

THE ROLE OF HERMETIC SEALS IN NEW BATTERY TECHNOLOGY



With the increased demand for battery technology in automotive and commercial transportation vehicles, the ability to increase battery range, performance and life have become an epicenter for research and development. Battery immersion is an increasingly popular technique to increase the performance of the battery. For example, battery immersion can improve thermal management of the battery, as batteries perform best under stable environmental conditions. Improving thermal management also increases the battery life. Charging speed increases; by maintaining a stable temperature and reducing risk of overheating, faster charging is enabled. Safety is also a factor; lithium-ion batteries in particular pose a risk to fires; [immersion cooling](#) reduces the risk through temperature regulation.

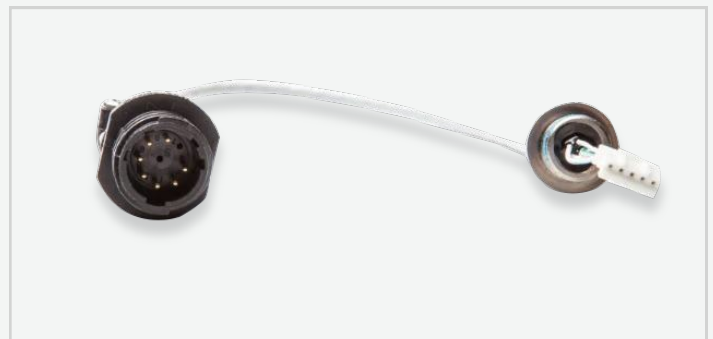


Because of the transmission of power and signal, water itself cannot be used. Manufacturers are relying on new dielectric fluids to increase the thermal management capabilities of battery technology. Fluorocarbons in particular offer increased dielectric strength and heat dissipation with non-flammable options to increase safety.

As research and development expands in this application, design engineers are considering how to circulate and monitor the liquid environment around the battery. Understanding the pressure and temperature of the liquid within the cavity can be crucial from a safety and performance perspective.

FEATURES

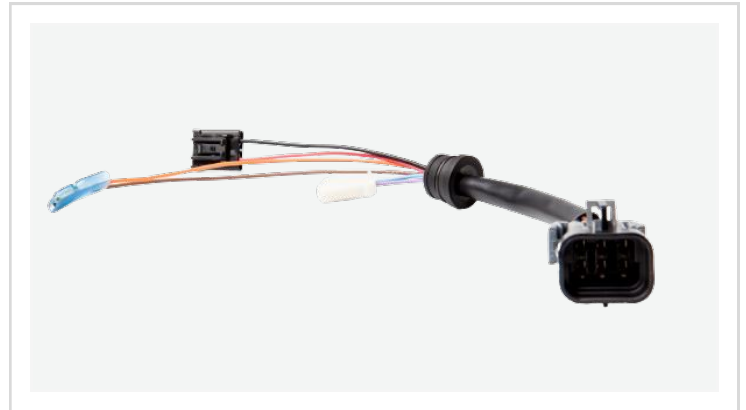
- Hermetically sealed beyond industry standard IP ratings
- Complete mechanical and electrical design flexibility
- Minimize components with a simplified hermetic design
- Chemically inert epoxy seal features compatibility with oils and di-electric fluids



Douglas Electrical Components manufactures hermetic feedthroughs for both [automotive](#) and immersion cooling server applications. Using a chemically inert, hermetic epoxy, Douglas can feed or pass through wires of virtually any type into a dielectric fluid environment. Douglas can not only seal to the wire jacket, but directly to the conductor passing in and out of the liquid environment. With the seal being “hermetic,” it is protected beyond IP ratings and 100% tested via helium mass spectrometer to ensure no leakage.

Our [hermetic epoxy](#) will bond and seal to a variety of wire and cable jacket materials. Douglas will also provide any harnessing and interconnect requirements. Additionally, we hermetically seal to connectors, PC board pins, and rigid and flex circuits.

In automotive applications, hermetically sealing can directly occur within a cast housing or providing a simple radial O-ring housing as a cost-effective means to transmit power and signal.



The housing is suitable for either a vacuum or positive pressure design with a few standard mounting varieties. Other housing customizations are available as well including utilization of various metals and plastics in virtually any mounting option.

Contact Douglas Electrical Components today to discuss your hermetic sealing applications. We remain at the forefront of technology innovation and applying hermetics new applications.

Solving Your Wire and Connector Sealing Challenges

For 80 years, Douglas Electrical has provided custom solutions to meet the demands of glove boxes, medical equipment, semiconductor manufacturing, space simulation, military, vacuum systems, energy-and more. From pin headers and pogo-pin solutions, to cooling feedthroughs and electronic encapsulation, we look for new opportunities to push our boundaries even further to meet your unique application needs.

Visit www.douglaselectrical.com to learn more.



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