



Faster Product Cycles: Can Your Supply Chain Keep Up?

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There is a popular adage when it comes to business: cheap, fast, or good — pick two. The electronics market is demanding ever-faster development, greater performance and cost-efficiency from every product. To better deliver in all three of these areas, solid collaboration and commitment between trading partners in a supply chain will enable real success and sustainable growth. While no two trading partners or supply chains are exactly alike, there are some basic trends and practices to follow in order to improve the production process.

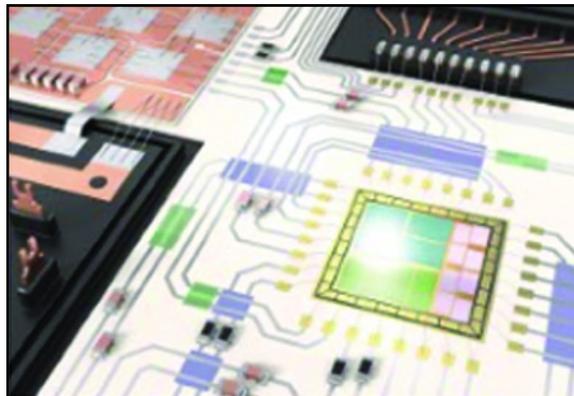
Start with the Materials

To ensure a device's reliability and performance, the right materials in combination make all the difference. For a customer, the challenge is to have the best combination of materials to achieve the best performance. Using a solder or sinter paste that provides high thermal performance will not guarantee high reliability on its own. It is said that a chain is only as strong as its weakest link, and using a single component that does not share the same quality as the others may compromise the entire product.

Matched materials and pre-qualified material sets provide a solution

that allows for a standard of quality throughout an entire project.

Customers then have their technical requirements met and delivered faster. As product life-cycles accelerate,



Today's electronic devices require a wide variety of materials.

the pressure increases to streamline the manufacturing process and handle more difficult technical requirements.

Supplier Simplicity Pays Dividends

The industry is constantly on the lookout for ways to streamline and simplify the supply chain. One common way is to work with suppliers who provide

more integrated components and services. Electronic components contain many kinds of materials, which may include different substrates, connectors, active and passive components, solders, adhesives, bonding wires, potting compounds, and housings. Each material on its own is fairly easy to handle, but when brought together for use in a single device, the supply chain can become complex and cumbersome.

The transition area between materials is difficult to forecast, especially when materials from various suppliers are used. Resolving one bottleneck with one supplier may seem only to lead to the next bottleneck. This often leads to compromise instead of a well-thought-out solution.

It is much more time-consuming to gather materials step after step with a lot of interfacing between companies, than with a holistic approach. Working with trading partners that use more integrated methods can help consolidate the number of players in a supply chain. By streamlining suppliers, a company can reduce the "domino effect" of problems or bottlenecks when they arise. In addition, the time and associated costs of managing less extra-

neous suppliers will improve the efficiency of the entire chain and allow resources to be used in other areas.

Thermal Management

With the demand for more power density in smaller spaces, thermal management is a continuous factor in electronics development. The energy lost as heat must be dissipated or the lifetime of the component is limited and the device may be damaged or destroyed.

The thermal conductivities of single materials are well known and documented, but transition areas among them need to be tested. This is difficult, especially if the materials come from different suppliers, as the entire project needs to be developed, coordinated and organized.

Again, matched material systems come into play and offer special advantages. First, a development team can work with the specification data of an entire system. Next, this system is able to improve performance outcomes, because the team has direct influence on the specification of each individual material component. As a final benefit, the customer can then spend time concentrating on core competencies.

Going Global

As with most industries today, the electronics manufacturing sector is truly global. Whether it be raw materials, components or products, the chances are good that they have traveled through a variety of regions before reaching their final destination. Companies that compete and conduct business on a global scale require trading partners that are experienced in navigating international supply chains. As a company grows, the network of trading partners must be able to support its activities in new markets. No one should have to rely on a trading partner and discover that it lacks the ability to support future growth.

Trust and Transparency

The real success of any business relationship goes far beyond products,

manufacturing and logistics. It is personal. Business is conducted by people, not by machines. The most successful supply chains are built on collaboration, trust and transparency.

One example of the need for solid business relationships took place in 1988 between Procter & Gamble, one of the world's largest consumer goods companies, and Wal-Mart, the number one retailer in the United States. While Wal-Mart was a \$375 million account to P&G, the relationship was adversarial and dysfunctional. The transactions and



Collaboration enables success in industry.

processes were fragmented and the supply chain was overly complex and inefficient. Long-term planning and customer satisfaction were afterthoughts.

Sam Walton, Wal-Mart's founder, proposed a bold idea to P&G — a trading relationship based on trust, collaboration and transparency. Wal-Mart would share store-by-store sales information with P&G in real-time, so P&G could improve replenishment processes.

The shared tracking information would enable the two companies to better serve local customers at every store. The two companies were able to rebuild their relationship and become partners committed to serving the end customer. Over the subsequent decades, the collaboration between Wal-Mart and P&G has paid enormous dividends. Their efforts increased sales by nearly 33 percent, and revenues of Wal-Mart and its affiliates is over \$12 billion annually, which accounts for roughly 15 percent of P&G's total sales.

Goals of a Successful Partnership

Companies cannot keep trading partners at arms-length. While supply chain collaboration has been a proven

business model, there are still many organizations that believe suppliers are commodity providers, and that an adversarial attitude will somehow get results.

Obviously, it is the opposite. Collaboration is a catalyst of innovation. Some of the most notable breakthroughs in electronics have come from situations where companies are deeply interconnected, and understand each other's challenges and future needs. A business should commit to its trading partners and invest in their success.

Simplicity should be at the forefront. When Wal-Mart and Procter & Gamble began to collaborate, they looked for ways to reduce redundancy. The result was a leaner and more responsive supply chain. When trading partners are freed from unnecessary complexity, they can be more agile and help improve time-to-market.

The final goal is simple — mutually serve the end-customer. Business is not simply about buying and selling. Real collaboration should be focused on building a mutually beneficial relationship that delivers the best product to the end customer.

As a company, Heraeus is committed to showing that its supply chain goes beyond the four walls of its plants and laboratories. It doesn't only serve its customers, but also its customers' customers. This mindset should be shared by trading partners.

Electrical devices are being challenged to deliver more, while using less space and keeping within cost limitations. Continuous optimization of materials, interfaces, processes, and techniques are vital to achieving these goals. However, this cannot occur in isolation. Companies that master collaboration will be the ones best equipped to remove roadblocks, avoid potholes and bottlenecks, and bypass any other barriers to success.

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