FPS: The Next Generation

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For the past several years, I have been helping a number of suppliers to the Ford Motor Company make the transition from mass production to lean manufacturing, as embodied by the Ford Production System (FPS). Since the early planners of FPS anticipated that it would take until now to see some results, this seems like an appropriate time to assess what's worked, what hasn't, and where to go from here.

Implementing lean production in a company as big as Ford is like trying to change all four tires on a moving car in the middle of a race. To make this process more manageable, the FPS planners developed a five-stage process, modeled after Toyota's approach. The first phase focuses on achieving stability up front to reduce the risk that later changes will significantly disrupt production. This initial phase places a heavy emphasis on training and communication to promote understanding and support for FPS throughout each plant, and to promote various techniques that are associated with lean production.

Basically, the first phase involves "getting ready" for lean production. However, many plants appear to be stuck in this getting ready mode. Although they display many of the trappings of lean, their systems remain firmly rooted in mass production ways of thinking and doing things. Where have they gotten bogged down? And how can they accelerate their movement to lean?

Much of the problem seems to lie in the way people are thinking about how to get from mass production to lean. I've identified several assumptions in particular that are getting in the way.

Assumption #1: The techniques are the fundamentals.

Five years into FPS, most of the workforce still appears to be quite confused about what lean production is all about. In fact, many people talk about FPS and lean production as

if they are unrelated. Most people define FPS in terms of a particular set of techniques, such as visual factory, preventive maintenance, quick changeover, and working in teams. That's only natural since most of the training has focused on these techniques, and the initial application areas have served as showcases for these techniques.

The problem is that these techniques, by themselves, don't necessarily represent a break from mass production. In fact, most plants were experimenting with work teams, preventive maintenance, and quick changeovers before FPS ever came along in an attempt to make traditional mass production processes more efficient. Starting out with these techniques in FPS may have seemed like a good way to ease people into lean production, but it may also be confusing people about what is at the heart of lean.

Lean production is fundamentally about getting the product to flow through production without interruption, based on pull from the customer or next phase of the operation, in small batch sizes with frequent delivery, in a culture in which everyone is striving continuously to improve. The techniques in FPS can help plants become lean if they support these fundamentals. But the techniques themselves are not the fundamentals.

FPS is a whole production system, not a set of isolated practices. Trying to introduce it piecemeal obscures that fact. It's necessary for people to see the big picture before they can understand the relevance of the various techniques.

What makes the most sense is to pick an entire product line and work to achieve continuous flow and pull on that line from dock to dock. A product line is large enough to reap the benefits of leaning a whole system, while small enough to be manageable. The initial application areas represent a step in this direction, but their scope is currently too limited to have much impact. It takes working with a whole production process to create the context and pull for specific techniques. It also makes it possible to identify systemic barriers that, if addressed, can speed the implementation of lean across the entire plant.

Assumption #2: Training must precede implementation.

How do people learn the fundamentals of lean production? The traditional response has been to give them training. And that's the approach that FPS has taken. In fact, Ford conducts more up-front training than practically any other company implementing lean production.

One explanation for this approach is that Ford's size and labor-relations policies require a lot of up-front training. The theory is that the more people hear about lean up front, the more they will understand what it is all about, and the less they will resist actual changes on the plant floor. Since large, heavily unionized companies are likely to encounter more resistance, they need to conduct more training to break down that resistance.

The experience of other companies in implementing lean production suggests otherwise. Because lean production represents such a radically different way of organizing the flow of product through the plant, it's almost impossible to talk it into being, especially when people have no experience outside of mass production. It's unrealistic to expect people to understand lean and accept that it is a superior way to organize production without actually seeing it in action or experiencing it for themselves. For that reason, a lot of up-front training is a waste of time if it doesn't allow people to experiment with directly applying lean principles to their own work.

FPS training has not provided much opportunity for that kind of experimentation. The initial application areas have come the closest, although they have primarily focused on showcasing various techniques, not on reorganizing the production process in more fundamental ways that directly challenge mass production thinking and systems. Those people not working in the initial application area(s), who constitute the vast majority of the workforce, typically go into a holding pattern following their FPS training, while they wait for everyone else in the plant to catch up. This batch and queue approach to implementing lean slows down the whole process and is fundamentally at odds with the basic principles of lean.

The prescribed sequence of the FPS training compounds the problem. The bulk of the up-front training is for work teams and is about working in teams. Since most people go into a holding pattern after completing this training, and never get to the material on continuous flow (which comes next), it's only natural for them to conclude that FPS is about working in teams. By putting such a strong focus on work teams up front, and in many cases never getting beyond that, the FPS training may actually be creating more confusion than understanding about what is at the heart of FPS.

The best, and perhaps only, way to help people understand the fundamentals of lean is to give them an opportunity to experience it in action. This means forsaking most of the up-front training designed to get people ready for lean in favor of a more action-oriented approach.

However, it doesn't mean forgetting about employee involvement. Some plants, in an attempt to break out of the holding pattern of FPS training, are being seduced by the apparent simplicity of a narrow engineering path to lean. They are reengineering lines designed for batch production into cells designed for lean production, relying mainly on engineers to do all the creative work. The rest of the workforce often gets left out, reducing the likelihood that they will lend their insights and energy to the process. In the long run, the key to success lies in mobilizing the workforce to transform the production process. There's simply no good way to work around them and still expect the ownership that drives continuous improvement. On the other hand, working with people in the right way can greatly accelerate the implementation process.

What makes the most sense is a form of just-in-time training that responds to the pull from teams that are actively experimenting with lean approaches. The kaizens that a number of plants have been conducting support that kind of just-in-time training. They assemble the right people to make a breakthrough on the right issue at the right time, equipping them with the right training and support to make that possible. Used in this way, kaizens offer an approach to training that is consistent with the fundamental principles of lean, reinforcing people's understanding of those principles in the process.

Assumption #3: The measures are the results.

Another hallmark of FPS has been its reliance on a new set of plant performance measures to drive the transformation to lean. The theory is that new measures will drive new behaviors. Over time, if enough people in a plant begin acting lean, then the systems will become lean. And if the measures are applied across all plants uniformly, then the whole company will become lean. Unfortunately, this attempt to "measure lean into existence" has run into a few problems.

There seems to be a lot of confusion about the relationship between the FPS measures and actual business results. Many plants believe that doing well on the FPS measures will automatically produce good business results, so they focus mainly on moving the FPS numbers, even in the face of growing red ink on their bottom line.

One explanation is that the plants continue to be managed as cost centers, despite the stated intent that they become profit centers. In many cases, there is still less focus on making a profit than on meeting their labor and overhead targets. It's been relatively easy for plants to tack the FPS measures onto the laundry list of other metrics that they faithfully report to the next level. In the process, scores on the FPS measures become confused with actual business results.

Another explanation is that total cost, probably the most important of the FPS measures, has gotten lost in the shuffle. The plants complain that no accepted methodology has ever been developed for capturing total costs. Actually, there are relatively simple ways to capture costs. Businesses do it all the time with an income statement. The problem is that Ford's financial accounting systems don't support that approach. They are set up to track variance from budget, not profit and loss, and they focus on labor and overhead, not total costs. To resolve this conflict, plants are just ignoring total cost, while maintaining the integrity of the traditional systems they need to report other financial data.

All of this is compounded by a natural tendency to want to make the numbers look good. The conventional wisdom in Ford is that all numbers need to be getting better all the time, otherwise there's a problem. Pay and promotion possibilities are directly at stake, and there are consequences for people's careers if the plant or product lines are perceived

as doing poorly. Consequently, professional managers are becoming amateur accountants who spend countless hours playing with the FPS numbers to make sure they come out right. In the process, the relationship between the FPS measures and actual business results gets further clouded.

More confusion comes from attempts to aggregate FPS numbers to the plant level, and even beyond. The FPS numbers are most useful for understanding what's going on in the business at the level of a work team or a product line. They lose much of their value when aggregated. In fact, aggregated numbers frequently mask real issues that have high leverage for performance improvement if explored in greater depth. They are vapor trails of other more important dynamics playing out at a deeper level.

The challenge is to find a way to really engage with the numbers, not just report them. The key to becoming lean is to go into enough depth in enough areas of the plant over enough time to see the patterns in how the business really works, then change those patterns.

The most promising work going on in this area involves the development of income statements for product areas to use in tracking their performance. With good information about how their product stacks up against the competition as context, and good information about their revenue and costs for guidance, product teams are natural learning labs for implementing lean. They have responsibility for a large enough piece of the whole system to make a difference, while not being so big that their focus gets diffused.

Assumption #4: FPS is a special project.

One obvious area where FPS has gotten bogged down is in trying to expand beyond the initial application areas. Although this is a problem that many other companies have run into, it seems particularly acute at Ford. Much of this is due to the treatment of FPS as a special project.

Ford has a long tradition of mandating that the plants undertake various corporate initiatives for their own good and for the good of the company. Each initiative typically has its own organizational structure, performance measures, and dedicated plant personnel. The plants generally sustain their focus and energy on these initiatives only as long as those above them sustain theirs.

Although the movement to lean production represents a profound and lasting transformation of the business, the approach that has been taken to implementing FPS looks a lot like the many corporate initiatives that have come before. There's a dedicated corporate FPS staff assigned to oversee the implementation efforts in the plants, there are special reporting requirements to assess progress, and there are dedicated FPS staff in the

plants. Many of the FPS staff in the plants have been recycled from previous corporate initiatives, such as employee involvement and preventive maintenance, reinforcing the perception in their minds and in the plant generally that this is more of the same.

Within the plants, ownership for the implementation of FPS has remained largely within the dedicated FPS team. They have borne most of the burden of getting the initial application areas up and running. Typically, the operational manager in that product area has not stepped in to work with the FPS team, but has stepped back and focused attention elsewhere, relieved to have the additional help while it lasts. When the initial application area is up and running, the operational manager typically knows little more about lean than before, and is poorly equipped to expand FPS beyond the pilot area.

Expanding FPS within the plant typically takes the form of establishing pilot sites in other product areas, where the pattern is then repeated. As the number of pilots is expanded, the resources of the FPS team get stretched thinner and thinner. And as more and more work groups go through FPS training, the burden on the FPS team to support them becomes heavier and heavier. Because they lack the clout to get operational managers and support departments to make implementing FPS a priority, the FPS teams try to do as much as they can on their own. Eventually, they reach their limit and grow frustrated with their own inability to sustain what they've started, and they grow frustrated with the lack of support they are getting from elsewhere in the plant.

For the most part, plant operating committees have not seen implementing FPS as central to their business strategy. One reason is that their understanding of lean, and their experience with it, is so limited that it's hard for them to see how it can help them. Another reason is that the operating committee members are so busy fighting fires that they rarely get around to putting together a game plan of their own for how to achieve sustainable, profitable growth.

Without a clear business case for lean that speaks directly to the unique interests and dynamics of a particular plant, there is little pull for implementing FPS. Attempts to drive lean into the plant from the top down or outside in are no substitute.

The most promising work going on in this area is where the leadership of the plant (union and management) is taking responsibility for their own destiny and charting their own course toward sustainable, profitable growth. Based on a rigorous analysis of the dynamics of the businesses in the plant, many are concluding on their own that the shift to lean production is critical to their long-term vitality. Stronger and more active support for FPS is sure to follow.

The Path Forward

Where do we go from here with FPS? Clearly, there are a lot of areas in which implementation is bogging down. At the same time, there are a lot of areas where plants are making breakthroughs that can provide guidance for the next phase of FPS implementation. Taken together, these breakthroughs suggest a model that is true to the original purpose of FPS, but designed to accelerate its implementation.

First, the leadership in the plant must take responsibility for the success of the plant and chart their own course toward sustainable, profitable growth. Given the current dynamics in most product markets, any realistic assessment of their competitive position will make it abundantly clear that the only way to ensure the long-term vitality of the plant is to embrace lean production.

The next step is to focus on leaning out a whole product line to realize the benefits of FPS as a system, rather than as a set of isolated techniques. The product team will need an income statement to track their total costs, and they will need information about their competitors' costs to give them a target to shoot for. They can then use the FPS measures as a tool to help them learn more about the dynamics of the business that drive those costs.

As the product teams gain a deeper understanding of the underlying dynamics of their business, they will be able to spot opportunities where a small amount of energy can produce a significant improvement in performance. Using kaizens, they can harness people's experience and energy to attack these leverage points, giving them an opportunity to learn from their own experience about how to transform the production process using lean principles. Using the product teams as learning labs, the plant leadership can spot opportunities to lean out systems plant wide, further accelerating overall progress toward lean.

This model represents a much leaner way to implement lean production. It relies on pull from the plants that stems directly from their own long-term vision and strategy, not on attempts to push something new into the plants from the outside. It focuses on transforming whole systems, not just improving isolated parts in a piecemeal fashion. And it provides just-in-time training in response to pull from teams involved in real-time implementation efforts, rather than batch and queue training with long lag times between the classroom and actual implementation.

This approach to implementing FPS requires managing the business in a fundamentally different way. That may pose the biggest challenge of all.