using advanced image segmentation algorithms. We have comprehensive sets of software modules for conducting voice acoustic analyses (diagnostic, performance, comparative).

Presentation

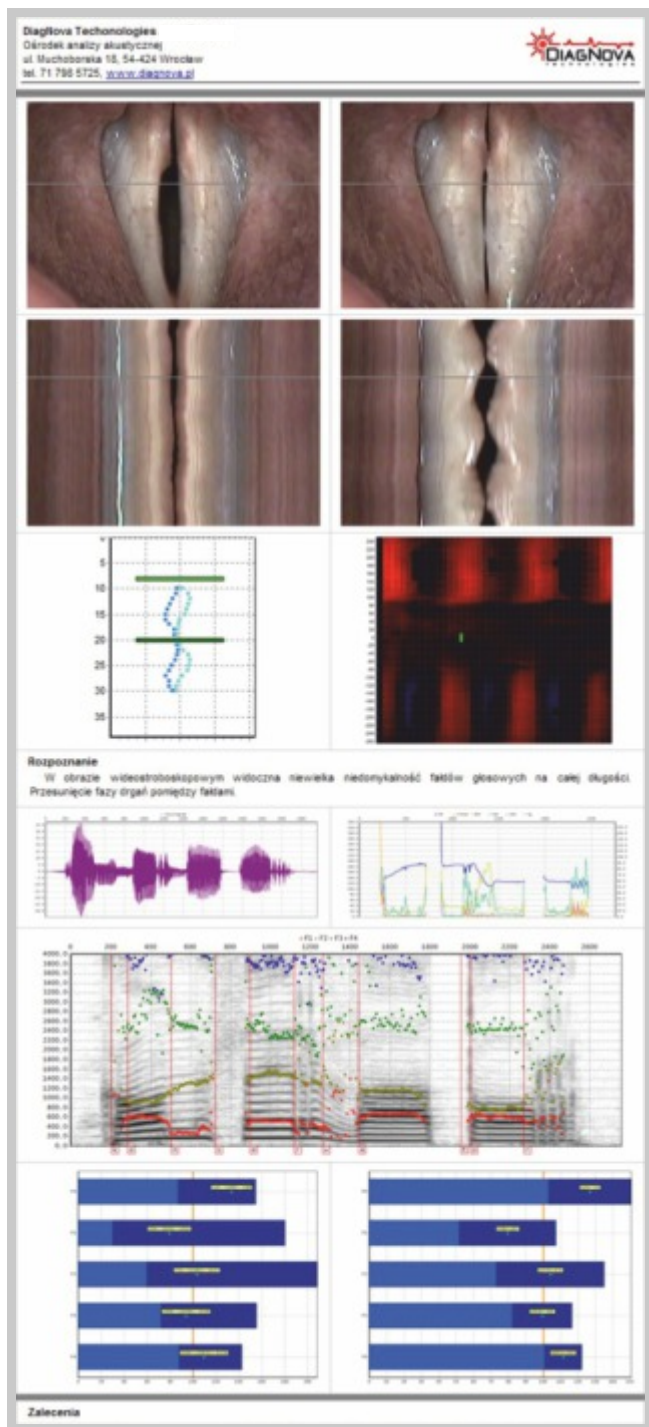
We facilitate the process of interpreting medical data through:

- ▶ enhancing the important content with the use of numerical analysis techniques (histogram correction of images, segmentation, colour correction, cropping, scaling, rotating, video image stabilization);
- ▶ changing the way the data are presented (kymographic sections, histograms, spectrograms);
- ▶ applying advanced presentation techniques (3D visualization, animation).

CONTACT

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Patient data storage:

- ▶ storing and archiving of patient data, issuing referrals and medical certificates;
- ▶ easy and quick reporting from templates for all types of examination;
- ▶ advanced semi-automatically created visit reports for any type of examination;
- ▶ increased data integrity and safety with a unique mechanism of doubled data storage;
- ▶ in the network version – working on multiple workstations in LAN with shared database.

Image recording and analysis:

- ▶ capturing images from endoscope cameras or other imaging devices;
- ▶ video recording, frame series or single frames recording;
- ▶ support for standard and chosen HD and high-speed cameras;
- ▶ kymography – vocal folds function analysis in time interval at any selected cross-section;
- ▶ extended kymography with numerical parameters of vocal folds function and phonovibrograms (PVG).

Voice analysis:

- ▶ for laryngology, phoniatriy, speech therapy and neurology specialties;
- ▶ classical diagnostic voice analysis;
- ▶ voice capacity analysis;
- ▶ vocal loading test;
- ▶ speech disfluency analysis;
- ▶ singers' voice analysis;
- ▶ oscillograms, spectrograms, parametric and formant analysis;
- ▶ protocols: GRBAS, VHI and other.

DiagNova Audio Interface – digital audio interface dedicated for DiagnoScope:

- ▶ measurement of absolute sound intensity;
- ▶ stereo recording with high-quality 24-bit sampling;
- ▶ support for dynamic and condenser microphones (phantom power supply);
- ▶ comfortable access to all settings from DiagnoScope Specialist.



High-speed video phonoscopy:

- ▶ the vocal folds function is recorded by taking video frames at very high rate (a few thousand frames per second);
- ▶ the „slow motion” effect is achieved by simply playing the recorded high-speed video at low speed, e.g., at the standard 25 frames per second;
- ▶ during 0.1 seconds of the record one can obtain the picture of up to 10 glottal cycles, and therefore record the vibrations even during a very short phonation;
- ▶ this way the maximum reliability of the picture of vocal folds function is provided.

In the stroboscopic technique, the impression of „slow motion” is achieved by proper selection of exposition moments for the subsequent frames, which are recorded at the rate of 25 frames per second (or similar). In order to record 10 glottal cycles, 10 seconds of stable phonation is typically required, which is rarely achievable in pathological voices. The correct control of frame exposition moments is only possible with sufficiently regular vibrations of the vocal folds. In effect, recording the function of vocal folds with a high-speed camera is much easier than with a videostroboscope, possible in virtually all cases, and the results are always reliable.

ALI Cam-HS1



High-speed camera attachable to rigid endoscopes, intended for recording the function of vocal folds.

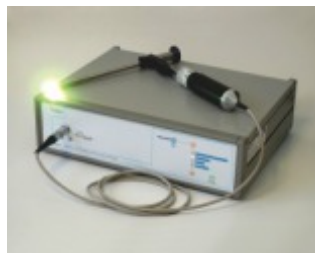


It offers unique functions and features not found in classic endoscopic equipment in order to make the laryngologist's and phoniatician's work easier and more efficient to a maximum extent:

- ▶ true „slow motion” records realized in High-Speed mode at speed of up to 4000 frames per second, enabling to conduct fully reliable functional diagnostics, even in the cases where the stroboscopic technique fails – particularly useful in assessment of voices with significant pathologies;
- ▶ detailed visualization of vocal folds in the High-Speed mode thanks to optimally chosen image magnification;
- ▶ high resolution (HD) mode up to 1024x1024 pixels at normal speed (25 frames per second) for diagnostics of organic changes and general imaging of the whole larynx;

- ▶ electronically controlled lens with manual or automatic focusing; the manual mode uses a comfortably positioned, precision knob;
- ▶ special endoscope attachment preventing its rotation and eliminating the related diagnostic errors;
- ▶ improved assessment of the imaged objects thanks to monitoring focus settings and determining the distance of the objects from the endoscope tip;
- ▶ ability to record sound in parallel with the high-speed video sequence;
- ▶ works with original software reputed in Poland (DiagnoScope Specialist) enabling to conduct full kymographic diagnostics, including vocal fold motion parameterization and generation of phonovibrograms.

ALI Lum-C1



Endoscope light source of very high intensity. It provides the light flux of intensity required for recording the vocal folds function by a high-speed camera.



It is an innovative device with unique features:

- ▶ does not cause overheating of endoscope optics – the advanced optical system and the use of laser emitters provide highest efficiency and eliminate the excessive heat production which is typical for classic high-intensity light sources;
- ▶ the lightweight and compact illuminator head mounted directly to the endoscope makes the examination with the high-speed camera to be performed without effort and as easy as an ordinary videostroboscopic examination;
- ▶ excellent visualization of blood vessels, the edges of vocal folds and irritated mucosa thanks to originally chosen spectral characteristics (colour) of the emitted light;
- ▶ maximum image sharpness in the ALI Cam HS-1 camera thanks to optimally chosen light parameters;
- ▶ fully automated operation thanks to control of illuminator functions by the software from the computer managing the examination, according to the selected mode of camera operation – besides switching the device on, there is no need to adjust any controls in the front panel;
- ▶ long lifetime of the illuminator head and quiet operation, important while performing phoniatic examinations.