



Wireless Powering of Implanted Bioelectronic Devices

AzTE Cases # M11-030A & M11-030B

Inventors

Bruce Towe

Professor
School of Biological and
Health Systems Engineering
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Invention Description

Electronic medical implants require a power source, such as an internal battery or external coaxially coupled magnetic induction coils, thus requiring a larger form factor and more invasive surgical implantation. Furthermore, internal power sources tend to have shorter service life the smaller they are and magnetic coils are hindered by low coupling coefficients and limited functional energy transfer at higher depths. It would be ideal to have electronic medical implants that could be powered externally, have a small form factor and be implanted non-surgically.

Professor Bruce Towe of Arizona State University has developed a method of efficiently powering implanted electronic medical devices in a wireless manner. Because energy is wirelessly transferred from an external source to the implants, it allows for small neurostimulator designs, non-surgical injectable implantation and higher flexibility of implantation site.

Because this technology allows for such miniaturization of electronic medical devices it may serve as a core technology to promote the basis for further development of complex medical devices with sophisticated biomedical microelectronic functionality.

Potential Applications

- Implanted electronic medical devices including:
 - Stimulators
 - Sensors
 - Pacemakers
 - Actuators

Intellectual Property

Status:

Patents Pending

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Benefits and Advantages

- Small form factor – doesn't require use of bulky battery
- Amenable to non-surgical syringe injection
- Increased implant depth – allows for greater flexibility of implant site
- Replacement for inductive coils that take up a large area