



## **Navigating Materials Constraints: Burton Industries' Formula for Minimizing Supply Chain-Related Disruptions**

*Helping Your Bottom Line Series*

# **Navigating Materials Constraints: Burton Industries' Formula for Minimizing Supply Chain-Related Disruptions**

While 2020 will likely be remembered by all as the year of a far-reaching global pandemic, 2021 will be remembered by supply chain managers as the year of fluctuating constraints. The combination of reopening economies, technology shifts and COVID-19 short-term hot spots is creating challenges across the electronics manufacturing industry.

What is significant about the 2021 is the number of constraint drivers likely to be present during the year. Pent-up consumer demand is driving spikes in products across multiple sectors that were in short supply in 2020 due to the pandemic. The automotive sector is seeing both pent-up demand across all models plus increased demand for electric vehicles. Communications and IoT are also driving demand and 5G will only escalate that trend as more infrastructure is being installed. WiFi and Bluetooth modules are increasing lead-times and pricing. COVID-19 continues to drive increases in medical equipment demand.

Foundries are at capacity and in many cases, component manufacturers have firm bookings out two quarters. In some cases, parts aren't being distributed in North America due to priorities in other regions. Lead-times, non-cancellable, non-returnable (NCNR) windows and prices are increasing across multiple commodities. The passive market has leveled out, but ICs and semiconductors are likely to be a continuing problem. Increased cost of raw materials, labor availability issues and freight cost increases are driving some component manufacturers to increase prices by up to 25 percent. In this type of environment, a contract manufacturer's internal resources for rapidly identifying and addressing constraints are critical. This whitepaper looks at Burton Industries' formula for addressing the current challenges. There are three key areas that the team at Burton Industries focuses on:

- New product risk mitigation
- Early visibility into developing constraints and cost changes
- Customer education.

## **New Product Risk Mitigation**

The team at Burton Industries begins risk analysis at the quote stage, reviewing the bill of materials (BOM) for components with obsolescence risk or known constraints. Additionally, if there are sole-sourced parts, equivalent alternates are suggested. The goal is to begin any business relationship with a clear understanding of potential materials issues and options for addressing them.

In new product development, the team can be an integral partner when involved early in the process. Component lifecycle analysis should be a key part of every product development effort. In performing the analysis and developing a BOM and approved material list (AML), the team at Burton Industries considers a number of factors including:

- Obsolescence risk based on the stage of each component's lifecycle
- Best packaging styles for availability within the current market constraints
- Availability of alternate components
- Most cost effective options
- Product family component commonality considerations

- Quality/delivery track record of specified suppliers.

The team also looks at the anticipated volumes and likely demand patterns because that can influence component selection, as well. While design for manufacturability or testability (DFM/DFT) analysis is regularly performed by most contract manufacturers including Burton Industries, that analysis process doesn't analyze whether or not the AML and component specifications are optimized for likely demand patterns. That analysis is best done through a design for procurement (DFP) process. DFP focuses on minimizing the number of unique parts required, minimizing the amount of customization required and broadening the range of supplier choices. The result is fewer inventory line items to manage, reduced costs and better component availability.

The team's DFP process includes:

- Reviewing the bill of material to ensure choices that provide as much component commonality with related products as possible
- Specifying at least two sources for every line item on the BOM
- A focus on minimizing "over-specifying" tolerances, values or finishes on parts where less precision could provide a greater range of available materials
- Limiting use of mixed technology parts or difficult to procure packages
- Evaluating stage of lifecycle for specified components to minimize use of components with high obsolescence risk
- Evaluating likely product lifecycle against the lifecycle of any "off-the-shelf" subassemblies designed into the product.

### **Early Visibility into Developing Constraints**

When the effects of the COVID-19 pandemic began to be felt in 2020, the purchasing team developed a weekly constraint report to better monitor changing market conditions. Program managers work concurrently with purchasing to analyze the impact of market changes on their customers' products.

When new constraints are identified, purchasing, program management and engineering review options for alternate suppliers and/or equivalent substitutions and inform customers of the available options for addressing the issue.

An engineering change request (ECR) is opened and an engineer is assigned to identify as many options as possible. Proposed substitutions are compared with existing parts. At a minimum, any proposed substitutions must fit on the present pad and conform to fit, form and function as closely as possible. In some cases, an improved part with slightly different parameters such as wattage may be recommended. Availability and pricing are verified with purchasing, and the program manager then contacts the customer for approval.

If parts are not available through a franchised distributor, purchasing will identify options at non-franchised distributors and/or brokers. Burton Industries has a core of trusted suppliers in this category and can search beyond that, if necessary. When parts are sourced from these non-franchised sources, customers sign a waiver approving their use and additional incoming inspections or testing may be performed.

When price changes but availability remains the same, the program manager notifies the customer of the new price and any available lower priced, equivalent alternates. A new purchase order reflecting the price or AML change is issued.

### **Customer Education**

Mitigating supply chain constraints requires a coordinated effort from both Burton Industries' team and its customers' teams. Program Managers work with customers to keep forecasts accurate. At a minimum, volume production customers are asked to give 26+ weeks of commitments based on component lead-times. A rolling 12-month forecast is preferred. The one exception to that forecast length is customers with legacy products that are built on an as needed or a few times a year.

Other recommendations for mitigating material availability/supply chain disruption issues include:

- Put Burton Industries' engineering team in the design cycle from a BOM standpoint as early as possible. The engineering team offers a free BOM scrub service to existing customers to help them assess risk in critical-to-design components.
- Avoid single source parts or those with limited sources.
- If a part has been labelled not recommended for new product use, it should also be avoided as its obsolescence risk is high.

The material constraints of 2021 will be a continuing challenge. That said, the team at Burton Industries is working hard to ensure that as challenges arise, solutions are identified.

### **About Burton Industries**

*For more than 40 years, Burton Industries, Inc. has provided customized manufacturing solutions to OEMs in the medical, industrial, motor control, specialized consumer, security, building controls, defense and professional tool markets. We support the full product lifecycle from product development through end market support services.*

*We've built our business by listening to customer needs and efficiently supporting high mix, variable demand projects at both PCBA and higher level assembly (HLA) stages. Our manufacturing strategy includes:*

- *Extraordinary communication with customers*
- *Teaming with suppliers*
- *Optimizing test*
- *Eliminating hidden cost drivers.*

*Our primary manufacturing location is in Ironwood, MI and additional HLA manufacturing capability is located in Hazelhurst, Wisconsin.*