

Markets for Electrostimulation Devices (Neurostimulation, Cardiac Rhythm Management, Fracture Healing and Others)

<https://marketpublishers.com/r/M8686B779B6EN.html>

Date: July 2012

Pages: 198

Price: US\$ 3,995.00 (Single User License)

ID: M8686B779B6EN

Abstracts

Electrical and magnetic stimulation is the primary focus of this Kalorama Information Report. Rather than attempting to define and classify all of the varying electrostimulatory methods, this report groups technologies into basic categories based on application and complexity.

The audience for this report includes technical directors, business development managers, investors, and analysts who want a panoramic view, at a quantitative level, of the technology and medical applications of electrical and magnetic stimulation. This is a far-reaching field, and this report thus serves as a survey aimed at providing insight about the realm of market possibilities. Two general segments are discussed with various sub-segments included:

External Electrical Stimulation Devices:

Bone Growth Simulation

Transcutaneous Electrical Nerve Stimulation (TENS)

Ultrasound-Accelerated Fracture Healing

Implanted Electrical Simulation Devices

Bone Growth Stimulation

Cardiac Resynchronization Therapy

Deep Brain Stimulation

Gastric Electrical Stimulation

Implantable Cardiac Pacemakers

Implantable Cardioverter-Defibrillators

Sacral Nerve Stimulation

Spinal Cord Stimulation

Vagus Nerve Stimulation

Companies involved in the market are profiled to provide an understanding of today's competitive environment and marketing strategies.

Demand for both electrical and magnetic neurostimulation technologies is expected to grow moderately during the next few years.

TENS is commonly used for pain management. Despite controversy over the degree to which TENS is more effective than placebo in reducing pain, the market for TENS equipment continues to remain steady. Electromuscular stimulation (EMS) of muscle tissue can aid in the recuperation of overworked muscles. Technological progress continues in EMS, especially with microprocessors that allow protection against the risk of burning and elimination of electrical pain. Transcranial magnetic stimulation (TMS) is a non-invasive technique that uses an electromagnet placed on the patient's scalp to alter brain activity. Repetitive TMS (rTMS), which uses varying frequencies and intensities of magnetic fields, seems to have therapeutic value. During the previous years, rTMS has received a growing attention in the popular and scientific media. The market forecasts reflect growing professional medical acceptance. The demand of electrostimulation products based on external electrodes is expected to benefit from innovative developments in FES designed to augment movement of atrophied muscles, promote new nerve function, and provide interfaces between nerve cells and computing

devices. The market for treating depression is one of the most promising applications of neurotechnology devices. The potential market opportunity is huge, with between over 20 million people in the U.S. alone who could potentially benefit.

A new group of active electrodes are under development. These can connect nerve cells to microcircuits and provide a living link between living tissues and hardware. Direct interfaces between small networks of nerve cells and microdevices are advancing the understanding of nerves and leading the way to a new generation of hybrid devices that communicate between computers and biological neural networks. There are several research teams in the U.S. and Europe that are currently working on so-called neural-silicon hybrid chips. Wireless technology could lead to the replacement of leads with small radios that can transmit and receive information and energy.

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