



***Addressing Supply Change Constraints:
Strategies for Keeping Deliveries On-Time***

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By Wally Johnson

The combination of pandemic-induced work environment changes, pent-up demand for products in short supply in 2020, focus on new infrastructure and legislative priorities, and the lingering impact of spikes in COVID-19 infections around the world are creating constraints across the supply chain. Unlike the 2018/2019 constraints, which were focused predominately on automotive-grade MLCCs and resistors, these constraints are impacting the entire supply chain to some extent and will likely continue to provide availability and pricing surprises throughout the year as the variables described above create unplanned impacts.

A bigger, much longer term issue is semiconductor availability. Most of the semiconductor supply base is far beyond capacity due to a dramatic reduction in wafer starts available to them. In most cases, there are no alternatives as there were with MLCC. Even if alternates are available, most manufacturers are affected by this shortage to some degree.

The challenge for electronics manufacturing services (EMS) providers and their original equipment manufacturer (OEM) customers is to successfully navigate a supply chain environment where new issues develop as quickly as an old issue is solved. This requires a strategy that involves product development teams, supply chain management and senior management in minimizing constraint risks; lengthening forecast and firm order commitment windows; utilizing tools and processes to ensure real-time visibility into both material on order and on hand; and ensuring that critical suppliers understand the line down impact of their prioritization strategies.

Firstronic, an EMS provider headquartered in Grand Rapids, MI with a global network of manufacturing operations, has been successfully addressing these challenges. This whitepaper looks at the practices and tools it has been utilizing to accomplish that objective.

Overview

There are a number of variables currently driving constraints and price increases:

- Regional COVID-19 related country shutdowns and factory operational restrictions
- Loss in international air freight capacity
- Increased dependence on ocean freight combined with operational restrictions affecting the ports
- 'V shaped' recovery of the automotive sector trying to pull capacity back that had been diverted to increased demand for network equipment and 5G
- Insufficient available wafer start capacity in semiconductors.

Addressing this year of constraints requires a multi-pronged approach that includes:

- A revised approach to materials selection in the design phase
- Strong focus on supplier relationships
- Longer forecast horizons
- Real-time supply chain monitoring tools.

A Revised Approach to Materials Selection in the Design Phase

Materials will be much more of a critical path in 2021 during product development. The standard strategy of sourcing the large cost driver parts first and leaving the passives until the design is finalized is no longer helping to shorten new product launches.

Alternate component selection is critical. In some cases, designs may need to be modified. In particular, filter capacitors in 1uF, 4.7uF, 10uF and 0603,0805,1206 package sizes, have virtually no stock available across any manufacturer. A better option in these situations would be to consider electrolytic or tantalum capacitors for large case/high capacitive value (CV) applications.

It is more important than ever to keep EMS provider partners in the product development loop so that they can be involved early in component sourcing decisions and keep their supply chains in the loop. Firstronic would like at least six months' notice on new product introductions whenever possible.

Additionally, the team at Firstronic scrubs every new bill of materials (BOM) prior to launch to identify alternates for long lead-time/allocated components and encourage support of as many alternates as possible on passives and capacitors.

Longer Forecasts

Many parts suppliers are at capacity and have firm orders for a quarter or more. This situation is likely to continue for most of the year. As a result, rolling forecasts given to EMS providers need to reflect at least 12 months of demand. When possible, at least six month warning on increases in demand above the min/max range currently in place should be given.

Real-Time Supply Chain Monitoring Tools

Based on the constraints outlined earlier, there are potential issues in both assumed component availability and the capacity to build unanticipated spikes in demand above planned forecast maximums. The ability to monitor changing trends in real-time has never been more important.

As standard practice at Firstronic, both raw materials and finished goods inventory kanbans are established to minimize liability yet support variable demand. Suppliers agree to a bonded inventory based on each customer's forecast and likely variations in demand. A finished goods kanban is also in place and is normally sized to cover two weeks of demand. Firstronic builds to forecast and pulls on demand. In the event demand changes radically, forecasts and bonds are revised. In a perfect world, this process enables Firstronic's team to manage exceptions rather than expediting material.

Firstronic has developed a new cutting edge tool: ***the Firstronic Supply Chain Monitor***. It combines the latest Firstronic requirements schedule with the latest supplier inventory and the schedule of material



coming into the distributors. This enables the team to check supply chain shortages by customer, supplier or manufacturer and immediately see the impact of any issue and which one needs to be worked first. The system saves hours of time per person at Firstronic through this filtering and prioritizing of exception messages. The output of the system is being used to focus the expedite efforts at the manufacturer. One email covers multiple parts and lays out everything they need to know.

Stronger Focus on Supply Chain Relationships

Relationships matter in today's materials market. Companies whose executives are talking with executives at constrained suppliers and building the case for why their products can't be line down are going to get parts faster than companies just placing orders.

Firstronic is proactively discussing its forecasted demand with key manufacturers and encouraging its customers to have a direct dialogue with those manufacturers, as well.

This year's supply chain constraints are not insurmountable. However, keeping deliveries on-time does require changes to standard practices to increase options for alternate sourcing and provide earlier warning on upsides in demand.

About Firstronic

Firstronic LLC (www.firstronic.com) provides advanced electronics manufacturing services and optimized supply chain solutions for companies in a wide range of industries including automotive, industrial and medical device. Headquartered in Grand Rapids, MI, Firstronic has a 35,000 square foot facility, state-of-the-art equipment and a seasoned management team with an average tenure of 20 years and a 70,000 square foot facility in Juarez, Mexico. It also supports companies needing access to global manufacturing locations via joint venture operations in China, France, Germany, Poland and Tunisia. Firstronic's track record of excellence has been documented in a variety of ways. Awards include being named Circuits Assembly magazine's EMS Company of the Year and an Industry Week Best Plant, in addition to a variety of Service Excellence Awards and customer supply chain awards. To learn more, visit our website: www.firstronic.com.

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