



How to Win at Production Launch

by Dennis L. Harvey

Industry is flush with literature on lean product development. Production launch, however, the final phase of product development, receives little attention when it comes to the application of lean principles.

Production launch includes all of the activities necessary to get the manufacturing plant up to full line rate with a new product. Launches of products as diverse as cars, trucks, locomotives, locomotive engines, complex electrical components, generators and light armored vehicles have been a proving ground for the application of lean principles. Some of these products have had 3,000 part numbers or more, with more than 90% of them coming from outside suppliers. Many were engineered for specific customers, carried critical validation risks and were launched under tight time constraints.

Four key success factors have emerged from these projects, as follows:

1. An achievable build plan
2. Dynamic integration of all launch-related functional area activities
3. Part readiness
4. Build issue resolution

The more that lean principles were incorporated around these four key success factors, the easier it became to apply the production launch process to new product situations and the more efficient the process became.

1. **An achievable build plan.** The program team must establish a build plan that anticipates build problems. The team needs sufficient time and resources to handle the expected realities of the launch. Besides the problem of workload, the learning curve must also be considered in the build plan. In high-performance production launches, failure mode and effects analyses (FMEAs) are carried out on the build plan itself to reduce the number and severity of forecasted problem areas.
2. **Dynamic integration.** Dynamic integration is the ability to rebalance the program and its complex launch activities in real time when issues arise. Done well, a program will achieve all major milestones on time. All functional groups with launch responsibilities must participate in dynamic integration. Teamwork is essential. The secret to success is for the team to follow norms that enable identification of emerging problems and then have shared responsibility for finding and implementing solutions. Additionally, the focus of all the team members must be on making the launch successful.
3. **Part readiness.** Part readiness is the work that assures that all tooling, parts and documentation are available on time for every build event. Projects with a high percentage of purchased parts may feel the most pain with their supplier base. In this case, the timely availability of supplied parts must be addressed with rigor. Experience has shown that starting an early build event without all parts available precipitates waste, risk and cost.
4. **Build-issue resolution.** The build-issue resolution process must be fast and comprehensive so as to meet the customer's schedule (the achievable build plan) and quality requirements. Here again, teamwork is essential. All problems must be documented and resolved fast. The steady-state problem-solving processes of the manufacturing plant are inadequate to meet the rigors of the launch. Build-issue resolution has to be a more robust, though temporary, process.

How good is your company at production launch?

Companies benchmarked for launch capability can be categorized into three levels of capability. A level 1 company is at high risk of launch cost and quality issues because it usually treats launches as special projects, rather than having a repeatable production launch process. These companies have a great opportunity for implementing a lean production launch process to allow them to move to level 2 capability.

A company at level 2 does have a production launch process and is reasonably confident of reliable launch performance. Generally the company has cost, quality and schedule in control. It has an opportunity for additional cost savings by improving upstream business processes, such as product development.

Companies performing at level 3 fully exploit their production launch capability and use the knowledge from each launch to achieve maximum cost savings and quality potential.

Assessing your company

Level 1

Companies at this level struggle with launches. Each production launch is a special project. The projects rarely anticipate risks or put mechanisms into place to address risks early enough. Consequently, problems snowball into crises and require firefighting and extraordinary efforts.

What you might see:

- Managers spend a lot of time in crisis meetings.
- Deteriorating relationships with customers.
- Pervasive belief that the organization will make schedule, while it ends up eating the cost.
- Launch costs buried in mysterious ways so the actual launch costs are never known.
- Lurking fear that some quality problems will be missed and come back to haunt the company.
- The most visible and celebrated heroes are the crisis problem solvers.
- Company shares a recovery plan with the customer, just as a new wave of problems appears.
- Additional resources are “stolen” from production and/or other programs, creating stress on the rest of the organization.
- Employee burnout.
- Perception that manufacturing is not well run.
- No time to get to root cause of problems.
- No time to think about the future.

Common mistakes:

- Build plans that do not recognize and staff for the volume of problems that need to be solved.
- Unplanned time compression for manufacturing does not cause a corresponding adjustment in resources and activities necessary to execute a successful build plan.
- Company does not work closely enough with key suppliers and misses delivery dates for validated material for first builds.
- Proceeding with early build events without correct parts, thus requiring eventual rebuild and a lost learning cycle.
- During early build events, the workforce does not tell manufacturing and engineering what “adjustments” they did to make the build successful (which often contributes to secondary quality problems).
- The build-issue resolution process is overwhelmed because it is not properly staffed or process capable.
- In general, teamwork is difficult to achieve because the team members’ primary allegiance is to their home functional organization rather than to the success of the launch.

Level 2

Companies use a production launch process that gets repeatable results. Whether the process is lean or not, the company can expect to have few out-of-control launches. The rest of their organization recognizes that production launch capability is a manufacturing strength.

What you might see:

- Launch performance achieved at budgeted cost.
- Management spends minimal time on day-to-day details.
- Management attention is spent on issues that are appropriately escalated.
- Heroes solve problems before they become crises, but without crises, heroes are less visible.
- More employee enthusiasm as their empowerment gets results.
- Accurate resource estimates with minimum unplanned crisis work.
- Customers have confidence in the company.
- A frontier for further improvement becomes suppliers that still struggle with launches.
- The organization is in a position to improve upstream processes and product designs to eliminate root causes of launch problems.
- The production launch process is integrated with other lean and six sigma activities.

Common mistakes:

- Data on first-build problems are not captured or used for improving upstream business processes, such as the product development cycle.

Level 3

Companies use a common production launch process on all launches and size effort to the complexity of each program. Manufacturing has the knowledge and data to drive improvements to upstream business processes. Companies have production launch well integrated with product development.

What you might see:

- The organization can handle multiple launches with complex programs.
- Manufacturing is a proactive and welcomed player in upstream processes, particularly in product development.
- Problem-solving data from previous launches are used to drive improvements in product design.
- Design for lead-time reduction is pursued.
- Heroes are those who integrate production launch into upstream processes to improve business performance.
- Organization works to get all suppliers to at least level 2 production launch performance.
- Resource planning for launch is realistic because it is data driven, using simple mathematical models.
- Root causes of problems discovered during launch are addressed with six sigma or other tools.
- The organization has a more accurate understanding of the true cost of launches and aggressively pursues ways to methodically reduce those costs.
- Proposals for customers are developed with a better understanding of the facts of launch.

Conclusion

Winning at production launch is a key part of improving a company's product development process. The application of lean principles to a production launch process can get results, especially if it is focused around the four key success factors—an achievable build plan, dynamic integration, part readiness and a rigorous build-issue resolution process.

About the author

Dennis L. Harvey is the principle of Dennis L Harvey Consulting, Inc. During his 26-year career with General Motors Corp., he had leadership responsibility for production launch, new technology development, product development processes, business best practice development, lean manufacturing and design-for-manufacturing methodologies. Throughout this time, he had leadership responsibility for production launch of 42 programs. For more information, visit www.DennisLHarveyConsulting.com.

This article posted online Dec. 10, 2006. www.sme.org/cgi-bin/get-newsletter.pl?LEAN&20061210&1

Copyright © 2006-2010 Society of Manufacturing Engineers
SME Customer Service: 1-800-733-4763