



LeanService



An S-Business Case Study at Hartzell Propeller's Service Center



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*by Alfred W. Ryan, Jr.
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Familiarity with LeanService usually comes in the form of waste reduction, queue reduction, and improved process flow. What about the relationship between Lean and customer service? Unlike some Lean initiatives, Hartzell Propeller's Service Center started off its Lean journey with a clear customer service focus. They realized that improvements needed to be made in order to accomplish their goal of meeting customers' needs. LeanService is a process improvement methodology for all services operations. It is neither an invention nor a strategy, but is actually the result of an evolution spanning over 50 years that began with Japan's reconstruction after World War II. The fundamental principle of Lean is the improvement of processes by removing waste from the value stream. Lean improvement results coupled with real, tangible customer benefits seamlessly blend together the words "lean" and "customer service focus."



For nearly a century, Hartzell Propeller Inc. (HPI) has been a leader in the aviation market. In fact, given that HPI supplied propellers to the Wright Brothers, it boasts a unique place in history. It was company founder Robert Hartzell, at the encouragement of neighbor Orville Wright, who began developing the best aircraft propellers he could craft. Opening their doors in 1917 and growing as the aviation industry exploded with the demands of war, commercial airlines, and private aircraft, HPI appeared to be on a journey that had an unlimited future. However, following World War II, the introduction of the jet propulsion engine had a dramatic impact on the future of the propeller business. It was not a sudden change, but one that started showing its impact in the late 1990s, as illustrated in the following quote from HPI management:

“The regional airline business played a significant part of our overall business plan in the 1980s and 1990s. As these customers began to move from propeller-driven aircraft to jet aircraft, it was clear that we needed to focus our

business on the corporate and general aviation market.”

The focus on corporate and general aviation was true for both the manufacturing and the services side of the business. In fact, the challenge was greater on the services side because of the business mix of the Hartzell Service Center. The Service Center’s business came from two distinct sectors: airlines using propeller-driven commuter craft and the private/commercial aircraft owners.

In 2001, approximately 60 percent of the Service Center’s work involved commuter airline props where cycle time was not critical for the customer, as this market utilized the Hartzell exchange business rather than parking their aircraft while their propeller was being serviced. As the commuter airline business transitioned from prop to jet aircraft, a major part of Hartzell’s Service Center customer base was eroding rapidly. The requirements of the private commercial sector were very different from the commuter airline group. Private owners typically did not want to utilize exchange propellers, but rather wanted their own propeller over-

lean service: hartzell propeller case study

hauled and returned in a reasonable time frame.

Hartzell's cycle time was over 30 days, while their competition's was two weeks or less—raising additional concerns. Although Hartzell's price was acceptable in most cases and their quality was highly regarded, Hartzell's cycle time was not competitive and overshadowed their price and quality advantages. Large amounts of work in progress (WIP), high queue times, unbalanced flow, and value stream deficiencies contributed to the Service Center lagging the competition in cycle time. The general aviation business was not positioned to cover the losses of the commuter sector without gaining additional business. The reality of a changing market finally had reached the point where strategic decisions had to be made or the Hartzell Service Center would face drastic and very negative changes.



HPI's president and the Service Center manager first assessed their business position and how they would develop a competitive edge. The answer in their eyes was evident; they had to become more efficient in the overhaul/repair areas, reducing turnaround time by at least 50 percent in order to match their competition.

The Hartzell Propeller factory was familiar with and had been utilizing Lean tools in effort to be more competitive in the production of new propellers. Although Hartzell had a strong market presence, they realized that in order to maintain their market leader position, they had to become more efficient by reducing costs and cycle times while maintaining their quality record. Our firm had been brought in to assist Hartzell in implementing Lean in their production operations. We had worked with a cross-functional Hartzell team to Lean out the aluminum hub cell, reducing floor space by 30 percent, touch time by 30 percent, and total lead time by 50 percent. The learning from this endeavor had allowed Hartzell to organically continue their continuous improvement initiative, building on a prior transition to cellular manufacturing.

In October of 2001, Hartzell management realized that if the Hartzell Propeller Service Center was to continue as a viable part of their organization, changes would have to be made to reduce cycle time and meet customer expectations. Management felt that Lean tools could be applied to the Service Center, but were

uncertain if Lean would work in an unpredictable overhaul vs. a standardized production environment. And the prevailing question remained as to whether it was even possible to reduce the turnaround time on prop overhauls by more than 50 percent.

In order to answer their questions and provide direction, we conducted a Lean Technical Assessment of the Service Center in November of 2001. The assessment involved a step-by-step review of the entire prop value stream, including touch and queue times for all handoffs. The assessment identified that with the current one-shift operation and very limited second shift, it was possible to reduce cycle time to 14 days, and even to less than 10 days, expanding the partial second shift. The assessment identified immediate opportunities for Lean to address, including queue times, redundant activities, unorganized work areas, and inadequate tools and technology.

Based on the technical assessment results, the Hartzell Propeller Service Center and MainStream embarked on a two-year Cycle Reduction Program in January of 2002. The primary goal was to transform the Service Center from a batch and queue overhaul system to a Lean state meeting the cycle time objectives of two weeks or less with reduced WIP, reduced costs, and predictable flow. Special consideration was given to maintaining production levels during the transition since management required the Service Center not to increase employment and to continue to support its current business level.

During the two-year transformation, the customer service, overhaul, and office functions were reviewed from a value stream perspective in order to eliminate waste and implement

improvement solutions. A significant portion of the cycle time involved customer service functions at the front end of the process, such as scheduling, receiving the prop, and providing overhaul work documents, as well as closing out the process and invoicing the customer. Approximately 15 percent of the total cycle time involved customer service functions, offering an opportunity to apply MainStream's business process improvement program that encompasses Lean principles and tools for the office/administrative processes.

Over the 24-month transformation period, each area of the Service Center was scrutinized for Lean opportunities. This involved a detailed review of the tear-down function, initial customer contact inquiring about service, and continuing through shipping and invoicing. The Service Center found that much of their cycle time was actually queue time due to the outsourcing of many of the operations required, both to the Hartzell factory and to outside vendors. Agreements were reached with the Hartzell factory for maximum cycle times, routings were altered in order to reduce the number of trips to the factory, and some operations were brought into the Service Center in order to keep the operations under their control.

A steering team was formed, consisting of Hartzell Propeller president Jim Brown III, Service Center director Jeff Slattery, Service Center operations supervisor Craig Barhorst, and Hartzell Propeller director of special processes Burt Mattice, to communicate the need for change in the workforce at project initiation. The cultural transformation of the Service Center was a major factor in their success. As processes were Leaned, acceptance of change was addressed continu-

ally, resulting in increased buy-in by all employees. Improvements became visible to the other areas of the operation. After the first couple of Lean events, other members of the Service Center team started asking when their area would be Leaned and began identifying possible improvements prior to Lean events.

Although continuous improvement had been a part of the Service Center, exceptional gains were realized during the two-year program. Most important, the 14-calendar-day cycle time was obtained along with a 15 percent reduction of workforce (through attrition and redeployment), and floor space was reduced by 10 percent while maintaining the same production level. The marketing program has proven successful in replacing most of the commuter airline business with new private/commercial prop overhauls to maintain the same production level.

Within 18 months of the program, management realized that the 14-calendar-day cycle time goal was achievable. They asked themselves how they could move down the value stream where Lean improvements could make existing, new, and potential customers take notice. The welcome challenge was to determine how to make the success and savings visible to the customer base in a real way. The Service Center knew that claiming a two-week turnaround would require proof and action. Taking benefits they realized from the Lean improvements, in mid-2004, the Service Center began offering customers a 14-day cycle time guarantee on all prop overhauls, or additional discounts would be issued. Delivering on this kind of promise takes a lot of confidence in one's ability to perform, as

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illustrated in this quote from HPI management:

"After considerable research with customers, we found that customers were looking for three deliverables from their overhaul provider—quality, competitive pricing, and consistent cycle times of two weeks or less. You must have the ability to do what you say you will do, when you say you will do it. Our marketing program with a cycle time guarantee was the advantage that was used to attract customers and prove that we in fact had improved in this area."

This customer-focused endeavor proved to be very successful by increasing employee enthusiasm and confidence that additional work could be brought in against any competition. At the end of the two-year Lean program, the cycle time guarantee provided the marketing group, often forgotten in the Lean journey, with a golden opportunity to promote a real competitive advantage. The Lean initiative positioned the Hartzell Service Center as a formidable competitor in the general aviation market. After reaching this point in the Lean improvement process, some would see the journey as complete. However, HPI realizes that the competitive advantage they are building will last only as long as Lean is embraced. HPI's sights already are set on the next level of customer service. Nearly 100 years later and with a renewed market outlook, today's Hartzell Propeller would make company founder Robert Hartzell proud. ▼

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