

## // Field of Dreams

### Our Journey from an “Ideal State” to a State-of-the-Art LEAN Manufacturing Facility

*Published in APICS Magazine July 2007*

Let us examine the validity of Conventional Wisdom which dictates that the answer for almost all new manufacturing issues must be relocating to China or some other location with similar appeal. Conventional Wisdom is called Conventional Wisdom because so many people believe a thing to be true. And yet...truth is in the data, NOT in the belief of a concept or an idea! If your product fits a high volume, low variability, and low complexity model, relocation may very well be the inescapable conclusion (for the time being). We believe that basing an operational location decision solely on labor costs may be disastrous. For a low volume, high variability, high complexity problem, a modern facility implementing sound, effective, LEAN Manufacturing, Six Sigma, and Theory of Constraint principles can compete with any location in the world! As with all theories, hypotheses, and ideas, one must look at data or a specific Case Study example to determine whether or not they are valid.

Our Case Study example is a maker of large woven textiles for use in heavy industry. We conducted a Value Stream Mapping (VSM) Event designed to look at bottlenecks, cycle time reductions, delivery issues, and sales complaints. A team was assembled that would become known as “The Gang of 14”. Initial reactions to learning that they were going to be participating in this initial event were typical and perfectly normal. Some were upset about being in the event as they felt their time would have been much better spent on the floor making product. They also described an almost universal feeling of skepticism that anything would change and that ultimately no one in management would pay any attention to them or their ideas.



Equipment was located where it would fit when added to the mix and with little to no regard as to how product would or should flow through the plant. The age-old problem of people fighting over limited space; and different fabrics and products struggling for priority to use the same machine at the same time would routinely interrupt production flow in bottleneck areas. Different functions competed aggressively for space and equipment using a system of management that resulted from urgent list priority, fire-fighting, seniority, and often, brute force. Sound familiar? Some would read this and say “What is so strange about that?” Many who think that this method of managing operations is “normal” fail to realize their true potential as well.

The key turning point for this company came in the phase of the first VSM event known as the “Ideal State” development. They accepted the challenge of identifying “what could be” and

produced an outstanding concept. When challenged as to “What is it about this ‘Ideal State’ that is unattainable?” they were surprised to realize that their “Ideal State” was entirely possible in the short-term! They quickly developed a few different concepts of how flow could be improved in their current facility and what true LEAN flow would look like in a new “Green Field” configuration. The presentation provided by the team to management at the end of this first event conveyed a sense of excitement and an air of potential that was palpable. To their outstanding credit, the Executive Leadership Team quickly understood the potential benefits not only to the corporation but to this team and this operation.

Any solution that would be recommended by the team was going to require a strong business case be developed to convince the Board of Directors to approve any new project. A follow-up event was scheduled that would look at further developing and refining the flow model of the plant. The charter was to evaluate the potential of adding another bay on existing property and expansion of the existing plant on a piece of property that was for sale behind the current facility. This became known as the Enhanced Option. The team developed different scenarios and compared them to determine which concept was superior by analyzing the data between the different options. As was to be expected, the Green Field option clearly showed much better flow potential and manufacturing throughput capability. The Enhanced Option layout of the existing building also significantly enhanced flow and capability. However, this option would only allow production to continue at the current facility for about five more years before maximum capacity would again be exceeded. The Green Field Option would allow for the plant to meet and exceed its year-over-year growth projections for the entire ten-year plan.



Additional events produced greater details, improved resolution of layout concepts and other issues, provided more data, and developed several new questions that needed answers. The “Gang of 14” was retained for each of these events for continuity and team unity while bringing in additional subject matter experts from different areas when needed. In particular, with assistance from an engineering firm, the team was able to make many decisions and explore options with the knowledge that what they were proposing was indeed possible and practical.

At the conclusion of each event, the team developed an effective Action Plan to implement several items that each event identified to immediately realize results and benefits to the organization which people could see and evaluate. They also developed a strong Communications Plan and a Sustainment Plan. This further ensured that members of the organization who were not part of the “Gang of 14” were kept informed of how the project was progressing and what steps were being taken. By keeping everyone “in the loop”, any rumors and concerns held by some employees were addressed before they became problems or issues. Any time an organization or a group of people are undergoing major, systemic, and dynamic change, they will always focus in on what that change means to them personally first, THEN what it means to the organization. Understanding this and dealing with it pro-actively with positive communications and genuine Q&A sessions is fundamental to ensure that any change in

an organization is given the utmost chance to succeed and to ensure effective long-term sustainability.

Another of the techniques used by the team was a process called “paper dolls”. This involved using scale cut outs of equipment, furniture, and fixtures on top of scale CAD drawings (D Size or better) to determine the best possible layout. We also used a scale cutout of the largest fabric (33 meters plus) to make sure that even the largest piece of material could be moved easily through the layout and not cause new bottlenecks or obstructions. Ideal locations for doors, walls, and facilities were all included in our work to ensure the plan was viable and not just a “theoretical exercise” that would bear little or no relationship to what would actually be constructed.

Several different flow designs were evaluated by the team: an “I” shape layout that moved raw material from receiving at one end of the building straight through the plant to finished goods exiting at shipping at the other end of the building; an “L” configuration; and individual product lines located in specific locations in different parts of the building. By analyzing data gathered by evaluating their layouts and actually constructing mock ups to determine precise flow and movement patterns, it was determined that the “nested U” was the best configuration for their operation and their product flow. The final event produced a very detailed layout that incorporated five different product lines fully nested within each other in this “U” shaped configuration.



The options available to the Board of Directors included:

- 1) Looking at other global locations where the cost of labor is cheap
- 2) Using other corporate facilities currently slated for closure
- 3) Adding onto the existing facility where land already existed and was already owned by the corporation
- 4) Approve a new Green Field LEAN Manufacturing Facility in the current hometown municipality

In the end, the hometown option was chosen due to the unique skill sets of the existing personnel, training costs, relocation expenses of key personnel, and the risk of losing business when qualifying products in a new plant with new personnel. The net result of all of these events was a final plan that was far more mature and well thought out being delivered to the architects than is typically the case. Of great importance is that even when the architects were finished, the flow and layout of the new plant was, with a few minor exceptions, essentially retained as designed by the “Gang of 14”!

Upon hearing that the Executive Board had approved their new plant, the reactions were described as “Absolute total shock!”; “It felt excellent to have been a part of the team and it made me feel proud”; “Proud to be a part of a plant that was being awarded a bright new future”; and last but certainly not least, “Oh ----! We’ve got a LOT to do!”

The impact of this journey on the “Gang of 14” and the entire employee population has been enormous. People are now questioning everything about their jobs in order to become even better. Ideas are being put forth, and experiments are being tried in areas that have not seen effective change in many years. Today, there is a greater sense of accomplishment, a stronger feeling of empowerment, and an enormous feeling of pride of ownership in THEIR new operation. The team also understands that since it is their plan, they are the ones who must make it work. They want to prove that their ideas will not only work but are now the new “bar of excellence” that other operations must meet in order to remain competitive... with them!

Contrast those results with most transitions of this nature. Employees feel like something is being done ‘to them’ as opposed to ‘for them’.

Employees talk about every problem that develops in terms of “look what ‘they’ didn’t think about”, or worse, ‘this would have never happened if they had just listened to us’. Many organizations talk about empowering employees and involving them in decisions. Many organizations will tell you that their employees are empowered. Most would be wrong. True empowerment involves trust and commitment as well as communication, not just talk about “slogans”. This team had the opportunity to experience true empowerment by their executives along with the trust and commitment that they could and would succeed in their task. And they did.



From October 2005 to October 2007, this team traveled from solving typical, routine production issues to completing the transition to take possession of a new state-of-the-art LEAN Manufacturing facility constructed in their hometown. Cycle Time will be cut by ~50%, product Travel Distance will be cut by ~50%, and personnel travel distance will be cut by ~75%. This did not happen just because they got more space...it is the result of what they did with the space they needed to produce more product in far less time than they could currently accomplish with their old way of manufacturing.

Conclusion:

One of the key attributes that helped this team succeed beyond their wildest dreams is that the Executive team had exceptional credibility and followed through with their commitments to this group. Do not begin a major change, kick off a new initiative, or implement a major new endeavor unless there is a strong commitment to see it through to the end. The term “flavor of the month” has such strong negative connotation because so many endeavors fail before they even begin by not credibly establishing that the leadership team will do whatever it takes to see the initiative through and support the change no matter what. As a result, the first time a crisis occurs, or a new “flavor” shows up, the initiative is forgotten and/or replaced and the employees learn once again that talk is cheap. What started as a routine attempt to “work some issues” and evaluate bottlenecks and “routine” sales issues became a new lease on life to the employees at this plant who are now energized to continue changing their current reality and dedicated to the proposition that they CAN change the world! What can YOUR team accomplish today?

**J. R. McGee**  
*Managing Partner and CEO*

**&**

**Ray Harvey**  
*Plant Manager*

1248 Queen Street, Pottstown Pa 19464

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