

Categorie Premio	Accessibilità	Sostenibilità	Qualità della vita

Product Name	OSPA hearing aid - (Optical Speckle Pattern Analysis hearing aid)
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<p>Description of innovation social values</p> <ul style="list-style-type: none"> - product category - formal and functional features - problems solved by innovation <li style="padding-left: 20px;">- user - field of application 	<p>Our goal is to increase accessibility to high fidelity sound for all people. To do this we have created a novel solution by which we can enhance hearing. Introducing OSPA - a high fidelity hearing aid.</p> <p>OSPA is an integration of modern design sensibility and advanced engineering technologies. Stylish and sleek, OSPA represents a radical shift from the primitive technological approach of today's devices. With OSPA camouflage and miniaturization are no longer the name of the game. Instead OSPA celebrates hearing enhancement, and is thus designed as visible and stylish ear-wear. OSPA uses optical technologies and exploits the remarkable natural design of the human ear.</p> <p>OSPA dispenses with the common microphone – the source of many of the complaints of standard hearing aids. Instead the functioning ear-drum becomes the diaphragm of a new natural microphone. OSPA uses the ear, ear canal and drum to capture sound in the same way as people without hearing loss. The sound capture is high-fidelity rather than some bandwidth-limited noise as is the case with today's hearing aids.</p> <p>OSPA is suitable for all people with a wide range of hearing loss.</p> <p>The OSPA technique may also be used to capture and provide an input signal for all devices that aid hearing.</p>
<p>Description of technical features</p> <ul style="list-style-type: none"> - operations - technology 	<p>A sound signal is captured by the external ear shell and resonates in the ear canal. The signal travels to the ear drum where it causes the drum membrane to vibrate. An optical signal travels, via an optical fiber, from its point of generation to the ear-bud. The vibration of the ear drum membrane is measured by this optical signal. Measurement is made using a laser doppler vibrometer contained in the section of the aid, worn at the back of the head. The optical signal is incident on the ear drum membrane, and the reflected signal is returned to the vibrometer. An imaging technique known as speckle pattern analysis is used to record the phase and amplitude information. A speckle pattern is an intensity pattern produced by the mutual interference of coherent wavefronts that are subject to phase differences. The phase difference in this case would be created by the vibrating ear-drum. The signal is processed and amplified, as dictated by the patients specific requirements, and transmitted to the inner ear via high-fidelity bone-conduction, in all its richness and complexity.</p>
<p>Dimensions</p>	<p>width: ~165 cm wide; depth: ~125 cm weight: ~90 grams</p>
<p>Materials</p>	<p>OSPA contains a central processor, a custom designed laser doppler vibrometer, a high-fidelity magnetostriction bone conduction device and optical fiber technologies. All are contained within a cast magnesium casing.</p>
<p>Certifications</p>	<p>Presently in development.</p>
<p>Benefits for environment</p>	<p>In contrast to present hearing aids that require battery replacement, on average, every 5 days (2000+ batteries in a 30 year period), OSPA contains a two-option recharging process. Using a kinetic energy battery, OSPA may be partially recharged through movement of the head, generated during normal wearing of the device. As a backup a plugin -rechargeable lithium ion battery is also included.</p>
<p>Benefits for human being</p>	<p>Hearing loss is experienced by millions around the world. In Europe alone over 80 million people suffer hearing impairment. The hearing aid in its current form is at the beginning of the technology race rather than the end of it. OSPA is a radical new product derived from established technologies that address the shortcomings of today's hearing aids and has the potential to revolutionize the industry. OSPA is the next generation hearing aid.</p>