

# **ATTACKING WASTE IN EXPLORATION & PRODUCTION**

## **Implementing Lean in the Oil & Gas Industry**

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Few would argue that the oil and gas industry is in transition. Oil reserves are shrinking and the cost of getting it out of the ground is rising. Platforms were designed for oil to flow at much higher rates than they currently do because wells are nearing the end of their useful lives. And because of lower production and higher costs, replacing the equipment on these wells will not result in the payback that it once did. Although still profitable in absolute terms, the industry is changing.

Small- and mid-sized producers are hurting and the large producers are cutting back on spending. Employee layoffs are also increasing as producers and those in the supply chain attempt to deal with rising costs and unstable oil and gas prices. Although hiring when prices are high and laying off when prices are low is nothing new for the industry, one has to wonder whether this business model has actually helped or hurt their success over the years. After all, any producer can appear highly successful when oil is in the \$140 range. The real test of leadership comes when oil and gas prices fall.

It's time for a change and those who recognize it and act first will be the ones who reap the biggest rewards when the downturn is over.

### **Time for Lean**

In an industry that has not been particularly focused on reducing waste and improving efficiency, one has to wonder how much money could be saved by instilling a lean philosophy within the business. The leaders of oil and gas producers owe it to their stakeholders to consider shifting their focus to become leaner to avoid the pitfalls that have plagued other industries over the last several years. In addition to the benefits of lower costs and faster cycle times, the ability to keep workers through downturns is invaluable to any business. The resulting increase in loyalty and level of experience, plus the decreased fear within the company's culture can lead to improvements beyond expectations.

Simply stated, lean is a business philosophy that focuses on continual reduction of waste within an operation. Cost reductions are achieved by improving the flow of material and information through the system and continually finding ways to reduce the time it takes to do work. The philosophy achieves improvements by increasing the level of innovation and creativity of the workers closest to the processes and giving them the time to develop and implement changes.

Lean was originally developed by Toyota out of necessity in the post-WWII era, and heavily based on the teachings of W. Edwards Deming and others. Besides not being able to compete with the Big 3 automakers, Toyota was in desperate need to reduce costs and improve quality while producing in a country with little space and few natural resources. Although many people had a hand in the development of lean (or the Toyota Production System as it is known), Taiichi Ohno is credited with pulling it all together as an approach to business.

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The significance of the development of lean is that Toyota created it for themselves. It fit their needs and helped them be enormously successful over the last several decades. Application of lean to other industries and companies requires reflection and customization to make it fit individual circumstances. Efforts to implement the system exactly as it is in Toyota will only serve to frustrate people and turn them off of the concept.

### What Lean is Not

#### 1. It's not about the tools

In spite of the way it has been approached by many companies over the years, lean is not about the tools. Efforts to implement lean by focusing on the tools while ignoring the organizational and cultural elements will result in, at best, a limited amount of success.

#### 2. It's not a way to layoff workers

Lean is not a way to reduce headcount. If used in this manner, it will fail once people figure out that improving processes results in losing their jobs. Even if there is no intention of laying off people as a result of improvement, people in organizations with a history of layoffs will be skeptical and less willing to participate.

#### 3. It's not something the leaders can delegate

Lean requires a fundamental change in the organization's business philosophy and culture. Because of this, it is not something that the leaders can delegate to the quality team, black belts, or consultants. Obviously, these groups can be involved in the actual implementation of lean, but the executives must take responsibility for making it successful and must remain involved throughout the process.

#### 4. It's not a tool to use now and then or on a project basis

As a business philosophy, lean is not something to be used for isolated improvement projects in the company. Although the tools commonly associated with lean can be used to make isolated improvements, without fundamental change there is no guarantee that the improvement will be sustained. Also, the degree of improvement will be far smaller without associated organizational/cultural changes.

Using lean tools for improvement without fundamentally changing the organization can, at best, result in a 5% benefit in waste and cost reductions. This is because so much of the waste in companies is locked up in cultural and organizational barriers that cannot be removed without a fundamental change in how the organization is led.

### The Lean Paradox

There is a lean paradox that surfaces in many companies when discussing lean: When business is good, there is no need for lean (because there is no need for change) and when business is bad,

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there is no time or money for lean. People who believe this paradox obviously have no interest in pursuing lean.

### **Lean Within Oil & Gas**

As is common in the world of business, oil and gas producers feel they are different from other industries. Problems, processes, and makeup of the workforce are not the same as the automakers, so the approach to implementation needs to be modified to be successful. Toyota has been a great example to demonstrate the benefits of using the strategy, but any attempt to teach people about lean must be applicable to the audience. It is, therefore important to minimize any references to Toyota or manufacturing examples during training classes or meetings with oil and gas producers.

In general, lean focuses on reducing waste . . . and every company has waste. Therefore, every company can benefit from lean. A well-developed plan is necessary to assure that addresses the cultural barriers in addition to the process improvements will increase the chances of success.

Waste in oil exploration and production do not tend to appear as significant when oil is \$100+ than when it is \$40. It is important to note, however, that the waste is there whether oil is \$100 or \$40, and it needs to be addressed continually for the company to be successful year-after-year. Imagine how much additional profitability could have been achieved had the majors been using lean over the last 25-30 years.

### **The Steps to Success**

#### **Step 1: Learn and Customize**

The executive team and key advisors must learn about lean and what it will mean for the organization. This step involves a lot of debate and reflection to determine whether or not lean is right for the company. If the team decides to go ahead with lean implementation, it can begin to customize its system of implementation to make it more aligned with the organization's culture to increase its chances of success. At this point, the leaders must assure that lean is built into the company's high-level plan.

#### **Step 2: Identify/Remove Barriers**

Once the management team has a general understanding of the lean philosophy, they must begin the process of identifying and removing the barriers to organizational transformation. The team should review the barriers from table 1 and analyze the extent of each barrier within the company. Assigning each with a weight from 0 – 5 will help to prioritize efforts to remove the barrier once identified. The strategic initiatives related to lean implementation should address the most critical of the barriers identified.

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The barriers will never be completely eliminated, so the team should decide when enough improvement has been made to go forward with the lean implementation. It is important to continue to assess the organization for the existence of the barriers as the process moves forward to assure that the company continually improves and that certain barriers do not make their way back into the culture.

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|---|--|
| <ul style="list-style-type: none"><li>• Lack of Clear &amp; Consistent Purpose</li><li>• Arrogance</li><li>• Lack of Trust</li><li>• Lack of Team Development</li><li>• Absence of Servant Leadership</li><li>• No Focus on Internal Suppliers/Customers</li><li>• Lack of Aligned Objectives &amp; Rewards</li><li>• Impatience</li><li>• Too Much Financial Success</li></ul> | <ul style="list-style-type: none"><li>• Inconsistent Values</li><li>• Fear Throughout the Organization</li><li>• Number/Financial Obsession</li><li>• Management Not Committed</li><li>• Lack of Pride</li><li>• Improper Organization Structure</li><li>• Lack of Personalization</li><li>• Isolation from Strategic Plan</li></ul> |
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Table 1  
Cultural Barriers to Lean Implementation

### Step 3: The Top-Level Map

A value stream map (VSM) is a graphical representation of how material and/or information is transformed into value for the customer. The first step in the top-level map is to identify who the customer is and what the company provides to the customer(s). Afterwards, the top level VSM can be developed, which will include the major processes that the company uses to provide value to its customers. This is a very high level map that is really a graphic representation of the company's overall system. It sounds basic but it is not easy to do, and the exercise of putting it together provides an excellent platform for discussion and gives everyone a picture of how everything fits together. In most organizations, people understand their specific area of responsibility but often do not understand "the big picture." The high-level VSM provides the "big picture."

### Step 4: Lower Level VSMS

The processes listed on the high-level VSM become the VSMS in the next level down. As teams document VSMS, problem in processes will become evident and serve to prioritize where action is required.

The lower the level gets, the easier it is to pinpoint areas in need of improvement. Examples of processes within oil and gas companies that will likely show up in lower-level VSMS include:

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### Production Areas

- Painting processes on platforms
- Repetitive maintenance activities
- Lighting/bulb replacement
- Equipment rental

### Technical/Support Areas

- Management of chemicals used in wells
- New drilling opportunities in existing wells
- Procurement processes
- A/R & A/P processes
- Process/engineering change requests

Each of the above processes can be detailed enough to facilitate identification of improvement opportunities. After identifying the problem areas, it is important to prioritize them based on criticality to the company's high-level objectives to assure that limited resources are used in a way to work on those areas that have the most leverage.

It is a good idea to post the VSMS for a week or two in the area(s) where the work is actually performed to give the team an idea to think about what might have been left out before doing any further analysis. The team can write directly on the maps to record thoughts in a consistent manner and directly on the document to be used for improvement.

### **Step 5: Improvement Activities**

The areas identified for improvement can be addressed in a number of ways – either with six sigma/kaizen tools or basic project management. The key is to address them quickly to keep the improvement process moving.

### **Accept That You Will Never Be Lean**

Companies that have successfully reduced costs on a continual basis have an amazing amount of humility built into their cultures. Visit a Toyota factory and you surprisingly will not hear about how they lead the auto industry in terms of quality, productivity, market capitalization, etc.. What you will hear is how much improvement is still possible and how many problems they face every day that need attention.

When you start thinking that you are “better” than other companies because of the improvements made, you have failed. Feeling satisfied with how far you have come tends to stop the hunger for further improvement and change becomes more difficult. Satisfaction is akin to being happy with the status quo – something no company should want to happen.

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**Gregg Stocker** is an international management consultant, author and keynote speaker from Houston, TX. He has implemented change in organizations ranging in size from \$10 million to over \$300 billion, working in a variety of industries including oil & gas, instrumentation, plastics, mechanical assembly, and machining.

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In addition to consulting, Gregg has worked as Director of European Operations for a U.S. polymers company and Managing Director of a business in The Netherlands.

Among the companies he has worked with include Shell EP Europe, Schlumberger, Emerson Process Management, and Tyco Flow Control. His areas of expertise include lean, continual improvement, strategic planning, operations, and organizational/culture change.