

Designing in supply chain skills

Supply chain design and engineering expertise are essential to ensuring continuity of component supply. ESNA asked Sanmina's vice president, customer supply chain management, Tom Pendergrass, how outsourcing provides a solution

Q What role does Sanmina's purchasing team play in assisting new clients?

Supply chain design is one of the most important services we offer. In some cases, this means developing a complete supply chain for a product, while in other scenarios, it means redesigning the supply chain to increase flexibility or eliminate risk. We find that even large companies sometimes don't have the right portfolio of global suppliers to launch a product in new global markets, or have different components or subassemblies in a new product than their traditional products.

Medical, automotive, aerospace and some industrial products have an operational life of more than ten years.

In these industries, continuity of component supply is critical. Unfortunately, some components originally designed into a system may be discontinued before the system reaches end of life. Customers with legacy products may therefore want the bill of materials analyzed to identify obsolescence risks. Sanmina's component engineers identify parts that are already obsolete, or at risk of going obsolete, as well as single source components that expose a supply chain to risk in the case of unforeseen events. The team makes recommendations to add alternative components to the approved manufacturer list or to re-design for compatibility with alternate parts.

Some customers require more supply chain flexibility. For example, a customer may

ask Sanmina to re-design the supply chain to accommodate demand fluctuations of ± 25 per cent within a certain period of time. In these cases, the supply chain team will analyze the lead-time profile of all components, adding time for freight and manufacturing. Components that do not support the flexibility requirements are identified, then we work with suppliers to reduce lead times and develop agility programs to make additional components available in shorter timeframes.

In some cases, customers have developed an innovative product, but need access to a global supply base of components. In these situations, Sanmina provides complete supply chain design. Our preferred supplier list provides a global supply

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Component supply is critical at Sanmina. 500 SMT production lines worldwide are placing as many as 25 million components per hour

chain of qualified and audited suppliers that demonstrate technology leadership, flexibility, quality, delivery and cost performance.

Q What input does the buying team have on component selections and support?

We work with customers during product design and throughout a product's life. Sanmina's component engineering team provides a link between design engineering and supply chain design. Where possible, they help customers select manufacturers from Sanmina's preferred supplier list. These suppliers offer better performance in terms of quality, technology, on-time delivery and price and are also able to design more flexible supply chains.

Our component engineers combine their knowledge of the product design and its planned operational service life with manufacturers' technology road maps to propose appropriate suppliers and components. They analyze the product specifications and work to understand the design intent.

The expected life of the product has a big impact on component selection. Components designed for consumer products usually have short lifecycles and may not be appropriate for products with an expected service life of ten years. Typically, when manufacturers specify components for use in industries such as automotive, aerospace or medical, they provide assurance of supply for seven to 10 years or more.

Components that operate in harsh environments also require a higher specification than components used in consumer devices. The medical, aerospace and automotive industries have stringent regulatory requirements and knowledge of these criteria is essential when selecting a component manufacturer. Our component engineers understand regulatory standards in each of these areas.

The location of end markets, total landed cost analysis and the location of manufacturing also have an impact on component supplier selection. Larger bulky components are normally sourced close to the manufacturing plant to make the supply chain more cost effective in terms of freight.

Q What happens when end of life or obsolescence situations arise?

Our automated system manages notification



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of end of life or obsolescence. The information that suppliers provide when they notify us about component end of life usually includes the final order acceptance date and data about any replacement components.

When we receive the part change notification, our material requirements planning system reports which Sanmina facilities are purchasing that component. This is one of the benefits of having all plants running on the same IT system worldwide. Supplier notifications are sent to any plants using the component and the program management team then works with customers to introduce the alternative component and execute last time buys for the end-of-life part.

This automated tool works well for components that are going obsolete, however, in some cases, manufacturers reduce capacity for older components, without immediately discontinuing supply. We are experiencing this in the multilayer ceramic chip capacitor market at the moment, with some suppliers placing parts on allocation. Here, we are working to ensure customers do not use these components in new designs. When possible, we encourage them to redesign existing products using alternative components.

Q Is the Sanmina buying team experiencing extended lead times and what are the knock-on effects?

Lead times for certain components have extended over the last nine months or so. While lead times are improving now somewhat, we were managing components for several months where the lead times were in excess of one year. At Sanmina, we have 500 surface mount production

lines and sometimes place over 25 million components per hour. The real challenge occurs when customers want an upside within a certain component's lead time. Being able to increase component supply in three to four weeks, when the lead time on the component is 26 weeks or more, is really difficult.

From a supply chain perspective, there are three things we do to protect component supply and optimize the chances of achieving upside when required. First, we ensure that our plant purchasing teams are working with the correct component data. The teams re-confirm lead times with suppliers on a regular basis. Second, we work with customers so that they understand the lead time profile of their product and encourage them to be as accurate as possible with their forecasts. Third, we try to add multiple sources for each component, which maximizes the chances of finding component supply in the case of upsidess.

Our component engineers also work with customers' design engineers to select alternative components to replace those with extended lead times. Recently, we worked with a medical customer on a new generation of an existing system. Many of the capacitors used featured older technology where the manufacturer had reduced capacity and extended lead times beyond 26 weeks. We found alternative components, significantly reducing overall lead times. In another case, we suggested a smaller case capacitor as an alternative. Although the smaller capacitor required a printed circuit board re-design, the benefit was a reduction in lead time of 50 per cent.

Q Has Sanmina increased or decreased its preferred supplier list over the last 24 months?

There have been no dramatic changes in the number of our preferred suppliers over the last two years. We have a strategy of selecting preferred suppliers for the long term. They typically provide strategic advantages in terms of performance, quality and cost and are willing to work with Sanmina to increase flexibility. These long term partnerships paid off this year, when we were faced with challenging passive component supply constraints.

Q How has the purchasing team's role changed at Sanmina over the last five years?

A) We have adapted our services based on changing customer expectations and requirements. When outsourcing began, most OEMs had their own factories and supply chain management teams. Today, there are a significant number of customers that do not have a background in electronic supply chain management because they don't have their own factories and may even have contracted the product development to a design house. In these situations, working with a partner who has a preferred supplier list, an established process for selecting suppliers and a supplier management process is a significant benefit. For these customers, working with Sanmina means they have access to an instant supply base, advanced global supply chain management systems, preferred and qualified suppliers and proven supplier management programs.

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Continuity of supply is critical when building complex systems with as many as 10,000 different components