CUMMINS, INC.

3D Printing Integration for Aftermarket No-Source Part Order Fulfillment Process

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Cummins Inc., a $20.4B Fortune 500 company that designs, manufactures, distributes, and services diesel and alternative fuel engines and related components, recently adding electrified power systems to its product lineup. The Cummins New & ReCon Parts (NRP) division supports the aftermarket supply chain for over 200,000 current and legacy parts. The company is committed to supplying aftermarket parts for upwards of 30-40 years for many types of equipment. As new engine models are introduced, demand for legacy parts decreases. This decrease in demand leaves Cummins with greater supplier risk in the form of suppliers discontinuing production for parts that clients still need. Once a legacy part no longer has a supplier, it becomes "no-source." Fulfilling no-source parts orders can be a time-consuming and complex process that inhibits Cummins' ability to provide customers with world-class service.

3D printing or additive manufacturing is an emerging way of producing parts that does not require complex tooling. 3D printing is suitable for low-volume production and presents interesting possibilities for resolving no-source cases. The Tauber team was tasked with integrating additive manufacturing into the cross-functional no-source order fulfillment process. They began by analyzing the current process flow and performance through multiple rounds of stakeholder interviews. Based on information gathered from the interviews, value stream maps were constructed to uncover process optimization opportunities. The team also built a cost model that quantified approximately $1M in annual indirect costs incurred in resolving no-source cases with conventional suppliers.

The next phase of the project involved building the necessary operations to support 3D printing no-source parts. A new sequence of decision-making and internal infrastructure was designed by the Tauber team and will be used to pilot rapid 3D printed end-use parts delivery within the aftermarket. This process will enable engineering, purchasing, and marketing resources to "fast track" no-source order resolution for qualified parts, thereby improving lead time and customer satisfaction. The new process will also reduce labor hours, the number of required information systems, and the number of decision points and cross-functional handoffs embedded in the process. Because of the team's work, NRP's business case for additively manufactured parts was revised to include reduced indirect costs to offset potentially higher per unit direct costs in additive manufacturing.