ProMed Highlights Key Design Considerations for Desiccants for IPGs

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Moisture control may not be the most visible part of implantable pulse generator design, but it remains a significant long-term reliability consideration in sealed implantable systems.

Desiccants for IPGs are often treated as small internal components, but their role extends beyond moisture adsorption alone. Material selection, part geometry, assembly fit, manufacturability, inspection strategy, and long-term production control can all affect how well a desiccant performs inside an implantable device.

ProMed is a family-owned, privately held contract manufacturer of complex molded silicone and plastic components, assemblies, and polymer-based dosage forms for highly regulated industries. Implantable devices and molded desiccants are part of that work, alongside broader support that includes tooling, process development, testing, validation support, manufacturing, packaging, and related value-added operations.

In implantable-device programs, desiccants sit alongside components such as seals, connector boots, strain reliefs, anchors, headers, lead components, valves, catheters, and sensing components. That reflects the role desiccants play inside the device itself. A desiccant is part of the internal architecture, with implications for part shape, tolerances, placement, and downstream assembly requirements.

In IPG development, desiccant design usually benefits from early review. Waiting until late in the process can narrow geometry options, limit placement flexibility, and create avoidable assembly constraints.

Format is one of the main design variables. ProMed manufactures injection-molded silicone desiccant components that combine silicone rubber with zeolite desiccants to create durable moisture-adsorbing parts.

That molded format gives engineers tighter control over shape and integration than a generic moisture-control insert. A defined molded component can be designed around available space, retention needs, and adjacent features, which supports more predictable assembly. That can be especially useful in implantable devices where internal layouts are compact and each component has a clearly defined place

within the finished system.

Function can also extend beyond adsorption. Molded desiccants may serve as moisture getters, shock absorbers, thermal insulators, or specialty molecular-capture materials in advanced applications.

In IPG development, that can change how a desiccant is evaluated. A desiccant may be expected to do more than capture moisture. The same component may also need to fill a mechanical role inside the assembly, occupy space in a controlled way, or help protect nearby electronics or other sensitive internal features. A narrow review centered only on moisture capacity can miss those broader performance requirements.

Geometry also carries practical consequences. A desiccant can only perform consistently in production if the part can be molded, inspected, and integrated into the assembly without introducing avoidable variability.

ProMed?s silicone molding capabilities include LSR molding, HCR molding, transfer molding, compression molding, micromolding, multi-component molding, and over-molding. ProMed also maintains in-house tooling, prototyping, and metrology capabilities, including CT, optical 2D inspection, CMM measurement, and chromatic white light inspection.

Those capabilities matter because implantable components are judged by more than design intent. Performance depends on repeatable manufacturing, dimensional consistency, and the ability to evaluate challenging geometries accurately.

Material and process decisions also need to hold up under regulated manufacturing conditions. ProMed operates within an ISO 13485-certified quality system and supports FDA-regulated manufacturing, with an emphasis on documented process control, continuous improvement, and production discipline.

Those operating conditions matter as much as the part design itself. A well-conceived desiccant component still needs a stable process, clear documentation, and a production plan that supports repeatability over time. In implantable-device work, reliability is tied to both design quality and manufacturing discipline.

Desiccants for IPGs are best evaluated as engineered components within a larger implantable system rather than as isolated moisture-control accessories. Part shape, material composition, assembly role, inspection needs, and long-term production feasibility all warrant review at the same stage.

For implantable programs, that kind of review is strongest when design, tooling, manufacturing, and quality planning are addressed together from the start. In a device category where small internal design choices can carry long-term consequences, desiccant strategy is closely tied to how consistently the final device can be built and supplied over time.

About ProMed:

Since 1989, ProMed has been recognized as a leading Contract Manufacturer of complex, intricately designed molded silicone and plastic components and assemblies for highly regulated industries. ProMed?s expertise extends across applications for short-term and long-term implantable devices, single use devices, drug-releasing combination devices, and specialized materials and processes for defense applications. They collaboratively work with our customers from prototype through production, providing over 30 years of experience related to design for manufacturability, material selection, tool and fixture design, process development, manufacturing, and other value-added services that result in cost-effective solutions with superior quality.

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