

A Brainin customer experiences problems with assembly when switching to Polymet contact tape. Expert analysis reveals the root cause isn't as obvious as it seems.

Electrical contact attachment

One PEP Brainin customer switched to PEP Polymet contact tape for an existing application.

When Brainin followed up with our customer we learned they were having difficulty attaining the desired weld strength. Shear testing of the welded contact would not consistently meet the 100 pound minimum force that was required.

Several discussions took place to try to understand the problem, extending to the equipment and process being used. Brainin made recommendations based on the information gathered. Although it had been several months since the customer last produced product with the previous supplier's material, they were confident the equipment was set up and functioning properly. We examined many details, including review of the material certifications from both suppliers.

No differences could be found to explain the problems, so additional information was required. Brainin felt it was important to test both materials at the same time to rule out equipment-related issues. The back-to-back welding test performed by our customer showed that both materials welded similarly, and neither could consistently attain the 100 pound minimum shear force.

The assembled samples were sent to Brainin, along with samples of previous good production. The parts were analyzed to help identify the cause of the welding problems. We concluded that the equipment was applying too much force based on differences found in the newly produced parts:

- The surface of the contact was flattened in the center
- The weld area was uneven, with material transfer on only one side of the contact
- Marks were observed in the mating component matching the weld projection pattern

Brainin reported the findings to our customer. We explained that the excessive force increased the contact area between the components during the welding operation, which in turn reduced the resistance. Resistance welding is designed to generate heat between the components in order to melt the materials together.

To aid our customer in review of their equipment, Brainin also provided information about various process adjustments that could be evaluated to help resolve the problem. A follow-up with the customer a few weeks later confirmed they did identify equipment concerns, which their maintenance department was addressing.