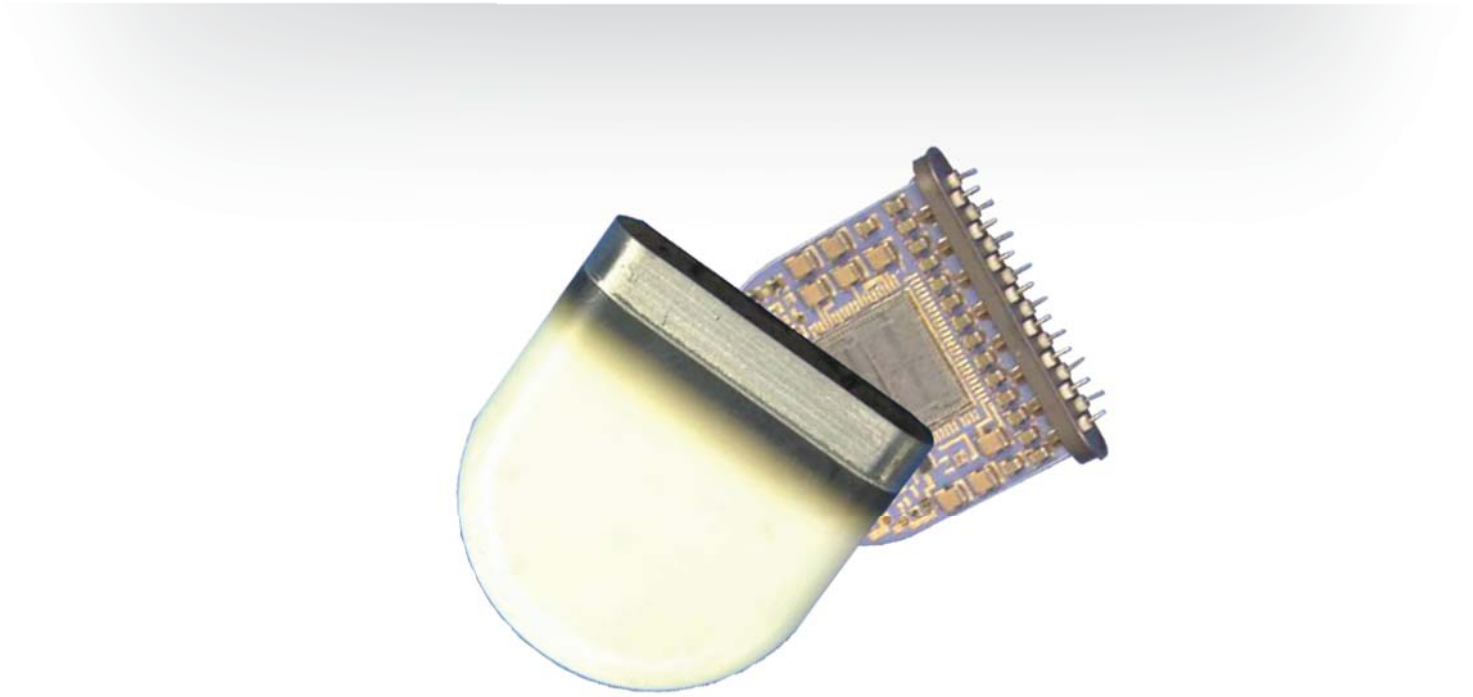

Implantable Medical Packaging

PA&E makes it possible for medical device developers to create new, life-saving devices that are smaller, stronger, and more reliable. Our medical components are used in applications such as cochlear implants, neurostimulators, cardiac-function devices and more.

Turn Key ■ Integrated package/feedthru solutions

Innovative ■ Unique material combinations

Field Proven ■ 30+ years of industry experience

Flexible Solutions ■ RF transparency

PA&E
The Hermetic Advantage
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Enabling Technology

Implantable Medical Packaging

Vacuum Brazing/Diffusion Bonding

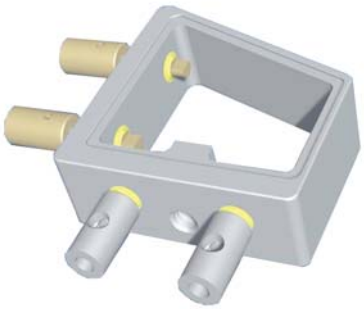
PA&E offers processes to join dissimilar materials such as titanium, alumina, zirconia, and more. We've been making medical feedthrus and assemblies for more than 25 years.

Advanced Implantable Viability

PA&E's packaging designs address potential rejection issues by using materials with a proven track record of implantable viability. For example, we utilize advanced ceramic materials in a housing that enable a cochlear implant to reside safely within the human body.

Smaller, More Durable Components

PA&E has developed a ceramic-to-metal joining technology to make components smaller without compromising performance. Our RF transplant ceramic enables device manufacturers to communicate with devices from outside the body. Using smaller components and strengthening advancements, we have increased the durability of implantable medical devices.



Kryoflex

Kryoflex is a family of polycrystalline ceramics developed by PA&E for hermetically sealing together materials used in electrical feedthrus and is very effective at prohibiting the influx of any fluids or gases into the internal electronic circuitry. Kryoflex is used to manufacture ultra-reliable feedthrus for a wide variety of implantable devices.

Implantable Medical Packaging

Devices implanted in the human body are at the leading edge of medical science. Advancing that technology, and making more implantable devices possible, requires overcoming several complex challenges. For example, medical implants must be as small as possible. However, the performance of new devices is often constrained by material selection and thickness. External communication with the implant is critical. Current communication technology relies on case material characteristics and size. Reliability and implantable viability are always issues because it is imperative that the body does not reject a newly-implanted device.

Examples of implantable packages and feed-thrus from PA&E.

PA&E is at the forefront in overcoming challenges faced by medical implant designers. We developed a ceramic-to-metal joining technology to make components smaller without compromising performance. PA&E's RF transparent ceramic enables device manufacturers to communicate to devices from outside the body. With smaller components and strengthening advancements, we increase the durability of implantable devices. We've also helped to overcome rejection issues by designing devices using materials with a proven track record of implantable viability.

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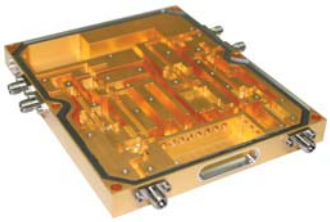
Hermetic Solutions for Extreme Environments

Integrated Packaging



Using technologies such as Kryoflex® and explosively bonded metals, PA&E designs and manufactures hermetic packaging for extreme environments — whether it's integrating components that protect satellites deep in space or connectors for oil-drilling tools that bore deep below the earth's surface. By pairing our Kryoflex and explosively bonded metal technologies, we can build hermetic packages using precision laser welding rather than solder joints, thus eliminating the two most common causes for hermetic package failure: solder joint fatigue and cracked glass.

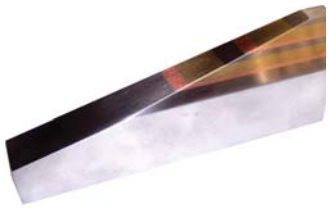
DC Connectors

PA&E's hermetically-sealed rectangular DC connectors exceed most mil-spec requirements and are designed for use in military and commercial applications, where environmental conditions require an extremely rugged and reliable hermetic seal. The uniquely-controlled CTE characteristics, chemical bonding properties and polycrystalline structure of Kryoflex allows PA&E to manufacture these hermetic connectors with 304L stainless steel shells and gold-plated beryllium-copper contacts to maintain excellent electrical performance and environmental characteristics.

RF/Microwave Connectors

PA&E's 50 Ohm hermetic RF/Microwave connectors are designed for use in military and commercial applications where environmental conditions require an extremely rugged and reliable hermetic seal. Low-loss Corning 7070 glass is used for dependable electrical performance. PA&E manufactures these hermetic RF connectors from a variety of compatible shell and contact materials, in both laser weld and solder-in styles, which provide excellent electrical and environmental performance characteristics.

Bonded Metals



PA&E has been the innovative leader in the explosive metal working field for over 30 years. Our customers have access to some of the world's most exciting metal working technologies, such as: Explosive Metal Bonding, Explosive Metal Forming, Explosive Shock Hardening and Dynamic Powder Metal Compaction. These high-strain rate technologies offer unique metal working advantages that can help our customers achieve the impossible.

For further information contact us at sales@pacaero.com
or visit our web site www.pacaero.com

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