

FORM IN PLACE GASKETING

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“Smaller” and “more powerful” are the buzzwords in today’s industrial and electronics marketplace. A 40-lb “personal” computer of a generation ago has turned into a palm sized does-everything unit. The jobs associated with shrinking these gadgets are getting more and more challenging for engineers and manufacturers. These smaller gizmos come in many shapes, are made of lighter-weight materials, and must shield, not only against the elements, but also a wider range of frequencies to comply with current EMI/RFI standards. One way to effectively meet these challenges is with Form-In-Place gasketing.

Form-In-Place technology is an accurate and consistent system of applying a reusable elastomer seal to metal and plastic housings. This low cost method of gasketing provides design flexibility, as there is no need to plan the gasket. Also, there is no wasted material as with a die cut gasket. The seal is applied directly onto the edges of the existing closure, and can be electrically conductive for EMI protection or as a non-conductive environmental gasket against the elements. Because Form-In-Place gasketing is a liquid (or semi-liquid) application, it can be done by programmable automation, which makes the process highly accurate (often to 0.001 inch), fast, and repeatable. The material is usually a one- or two-part silicone that can be precisely metered and mixed. Once the gasket is applied it can be cured at room temperature or in ovens, depending on the material and time required.

Historically, Form-In-Place gasketing was adopted primarily by the automotive industry as a cost-reducing alternative to die cut or extruded gaskets in dust and moisture sealing. They have since evolved into a wide variety of industries due to a number of factors:

- Total manufacturing costs are lower because automation reduces manual labor costs
- The process allows for more precise gasketing, which in turn simplifies quality control and data collection procedures
- Form-In-Place gasketing works with product designs that are not conducive with other gasketing methods
- Size and weight are generally reduced using Form-In-Place gaskets. Part flange size can be reduced to .025” or less
- Robotic programming permits the adjustment of the gasket to compensate for imperfect housings
- Automated dispensing means quick change over for new parts or prototypes
- No tooling costs associated with Form-In-Place applications

Designers are now requiring the attributes of shock absorption and environmental sealing as well as uniform conductivity in electronic applications. Form-In-Place gasketing satisfies these requirements.

Of course, Form-In-Place gasketing is a highly specialized process that requires extensive set-up and programming in order to ensure that the gasket functions correctly. Compression deflection percentages, desired shielding effectiveness, substrate preparation and housing deformation compensation are just some of the things that must be considered prior to dispensing the gasket. There are some limitations on gasket thickness and non-flat surfaces are not good candidates for this type of gasketing. And not all dispensing equipment is the same. Some systems don’t offer the flexibility, performance and capacity of others. Dispensing equipment and curing ovens can get expensive. Unless the volume warrants buying such equipment, contracting out the job is your best bet.

When considering Form-In-Place gasketing, whether doing it in house or contracting it out, it’s important to consider all the costs involved in your current process. Properly calculated, many of the costs that are difficult to ascertain will show that Form-In-Place gasketing is the most cost-effective gasketing solution.