



Rigid Flex | Whitepaper

6 Criteria to Evaluate Whether Your Flex Supplier is Right for Rigid Flex

The global rigid flex printed circuit board (RFPCB) market is poised for a significant growth spurt. According to the forecast by market intelligence firm [Research and Markets](#), the global market for Rigid Flex PCB was valued at \$3.8 billion in 2020 and will nearly double to \$7.5 billion by 2025. The Research and Markets forecast credits this projected growth to surging demand for advanced healthcare devices and high-end consumer electronics, primarily in the U.S.

Rigid flex PCBs are currently a foundational element for military and aviation applications due to high reliability and low weight requirements for missile and aircraft fire control circuitry. Using a combination of flexible and rigid board technology, rigid flex PCBs are designed and engineered with layers of flexible circuit substrates affixed to rigid boards. The rigid portions provide surfaces that allow component mounting on both the top and bottom of the circuit. The flex areas allow the component to bend for custom installation and dynamic flexing. This construction eliminates many potential fail points, providing high reliability with less weight.

Since rigid flex requires more engineering than rigid boards, it might be tempting to think a supplier that meets your flex needs today can easily pivot to rigid flex. That may be the case, but it's not a guarantee. Here are 6 criteria to evaluate whether your flex supplier is equipped to ensure your rigid flex solutions are built to your exacting standards — and won't hinder product design, development and production.

1. Is Your Provider Equipped to Build Prototypes In-House?

Prototyping can be a critical part of the rigid flex process. But a prototype is different than mock-ups, which have no circuitry and are created simply to ensure proper fit and bend radius for the final application. Prototypes, on the other hand, are electrically serviceable parts, with identical functionality to a final production part.

To ensure the integrity of a prototype, it should be produced on the same equipment that will be used for full-scale manufacturing of the final part. That means prototypes should be produced by the supplier in-house, relying on the same equipment and engineering team from design to finished product. In-house prototypes also have advantages for qualification work, eliminating the need to duplicate efforts.

2. Do You Have Assurances All Components Will Adhere to Recognized Industry Standards?

Rigid flex suppliers should always meet IPC standards, the trusted global standard for the electronics industry that covers nearly every stage of the electronics product development cycle. The IPC standards cover everything from specifications for raw materials, processes and finished goods.

For example, suppliers serving the highly demanding defense and aerospace industry are required to follow NADCAP certification guidelines. The certification from the Performance Review Institute verifies that the product is built to this recognized standard and design drawings from defense and aerospace companies come in with these standards to ensure the reliability of the finished product.

3. Is There a System for How the Organization Designs for Manufacturability?

Manufacturing expertise shouldn't be confined to the production phase of a rigid flex project. Manufacturing engineers should be on hand at the very beginning during the design phase to ensure the end result is designed toward a readily-manufacturable solution.

This step can help prevent assembly challenges, make manufacturing more efficient by maximizing the panel size, head off problems early and recommend changes to improve manufacturing quality and yields. Having seasoned manufacturing engineers involved early in a rigid flex project helps to reduce unexpected costs and produce a more reliable product from every production run.

4. Is Your Supplier Able to Integrate Additional Components?

In almost every case, rigid flex applications will need an accompanying sensor — and also a heater in most cases. They may also need chips and diodes on the circuits. Suppliers with the ability to customize products and assemble other components into a single solution can help reduce assembly errors, improve time-to-market and drive down costs.

Through integration and meaningful engineer-to-engineer (E2E) collaboration, suppliers can help mitigate the risk of delays in both the engineering and manufacturing process. A collaborative process also typically leads to measurable cost reductions in both design and manufacturing.

5. Do You See a Track Record of the Supplier Keeping Up with Production Schedules?

The last two years were like no other period in recent history. Supply chain disruptions led to long lead times for materials and delayed many rigid flex development projects. Today, the situation is improving with a new Dupont plant that uses recognized materials needed for rigid flex PCBs.

Lower staffing levels industry-wide have also hampered suppliers' ability to keep up with production schedules. While many of these issues will delay expected timelines across the board, suppliers with an experienced team of assemblers, technicians and engineers that collaborate from the beginning of the design process all the way through manufacturing are better equipped to avoid unnecessary delays.

6. Does Your Supplier Demonstrate a Core Value Around Quality Control?

It isn't enough for suppliers to have a quality control department. Quality needs to be built into the design phase of a rigid flex project as well as process controls throughout development. Suppliers need to have a dedicated quality team that conducts multiple in-process inspections throughout the manufacturing process.

From inspecting raw materials to the final products being shipped, every step needs to be meticulously designed — and cross checked — to ensure quality. Inspectors need to compare the product's form factor and performance against the design drawing and assembly information, while also confirming its adherence to relevant certifications such as IPS regulations.

Ready to Innovate with Minco?

When it comes to truly game-changing design, engineering teams need technology that allows them to build smaller, build lighter and build better.

Visit [Minco.com](https://www.minco.com) to learn more about our rigid flex capabilities.

Call Minco at 763.571.3121 or send us an email at [**CustServ@minco.com**](mailto:CustServ@minco.com) to get started.



7300 Commerce Lane NE
Minneapolis, MN 55432
Tel: 763.571.3121
www.minco.com