

Best-in-Class Benchmark Study

Consumer Package Goods (CPG) Manufacturing Operations

Executive Summary

Today's enterprise places the highest level of importance on the quest for operational efficiencies. Many enterprises face only capacity constraints – the more they make, the more they can sell. Other enterprises with fairly constant demand focus on reducing labor, inventory and capital costs. Manufacturers achieve these objectives through operational performance initiatives such as Lean Manufacturing, Six-Sigma, TPM and TQM. Leading manufacturers meet goals by identifying and measuring key performance indicators (KPIs) within and across facilities on an ongoing basis.

From January 2007 to June 2007, Informance studied 220 consumer package goods (CPG) manufacturing lines worldwide. Researchers used The Informance Enterprise Manufacturing Intelligence Suite (including patented analytics), and IMPACT Advisory Services to collect data, derive insight and discover correlations to operational success of tactical and strategic actions.

Key Findings

- Best-in-class manufacturers achieve 1.8x overall equipment effectiveness (OEE) over laggard manufacturers.
- Laggard manufacturers experience minor stops (stops with a duration of 10 minutes or less) 2.1 times more frequently than best-in-class manufacturers.
- Best-in-class manufacturers exhibit an average changeover time of 17 minutes, as compared to laggard manufacturers at an average of 50 minutes.

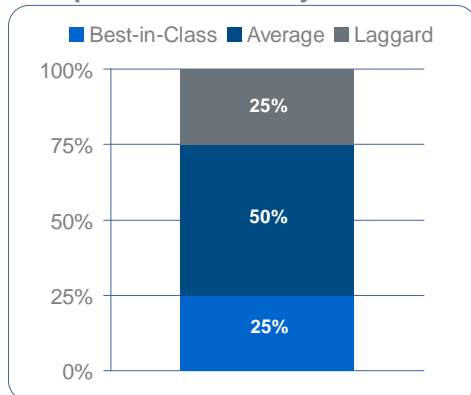
Cause & Effect: Minor Stops & Overall Equipment Effectiveness (OEE)

Best-in-class, average and laggard CPG manufacturers average 70%, 54.3% and 38.4% OEE respectively. A key factor for the success of best-in-class performers is the relatively low number of minor stops per hour. Laggard performers experience more than twice as many minor stops per hour as their best-in-class counterparts do.

Definition of Best-in-Class

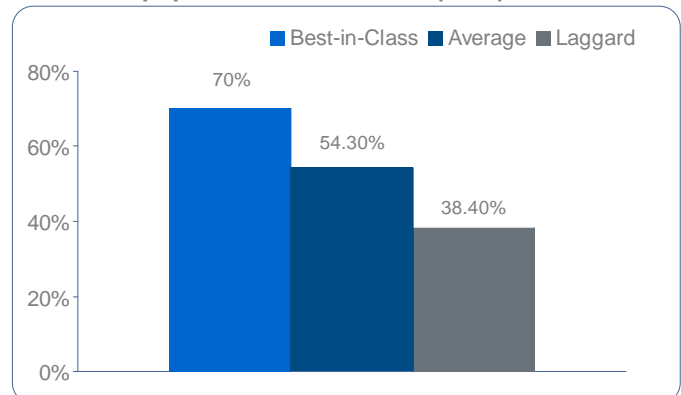
To determine a manufacturer's competitive position, we use overall equipment effectiveness (OEE) as the top indicator of performance. We rank each manufacturer by OEE and view all other key performance indicators (KPIs) in context of this order. The average of the top 25% of each KPI denotes best-in-class performance for that KPI, the average of the middle 50th percentile represents average performance, and the average of the bottom 25th percentile represents laggard performance.

Competitive Position by KPI Rank



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Overall Equipment Effectiveness (OEE)



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Big Six Losses

For this study, researchers categorized downtime in standard capacity loss buckets, known as the “Big Six”, popular among most TPM practitioners. Shutdown losses include preventative maintenance, breaks and lunches, training exercises, and other miscellaneous production stops. Operational downtime includes adjustments or related equipment losses that are not direct failures during scheduled run time. Changeover downtime contains capacity lost during changes in material, equipment, or product. Equipment failures incorporate the time lost when equipment unexpectedly becomes dysfunctional or inoperable. Process failures include the loss from changes in defective raw materials, operating errors, leaks or spills, and supply and demand of key packaging material. Production adjustment losses include time spent on changes in supply and demand that requires adjustments to production plans and demand of main product material.

Top of the Big Six

The largest gaps between best-in-class performers and all others combined (average and laggard performers) fall under operational downtime and process failures. Defined above, operational downtime includes both major and minor downtime (stops with a duration of 5 minutes and less). Together, average and laggard CPG manufacturers experience operational downtime and process failures at a rate of 3.7 times that of best-in-class performers.

Changeover Analysis

Changeover is a major contributor to lost capacity, based on the sizeable gap in changeover performance between best-in-class and laggard manufacturers. Best-in-class manufacturers have reduced changeover to less than 5% of overall capacity, while laggards hover just below 10%.

Recommendations

The characteristics that differentiate best-in-class enterprises from average and laggard performers are visibility of key metrics, more frequent measurement of those metrics, and an understanding of the financial impacts of change — positive or negative. Average and laggard performers should increase understanding and visibility of losses, frequently measure the impact of process change on KPIs, and institute processes to respond quickly to KPIs that deviate from acceptable levels.

Specific recommendations for average and laggard performers:

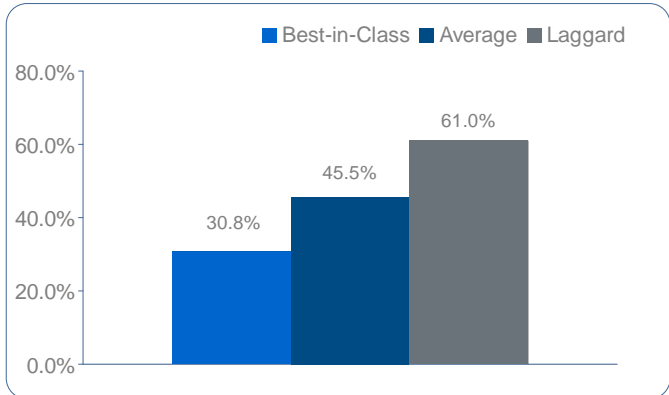
- Reduce equipment failures
- Reduce operational losses
- Eliminate production adjustments

Best-in-class enterprises have achieved a strong competitive position with structured improvement initiatives. However, they attain even greater performance and gains when the granularity of information increases (from days to hours, hours to minutes, and minutes to “real time”).

Specific recommendations for best-in-class performers:

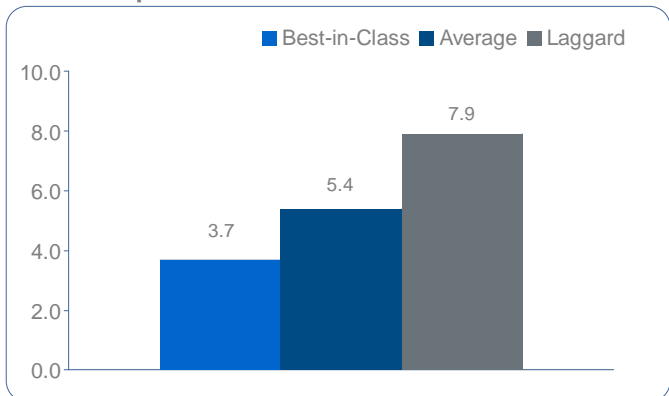
- Identify losses better with higher fidelity
- Reduce shutdown losses
- Continue focus on reducing changeover
- Reduce process failures

Total Big Six Losses



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Minor Stops Per Hour



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Total Big Six Losses

	Best-in-Class	Laggards	Gap
Shutdown	4.37%	10.18%	5.81
Operational DT	4.36%	6.82%	2.46
Changeover	4.35%	9.20%	4.85
Equipment Failures	9.37%	17%	7.63
Process Failures	2.32%	3.84%	1.52
Production Adjustments	.17%	2.89%	2.72

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