Potting and Encapsulation of Electronic Components

Vacuum plasma treatment is a critical first step to protecting piezo devices

TriStar’s Surface Modification Experts have teamed up with the leading manufacturers of electronic components to help them protect their sensitive devices from damage caused by moisture and chemicals, as well as the risks of pressure and vibration. Our latest application involves pre-treatment of ceramic piezo discs via plasma cleaning to guarantee a more-robust potting and encapsulation treatment.

Flow devices fail to contamination, pressure

Our client is a major manufacturer of flow sensor devices who needed to safeguard their fragile ceramic piezo discs from environmental contaminants. Their discs are used to calibrate the flow and pressure of liquids inside a pipe by discharging a small electrical current that is recorded by peripheral instruments. Our clients cited the piezo discs were failing from exposure to chemicals and other contaminants inside the pipe, which caused the electrical signals to falter. Our team examined the failed discs, and after close examination, recommended “potting” the piezo devices to protect them from these environmental hazards.

Functional cleaning and potting

The first step in the process was to functionally clean the piezo discs with low-pressure plasma to remove all contamination and promote hydrophilicity (wettability). Once cleaned, the discs were then placed or “potted” into housings and “encased” in a liquid resin, which rendered the discs impermeable to all environmental hazards. The plasma treatment promoted a good bond and a uniform flow of resin around the device. It also helped to eliminate air bubbles which could trap contaminants and weaken the integrity of the housing. Since undergoing plasma cleaning and potting, our client reports the piezo discs are well protected from pressure and other hazards.

Do you have an application that could benefit from surface modification? Want to learn more about the benefits of plasma and other surface modification techniques? Just contact us for a complete surface analysis. That’s the TriStar Advantage!
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