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Lean Thoughts

Making Cells work for You!

Cellular layout and organization create compact, highly focused work environments that release a host of benefits, quality being among the foremost. Briefly, a work cell is a grouping of manual or machine processes that can produce a complete item or family of items. Cellular work stations are close enough together to squeeze out nearly all buffer inventories. No stockrooms, with potential percentages defective, intervene. Since products keep moving with little rest from process to process, misfits and nonconformities show up quickly while the trail is fresh. Identifying and rectifying root causes is that much easier.

The alternative to cells, dispersion of productive processes among geographically separated shops or departments, once was standard practice. That mode of operations creates a mishmash of flow paths, for example, from any of five presses in the press shop to any of five welders in welding. That simple case yields 25 possible routings, each loaded with its own set of potential quality problems. Those problems and their root causes hide among the large between-shop inventories and the sheer numbers of flow pathways. Moreover, as various shop-to-shop delays expansively stretch out total flow times, true causes of variations and nonconformities are contaminated by the large numbers of variables that stack up with the passage of time.

Cells improve product uniformity because minimal delays expose nonconformities before they can do much damage. Cells lower throughput time variation by keeping work moving with minimal queues, and therefore minimal queue-time delays. That puts clamps on high-side variation. A cell reduces process and method variation, because one process delay or failure quickly halts others; that plays up the need for well characterized processes and well defined methods with operators well trained and certified. By the same token, low tolerance in the cellular mode for delays and failures punctuate the need to upgrade process capability and reliability and to keep processes in tip-top shape, for example, employing total preventive maintenance.

Early identification of root causes—the fresh trail benefit—has been explained. Next comes attack and rectification of root causes. Cells tend to enhance that effort for two reasons. One is the high need for eliminating ripple-effect problems that accumulate with processing delays; the other is the tendency of cells to pull together multi-functional minds. In labor-intensive cells—for example, assembly-test-pack—best practice is to cross-train everyone and also to move engineers, technicians, or other specialists close to the cells they support. With operatives cross-trained and job-rotated, and with expertise close at hand, root causes get suffocating attention.

Last is the need for less documentation. Moving productive processes out of shops in favor of cells cuts out assorted documentation for scheduling, dispatching, labor and scrap reporting, pick lists, move tickets, costing, and lot inspections—and the many potential errors that go with such administrative processing.

Cashing the Dividend

In the late 1970s and early 1980s, planeloads of Western manufacturing people went to Japan on study missions. Cellular processing, a foreign idea at the time, was prominent among their observations. They saw, and often did not fully understand. The simplicity and fast throughput was apparent. The tendency to make use of smaller, simpler equipment, so that each cell could have its own, was harder to understand.

Where Lean Thoughts can become Reality

"Unless you try to do something beyond what you have already mastered, you will never grow."

Ronald. E. Osborn

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Lean Thoughts

LEAN IMPLEMENTATION … Starting Place

Lean has certainly come a long way from the days of Henry Ford and the Model T. Taiichi Ohno added the supermarket pull system, which allowed Lean to be applied to value streams producing a variety of products. Thus cars could be manufactured with options, without significantly sacrificing productivity or flow. Over the years, organizations have applied Lean in a wide variety of industries, each requiring a slightly different application of the Lean Principles 1 . Lean is being applied in banking, national defense contracting, shipbuilding, job shops, hospitals, and almost any other business application one can think of. 1 The Lean Principles were identified by Womack and Jones in Lean Thinking and are based on the operating philosophy behind the Toyota Production System.

The industry in which Lean is successfully being applied is not the only way in which this powerful business concept has evolved. Even within traditional manufacturing industries, Lean is being applied to nonmanufacturing tasks such as accounting, administration, product development, and the supply chain. These days an organization planning to embark on an enterprise wide Lean transformation may be overwhelmed by all of the different applications available, and most are left wondering where to start.

The Starting Place

Although it may seem that the majority of the problems in your organization exist elsewhere, it is *essential* that all Lean transformations start in the value streams where value is added. For manufacturing firms, this means that the starting place is Lean Manufacturing. Project management firms, however, should start with Lean Project Management. To find where value is added, simply ask, “What does our customer pay us to do?” Much of the waste that occurs in other areas of the business is in fact caused in our value adding value streams. For example, accounting frequently conducts thousands of wasteful transactions to track inventory because there is no control over that inventory on the manufacturing floor. Thus, the transactions are necessary until Lean Manufacturing makes them wasteful by putting control over inventory accumulation. Level loading production will create a smoother demand profile for the supply chain, thereby improving supplier performance without actually improving supplier capability.

Lean in the Office

Many organizations add value to their customers in an office environment. Their value adding value streams involve business processes, processing queues (either paper inboxes or electronic ones). For these organizations, the starting place for an enterprise wide is with Office Mapping (value stream mapping for the office). From there, these organizations will continue to apply the Lean Principles of Flow and Pull as they drive out waste, and reduce processing times. However, not all administrative value streams add value. For most organizations, their administrative (or office) value streams enable the creation of value in other value streams. Although it may frequently seem that problems within these enabling value streams are hindering value creation more than enabling it, we must resist the urge to begin our Lean transformations here. Consider the advantages of reducing the order processing time for a manufacturing firm. Orders flow quickly through the sales force to order entry, and arrive in the scheduling department only a couple of hours after they are placed. In a Lean Enterprise, this is an excellent advantage as the orders can then be level loaded and quickly produced with a short lead time. The customer receives confirmation and an accurate expected ship date scheduled in the near future. However, without Lean embedded in the value adding value stream, the orders will not likely get processed in a timely fashion and the customer cannot be given an accurate ship date. This is not to say that there is not much waste in the office, or that there are not big improvements to be made there. However, without first applying Lean in the value adding value streams, the improvements in the office will have little impact to the customer.

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