Rapid Response Case Study:

Two Week Production Ramp

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Firstronic's team in Grand Rapids, MI recently set a new speed record in project launch, transitioning and completing all normal project validation activities in two weeks per product family on a project with 10 different product types totaling close to 375,000 units a month in production.

The Challenge

An automotive original equipment manufacturer (OEM) who had previously audited Firstronic as a potential supplier encountered capacity constraints at its current contract manufacturer. The existing supplier could not handle its increased program volumes and the OEM contacted FIrstronic to determine how quickly Firstronic's Grand Rapids team could launch the product.

The Response

Firstronic had recently added two SMT lines to address anticipated demand scheduled later in the year, so production capacity was not an issue. The gating item was materials. The OEM eliminated that issue by instructing its contract manufacturer to kit existing material in inventory and ship to Firstronic for assembly.

Firstronic assigned a cross functional team (CFT) to the account. In Firstronic's CFT model, the team includes a tactically-focused program manager, a strategically-focused account director, a buyer, a product engineer, a process engineer, a test engineer, a quality engineer, a production supervisor or leadperson and a customer service representative focused on materials and scheduling.

The team determined that the best way to launch the project was to break the products into three phases centered around product families. The first two phases included three printed circuit board assembly (PCBA types) each and the last phase included four PCBA types.

Firstronic's new product introduction (NPI) program is rigorous. Each PCBA went through a complete purchased part approval process (PPAP), process failure mode effects and analysis (PFMEA), advanced product quality planning (APQP) techniques, development of a control plan and run-at-rate validation process which included on-site source inspection and capacity review. Stencils were generated in two days. Tooling for the auto-router was expedited to under two weeks.

The Result

Firstronic's team completed the NPI on all three phases in two weeks per phase. The OEM was onsite during preproduction, launch and ramp to initial volume. Units were initially shipped back to the existing contract manufacturer for inspection as part of a Safe Launch program. After the first three shipments, FIrstronic was authorized to ship directly to the customer. The volume across the 10 products is 375,000 units per month.

The Team and Processes Behind Firstronic's Rapid Launch Capability

The current pandemic is creating capacity surprises in multiple industries. While this case study involves an automotive supplier, Firstronic's team training, systems and processes are designed to support rapid launches in multiple highly regulated industries with complex validation processes. In addition, to its IATF 16949 certification, Firstronic is also ISO 13485 certified and FDA-registered. It is currently building systems used by hospitals to monitor cardio and respiratory functions, in addition to other medical projects.

Firstronic's recipe for success in this area involves two elements: its CFT model and real-time systems that support a paperless factory environment and real-time monitoring of critical metrics.

The CFT Model

In designing the CFT, Firstronic's goal was to create a team that was broad-based enough to manage all the necessary outputs associated with each customer. Many of Firstronic's programs involve production in multiple regions of the world so the division of labor among a program manager and an account director ensures an internal, factory-resident, tactical focus via the program manager, while the account director focuses on strategic and commercial issues, and has accountability for global program performance should a project need to ramp in multiple locations.

The training program for CFTs is rigorous and includes training on process failure mode effects and analysis (PFMEA); 8D problem solving; corrective and preventative action; statistical process control (SPC); control plans; change management; understanding IATF processes and procedures; advanced product quality planning (APQP); installation, process installation, process qualification and operational qualification; the purchased part approval process (PPAP); and control plans. Six Sigma Green Belt training is also part of the process. The goal is to ensure all team members have a strong foundation in the core tools necessary to carry out their defined responsibilities in managing project launch, corrective actions and continuous improvement activities.

CFTs are Firstronic's front line resource in ensuring that what is delivered to customers meets their requirements. They provide the rest of the organization clear focus on what resources are needed to support the customer. The broad-based nature of this team structure ensures that each customer has a complete set of subject matter experts focused on project execution and continuous improvement. The teams measure a number of metrics including process and specific product yield relative to key performance indicators (KPIs), customer and product line gross margin, forecast accuracy, revenue to project budget, on-time delivery performance, customer satisfaction, corrective actions and inventory turns. If issues arise in the metrics, the team analyzes the root cause and recommends appropriate corrective action.

Plex Online ERP

Firstronic's Plex Online ERP system enhances each team's abilities to manage and mitigate risk. Plex allows searching for process and product risk. As part of every new customer transition, CFTs look at the top ten product risks for that customer, to eliminate potential issues before they become issues.

From an operational standpoint, Plex's capabilities integrate well with Firstronic's Lean manufacturing philosophy. Product is bar coded and integrated with Plex to create a permission-based system that can stop production at any point, freezing material and production until the identified issue is resolved by the CFT analyzing machine, man and methods to determine the best corrective action. Centralized verification documentation and real-time data within Plex provide management with significant visibility into project status, quality trends and operational efficiency.

The result is a responsive, coordinated approach that mitigates risk, provides responsive solutions to any issues that develop in the project and ensures lessons learned are propagated throughout the organization.

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, India, 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.