

“Wheeze Rate – A New Paradigm in Asthma Management”

Airway Patency Technology

A new US Patent 11/107,999 titled “Method and Apparatus for Determining Conditions of Biological Tissues” has been allowed. This patent claims priority back to April of 2000 and was assigned to PulmoSonix by the inventors (see list at the bottom).

This patent covers the all important field of non-invasive monitoring of the patency (openness) of the lung airways by using sound transmission. The basic technique monitors the amount of sound that is transmitted from a sound source applied to the patient’s mouth or nose (e.g. by a facemask) to sensors (microphones) placed on the bottom of the neck and on the chest. If the airways are narrowed, the transmitted sound is attenuated (reduced), much in the same way a camera aperture determines the light exposure.

This invention is particularly relevant to detection or partial obstruction of the upper airways during sleep and to the monitoring of patients with Asthma, COPD and related conditions such as the elusive “Vocal Cord Dysfunction (VCD)”.

[To read more on VCD see

<http://www.nationaljewish.org/healthinfo/conditions/vcd/index.aspx>]

The Abstract of the allowed patent is copied below:

57)

ABSTRACT

Airway monitoring apparatus **30** includes a driver **6** for applying sound in the audible frequency range to the airway of a subject and a detector **7** for monitoring the response of the airway, e.g. by detecting transmitted sound signal components and/or reflected sound signal components. Variations in the detected sound signal, e.g. energy, due to attenuation of the signal, give an indication of the state of the airway, e.g. airway patency, and can be used to monitor sleep-disordered breathing events, such as apnea and hypopnea and to provide a breathing event index e.g. **AHI**. The apparatus may provide servo-control for a respiratory assist device, such as a positive airway pressure device, so as to provide an appropriate pressure level setting. It may allow for home use of such devices and for home titration. It may also assist in discriminating central and obstructive breathing events, and in providing a measure of airway resistance.

This detailed patent (25 figures, 26 pages, >50 claims) provides comprehensive Intellectual Property protection that is essential for future expansion of KarmelSonix’ product line to the field of upper airway obstruction and its treatment. This technology is directly applicable to the vast area of Obstructive Sleep Apnoea (OSA) which affects approximately 4% of the adult male population and 2% of the adult female population.

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This patent does not only facilitate the use of sound transmission methods for diagnosis of OSA, an area currently dominated by companies who specialize in PolySomnoGraphy. [To read more on Polysomnography see <http://en.wikipedia.org/wiki/Polysomnography> via the KSX website] such as Embla, Care Fusion (Viasys), Philips-Respironics, Nihon kohden, Compumedics, Somnomedics, and others; but also for directing therapy through optimization of the precise pressure applied to the airways of OSA patients with CPAP therapy, the main product of companies such as ResMed, Philips-Respironics, Care Fusion, De Vilbiss and other.

To access the full patent please click on the link below:

[http://appft1.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&p=1&u=%2Fnetacgi%2FPTO%2Fsearch-bool.html&r=2&f=G&l=50&co1=AND&d=PG01&s1=%2211%2F107,999%22&OS="11/107,999"&RS="11/107,999"](http://appft1.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&p=1&u=%2Fnetacgi%2FPTO%2Fsearch-bool.html&r=2&f=G&l=50&co1=AND&d=PG01&s1=%2211%2F107,999%22&OS=)

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