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Science of Business Goldratt Implementation Group US

## The Theory Of Constraints Exposed

How to move from theory to practice and see results.

March 1, 2007 -- In today's competitive global economic marketplace, manufacturers are struggling to squeeze out 5% to 7% operational cost reductions. The reality is startling. If a plant is not consistently improving performance, it is in danger of closing. However, if a company is able to find a way to increase throughput with the same or less resources, it may mean the difference between continuing operations in North America or moving them to lower cost regions around the world.
Twenty years after Eliyahu Goldratt first introduced the Theory of Constraints in his book *The Goal*, the manufacturing world is again experiencing another paradigm shift in thinking. Through the synthesis of the Theory of Constraints and lean manufacturing techniques, continuous improvement efforts and ultimately, performance improvement are no longer measured over periods of years, but weeks.

When one looks at the Theory of Constraints, the underlying principle emphasizes the importance of identifying and eliminating bottlenecks (constraints) in the manufacturing process-not only to increase productivity, but as a tool for measuring and controlling the flow of materials. The only problem is how to actually identify these constraints.

However, the fundamental approach to lean manufacturing is to maximize the amount of net good parts per shift by striving for true one-piece flow. Targeting balanced flow, buffers of excess inventory between each point in the process are removed, making it immediately apparent which process is underperforming. With this knowledge, a manager can dispatch resources to address the situation, known as "go and see."

While both ideas are productive, the key to unlocking true value and performance improvement is in merging the two approaches. Maximize your "go and see" efforts by focusing resources on the true constraint; the result is a seamless flow of production that generates the highest possible return. This simple idea in theory was a nearly impossible task in reality, until now.

By taking a constraint-based approach to maximizing the flow of product through the plant, you end up with less data, but more critical, decision-enabling information directly from the plant floor. This is accomplished by limiting and prioritizing data collection and identifying the key chronic constraints that must be corrected to meet a specified throughput target. This allows plant personnel to focus their efforts on corrections that will lead to the greatest improvements in plant performance. The results are astounding.

*"Manufacturers need to be able to improve plant performance by eliminating bottlenecks one constraint at a time. By focusing directly on true constraints, manufacturing operations can significantly improve efficiency on the plant floor." -- Greg Gorbach, VP of Collaborative Manufacturing, ARC Advisory Group*

To hear more about this topic attend the IW Best Plants Conference, April 24-25, 2007 at the Indiana Convention Center & RCA Dome, Indianapolis, Indiana. The session *Igniting A Revolution... Combining Lean and the Theory of Constraints* will be held on Wednesday, April 25, 2007 at 9:10 a.m. To register for the conference and view the entire list of speakers visit www.iwbestplants.com.

Recently, the idea of synthesizing lean and the Theory of Constraints was utilized by a major Tier One automotive supplier with two goals: to provide better clarity and focus by identifying true constraints, and to spend less time collecting data and more time solving problems.

In this project, weekly kaizen events were driven by the application. By measuring the identified constraints before and after focused kaizen events, the true value of the system would soon be revealed.

Almost immediately, constraints that had not been identified after 18 months of lean initiatives on one line were now completely visible. The system proved that resources were being misdirected toward downtime issues that had no impact on throughput.

As a result, improvement efforts were directed to areas where true constraints existed, resulting in performance improvement and project acceleration. In just seven weeks, throughput increased by 6.6%. The manufacturer estimated an annual savings in overtime costs of $840,000.