

## **2 Lean Auto OEM Executive Summary**

Original equipment manufacturers (OEMs) in the automotive industry gain a competitive advantage over their competitors by improving key performance indicators (KPI). The five major KPIs monitored by OEMs are cost, quality, time, flexibility, and productivity [6]. This document examines operations management tools that can be incorporated by managers in automotive manufacturing to improve KPIs and, therefore, improve the overall performance of their operations.

Three operations management tools are examined, namely, process design, lean operations, and maintenance management. Process design analyzed trends in factory design, equipment usage, and work flow. Lean operations focused on policies and practices such as 5S, Kanban systems, total quality management (TQM), and just in time production systems (JIT). Maintenance management examined the three most common maintenance management models, namely, reliability centered maintenance (RCM), condition-based maintenance (CBM), and total productive maintenance (TPM).

The findings highlight the optimal practices, among the many practices of the three operations management tools examined in this paper, that most contribute to improvements in flexibility, productivity, cost, and quality.

From a process design perspective, it is recommended that automotive plants should adopt flexible layouts with short sublines in their assembly shops. This enables ergonomic work flows and facilitates JIT operations.

Instilling a culture of Kaizen (Continuous Improvement) is the key element to gaining the most benefits from the lean operations adopted in automotive manufacturing. JIT is the lean operation principle that most contributes to KPI improvements.

As for maintenance management, achieving maintenance excellence is required for automotive manufacturing operations to improve KPIs and sustain a competitive advantage in the highly competitive auto market. A hybrid of the three maintenance management models presented in this paper is found to be the optimal maintenance strategy that should be adopted by automotive manufacturers to achieve maintenance excellence.