

Streamlining the Kemper™ Production Line to Enhance Efficiencies

Lean Principles Shorten LeadTimes by 40%

SPM™ Oil & Gas

A Caterpillar Company

Case Study

Customers experience faster deliveries from streamlined and optimized production flow.

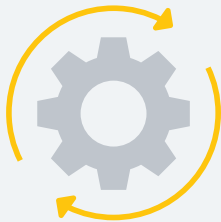
AT A GLANCE

- Streamlined and optimized production flow of Kemper Hammer Unions
- Employed lean manufacturing principles to increase efficiency while maintaining quality
- Shortened lead times by 40% for greater responsiveness



Fort Worth, TX

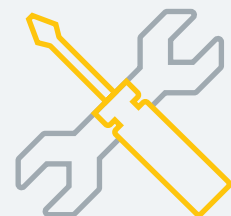
THE FACTS



90%
EFFICIENCY WITH
MAXIMUM QUALITY



40%
SHORTER
LEAD TIMES



52%
REDUCTION
IN ASSEMBLY HOURS

CASE STUDY

THE CHALLENGE

SPM Oil & Gas' Kemper™ product line consists of a broad range of flow control products and replacement expendable parts for the oil and gas industry. With more than 1,500 hammer union active assembly or component part numbers manufactured between two facilities, lead times were four to eight weeks.

SPM Oil & Gas sought to dramatically increase its manufacturing efficiency for Kemper products to shorten lead times while also maintaining high quality standards.

THE APPROACH

SPM Oil & Gas embarked on this ambitious goal by consolidating its Kemper manufacturing operations into one facility in Fort Worth, Texas. Employing lean principles, SPM Oil & Gas eliminated half of the equipment used to make Hammer Unions, which helped to streamline and optimize production flow.

Hammer Unions are comprised of three components, and SPM Oil & Gas implemented a lean manufacturing supermarket concept that enabled all three components to arrive at the assembly process at the same time – rather than each component arriving as it was finished. This allowed team members to complete one part at one work center without moving from machine to machine enabling the team to reduce lead times as well as work-in-process (WIP).

SPM Oil & Gas used single-minute exchange of die (SMED) processes to minimize the time needed for equipment changeovers, performing as many changeover activities as possible while equipment was running to streamline remaining steps. Using dual spindles and having one operator running two machines at once further increased efficiency.

SPM Oil & Gas also reduced and right-sized production order quantities to allow team members to machine, paint and assemble smaller batch sizes often within just two days. Team members used visual management techniques and a heijunka board to clearly see production requirements for each machine, resulting in leveled production and hourly performance tracking across the department. Visual management was also essential for organizing and simplifying the manufacturing floor.

In addition to employing lean methodologies, Hammer Union design improvements not only positively impacted insert life and geometry but also efficiency. SPM Oil & Gas also installed new high-pressure, low-volume paint guns, which not only reduced paint usage but also VOC emissions.

THE RESULTS

While streamlining all aspects of Hammer Union manufacturing was challenging, the SPM Oil & Gas team collaborated to identify and implement successful strategies. By employing lean principles and introducing engineered enhancements, SPM Oil & Gas shortened Hammer Union production lead times by 40% – reducing the lead time to three to five weeks from the original four to eight. The changes also enabled SPM Oil & Gas to decrease the time required to make stock assemblies by 52% and reduced paint usage by 50%, further improving efficiencies.

Today, each manufacturing cell has the capability to run at more than 90% efficiency while delivering quality components.

THE SOLUTION

SPM Oil & Gas has employed lean manufacturing principles for more than a decade, which allows it to provide superior products and service solutions that enable oil and gas companies to increase efficiencies and lower their total cost of ownership. As a Caterpillar company, SPM Oil & Gas offers the full range of Kemper flow control products as well as SPM well service and stimulation pumps, SPM replacement expendable parts and supports engineered repair services. SPM Oil & Gas also offers the broadest pressure pumping equipment range in the industry. Pressure control solutions include API valves and frac trees, and managed pressure drilling equipment including chokes, separators and containment equipment.

SPM™ Edge Services supports operators with a three-pronged approach that includes global access to local engineering experts, engineered repairs with highly skilled aftermarket support, and industry-leading digital empowerment tools for SPM Oil & Gas and other OEM equipment, all within a three-hour trip from any North American basin.

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