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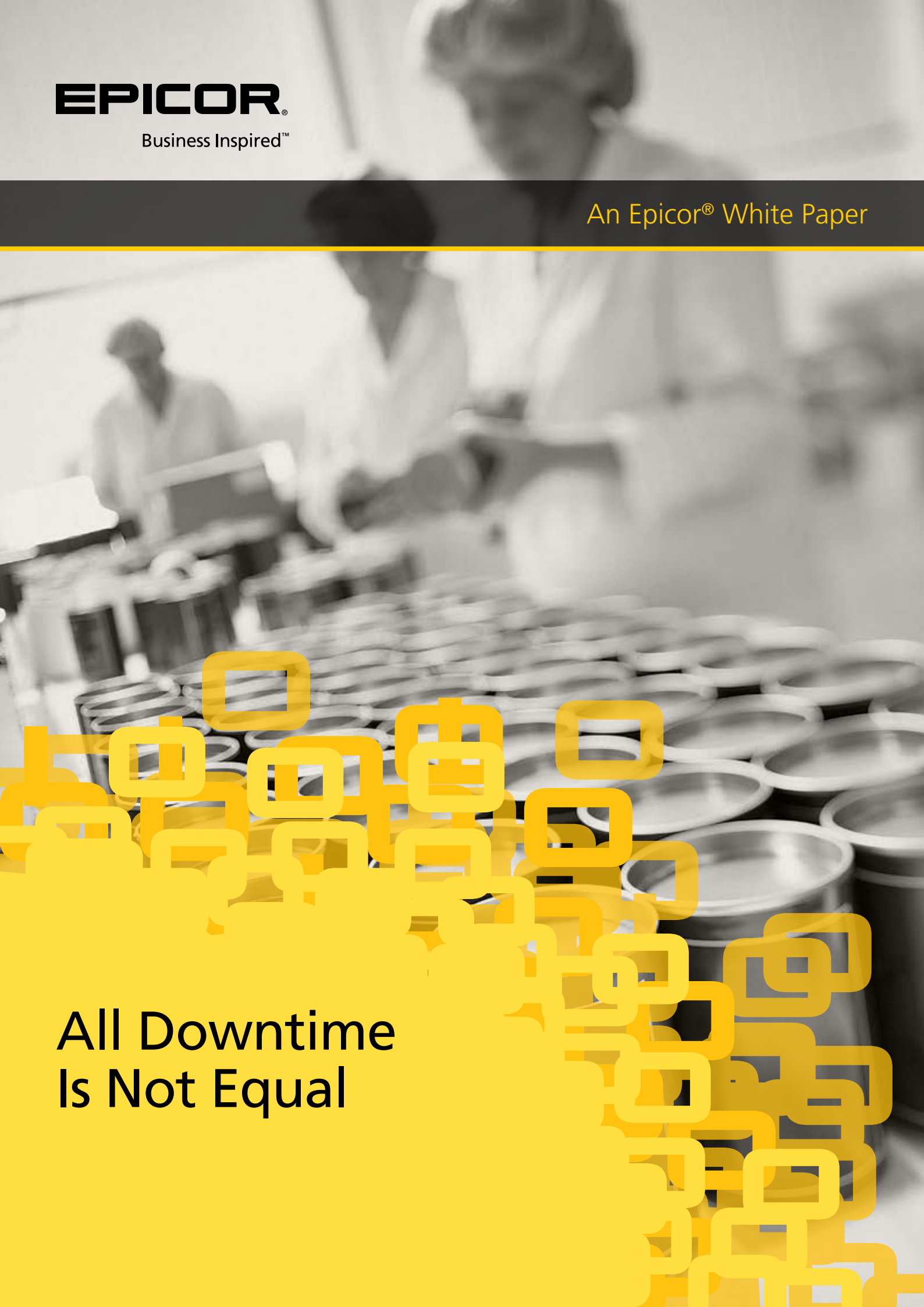
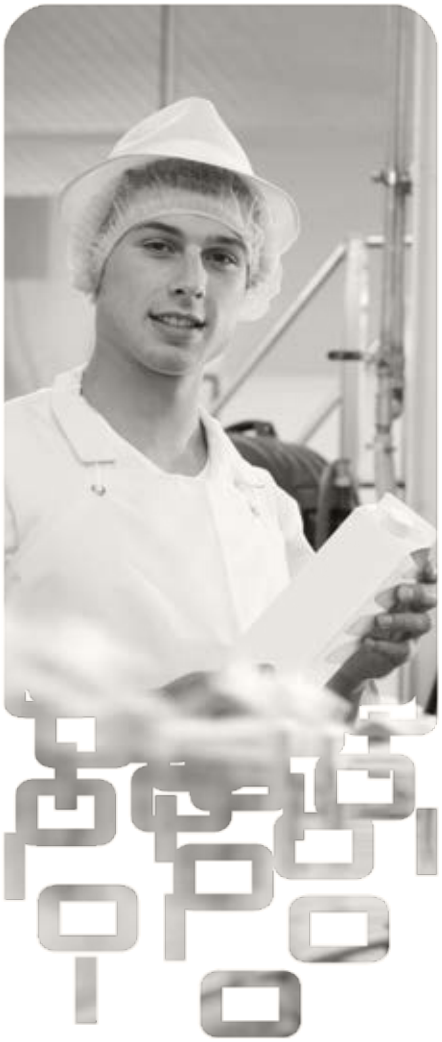
An Epicor® White Paper



All Downtime Is Not Equal



"To set priorities for an effective improvement initiative, it is imperative to examine the likelihood of success for each loss category."

Introduction

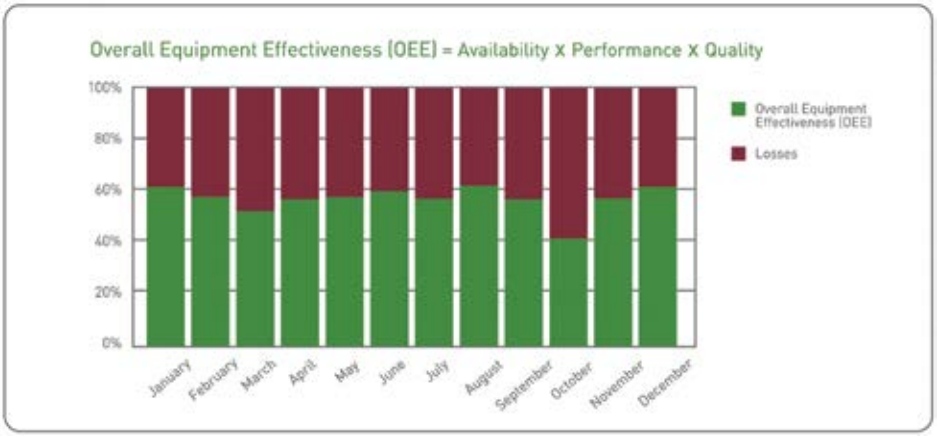
Manufacturers tend to focus on OEE as a fundamental indicator of performance. Since many businesses are capacity constrained—producing more equals more revenue—bottom line benefits present strong justification to maximize OEE improvement initiatives. In reality, every percentage point of OEE improvement can translate to value contribution in areas like cost of goods sold (COGS), inventory, gross profit, revenue, and capital expense and asset savings.

Finding and eliminating anything that inhibits performance, like downtime, will help businesses improve capacity and OEE. Ultimately, understanding the financial impact of downtime and loss categories helps operations professionals establish improvement priorities in context with the overall performance of the company.

Measuring Performance

Manufacturers today have started using an important metric for measuring and monitoring performance in factories. The metric is known as overall equipment effectiveness, OEE. This metric combines process availability, machine performance, and the output impact of quality in the form of rejected product. This metric provides a universal yardstick to measure operations performance. Businesses can realize tremendous gains when they focus on the largest inhibitors of performance.

In a typical initiative to improve overall equipment effectiveness, the starting point is to establish ideal production rates. Ideal capacity, based on planned production, represents 100%. Overall equipment effectiveness (OEE) is the measurement of the final result. It is the cumulative result of the elements that can detract from "perfect production": availability, performance and quality.

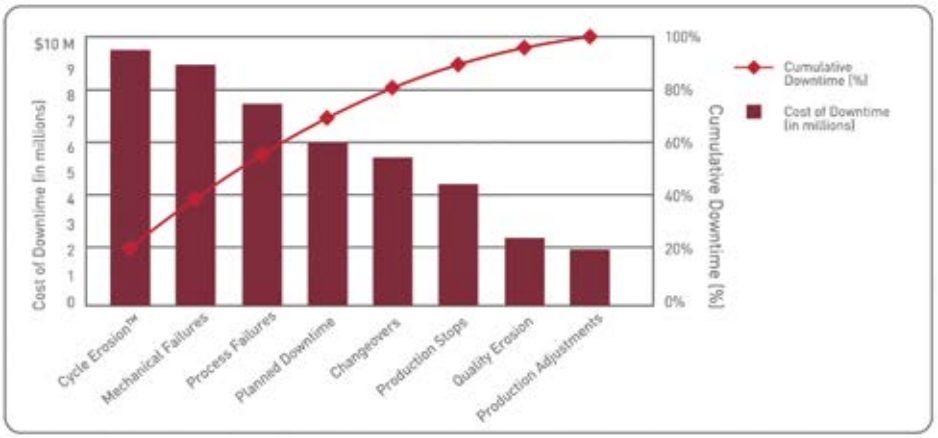


A Methodology to Establish Priorities

Performance analysis can reveal the sources of process loss from an OEE perspective. However, it is important to realize that not all downtime is equal. Applying cost information with the same analysis may reveal an entirely different perspective—the cost of downtime. A cost of downtime analysis can be used to establish priorities with a financial context. Moreover, considering the probability of success in different loss categories will prepare operations professionals to achieve sustainable improvements.

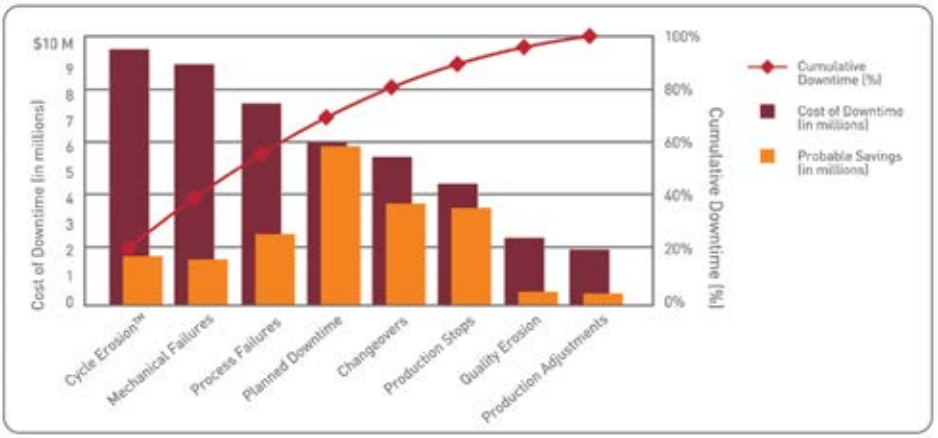
Operations excellence professionals generally focus on lean practices to establish production priorities. When they consider cost factors as part of the evaluation, they have the ability to focus on those areas that have the highest impact on the overall performance of the company. To quantify the financial impact of each category, it is necessary to understand material and labor cost components. Labor-intensive operations have a greater risk of downtime throughout the entire manufacturing process. Meanwhile, operations with high material costs usually experience significant material loss near the end of the production line. Waste and material loss due to rework may be more significant than the cost of labor.

A typical OEE analysis includes loss as a result of quality, but does not quantify the cost of that loss. From an OEE perspective, quality loss may seem insignificant. However, when cost enters the equation, it can be quite significant.



Probability of Success

Some problems are easier and cost less to solve than others. To set priorities for an effective improvement initiative, it is imperative to examine the likelihood of success for each loss category. A probability of success study in context with manufacturing operations measures the effort required for change, the cost for that effort, and the anticipated gains. Ultimately, benefits can be described in terms of percentage of reduction of loss, and the financial impact to the business



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Operational Downtime

Efforts to reduce operational downtime routinely have a high probability of success. It is possible to achieve a 50-75% reduction with as much as a 75% probability of success. Sometimes it is possible to eliminate an entire loss category with a simple change in work practice. For example, many companies have discovered that it can be very effective to stagger break and lunch intervals; others have eliminated the same loss category entirely by replacing equipment.

Reducing Minor Stops

It is also reasonable to expect a high level of success when attacking minor stops: 50-75% reduction with up to a 50% chance of success. However, remain cautious because minor stops can reappear. To prevent recurrence, leading manufacturers continuously use root cause analysis and make equipment adjustments as necessary.

Catastrophic Downtime

Issues involving machinery often represent the lowest probability of success. They may also represent the highest probability of sustained improvement. Often, replacing machinery becomes avoidable by leveraging root cause analysis to correct problems.

The Cost of Quality

Quality loss has a double impact: material and labor. A standard overall equipment effectiveness equation categorizes a production reject as a lost opportunity for production. This has an impact on capacity. Therefore, when taking cost into consideration, it is important to consider the cost of both material and labor. In a typical packaging operation, the range of quality variation is 1-5% of total production. Consider this: the cost of material can be four times the cost of labor. From a pure cost perspective, a 1% first-pass reject rate translates to 4% loss. We can vary the analysis to reflect production improvement, cost reduction and probability of success. Note that loss from changeover, product loss and quality appear to be priorities.

Exploring Tradeoffs

Over the long term, there may be a higher probability of success to reduce changeover downtime by 50% than to reduce minor stops. When downtime from changeovers has been reduced (usually process changes or machine adjustments), it is typically sustainable permanently or for very long periods. Immediate and long-term objectives also influence decisions about improvement efforts.

By reducing cycle time, manufacturers gain "sprint capacity", and build momentum in the improvement initiative. This momentum helps to build confidence among operators and line workers, as they begin to see that they have a positive impact on the improvement program. Buy-in facilitates more elaborate or difficult improvement tasks or projects.

Conclusion

The greatest opportunities are those with the greatest cost savings or largest anticipated production increases combined with the greatest probability of success. The cost attributed to downtime is a common denominator for management and production teams. Establishing appropriate priorities, solving problems, and planning activities for manufacturing improvement and effective kaizen is possible using a careful analysis that includes cost factors and the probability of success. Plant management always strives to connect economic metrics to the plant floor. Each team member can understand his financial impact when the cost of downtime is available in clear and simple terms.

About Epicor

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