Best-in-Class Benchmark Study
Pharmaceutical Manufacturing Operations

Executive Summary

Manufacturing enterprises gain competitive advantages when they focus on operational excellence initiatives like Six Sigma, Lean Manufacturing, Total Productive Maintenance and other continuous improvement methods. They set goals to unlock capacity and reduce inventory and labor costs, while increasing productivity without additional capital investment. Leading manufacturers meet these goals by identifying and measuring key performance indicators (KPIs) within and across facilities on an ongoing basis.

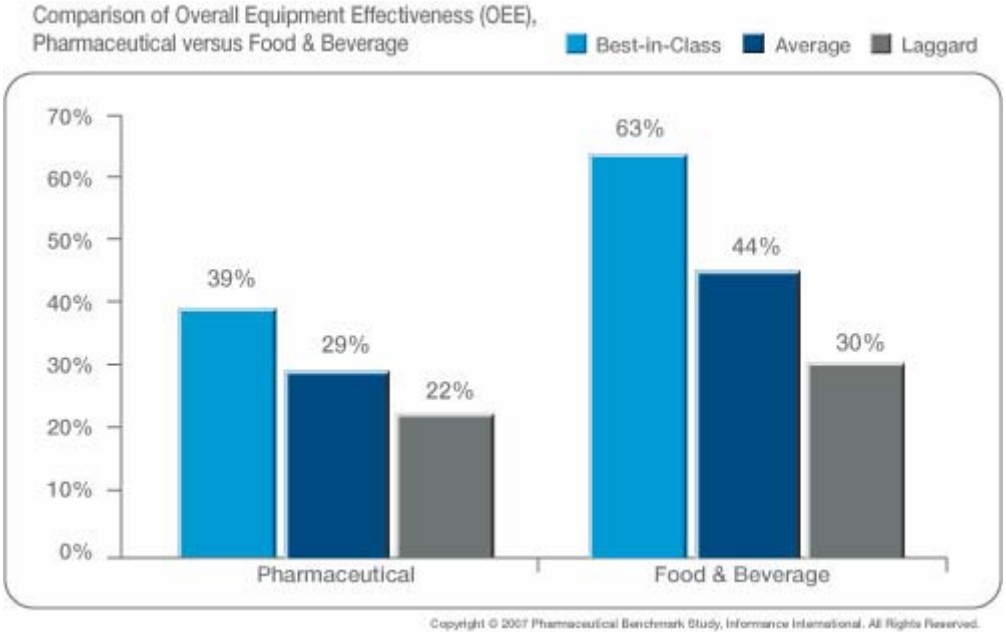
From January, 2007 to June 2007, Informance studied 50 pharmaceutical manufacturing lines worldwide. Researchers used The Informance Enterprise Manufacturing Intelligence Suite (including patented analytics), and IMPACT Advisory Services to collect data, derive insight and discover correlations to operational success of tactical and strategic actions.

Key Findings

- Best-in-class pharmaceutical manufacturers exhibit 87% more availability than laggard performers
- Best-in-class performers reduce loss due to changeover at a factor 4 times greater than laggards
- Equipment failure is a significant contributor to lost capacity; however best-in-class pharmaceutical manufacturers attribute equipment failure at 7% of capacity, versus laggards that experience a staggering 26% of capacity lost due to equipment failure.

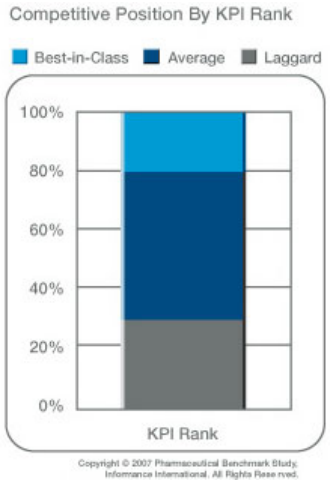
Overall Equipment Effectiveness (OEE)

OEE in the pharmaceutical industry is significantly lower than other manufacturing verticals. Figure 1 illustrates the difference in OEE between pharmaceutical manufacturers and their counterparts in the food and beverage manufacturing industry. Further analysis shows that availability is the primary reason pharmaceutical OEE lags behind other industries.



Definition of Best-in-Class

To determine an organization's competitive position, we rank each key performance indicator from each organization from best score to worst score The top 20th percentile represents best-in-class organizations, the middle 50th percentile represents average, and the bottom 30th percentile represents laggards.

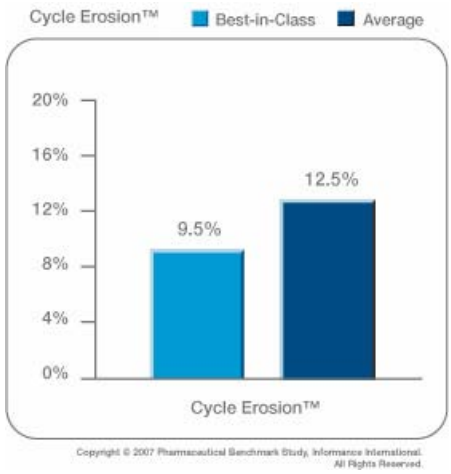


Cycle Erosion™

Cycle Erosion™ is performance loss from minor stops, hesitations, reduced speed and operator fatigue. Best-in-class pharmaceutical manufacturers experience 9.5% Cycle Erosion (Figure 3) while the remainder of the industry experience Cycle Erosion up to 12.5%. By comparison, Best in class Food and Beverage companies experience only 3.2% Cycle Erosion.

Big Six Losses

The study categorized downtime in standard capacity loss buckets, known as the "Big Six", which are popular with 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. The production adjustment losses include time spent on changes in supply and demand that required adjustments to production plans and demand of main product material.



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 quickly react to KPIs that deviate from acceptable levels. Best-in-class organizations have achieved a strong competitive position with structured improvement initiatives. However, they attain even greater gains when the granularity of information increases (from days to hours, hours to minutes, and minutes to "real time"). Finally, KPI roll-ups and metrics reporting propagated throughout the organization quickly enables a much more agile and proactive enterprise.