

# **Implantable Neuromuscular Stimulator**

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## **Abstract**

The success of the implant performance in the human body is highly dependent on three factors: the properties and biocompatibility of the implant, the health condition of the recipient and on the competency of the surgeon who implants and monitors its progress. The biocompatibility dictates the development of so called biomaterials. A biomaterial can be defined as any material used to make devices to replace a part or a function of the body in a safe, reliable, economic and physiologically acceptable manner. In medical applications, biomaterials must be considered in context of its final fabrication integrated in implanted device.

When implanted in the human body the implant device is in continuous contact muscles/ligaments, fats, bones and organs. It must however stay inert and compact while maintaining its mechanical and physical properties. The most important part of neuromuscular stimulator is the implanted unit. The body of this unit must ensure the reliability of inner microelectronics to perform successfully for many years. The critical part is the feed-through – the contact part between ceramic body and the metal lead. In order to produce hermetic seal, different technologies and materials are implied. Manufacturing of particular types of seals is nowadays a common matter and all kinds of literature and patents are readily available, however, the key features remain well-kept secrets for economic reasons.