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Automatic Roll Splicing: Improving OEE with Each Roll Change

A quick read on the benefits of automatic roll splicing and increasing your Overall Equipment Effectiveness (OEE)

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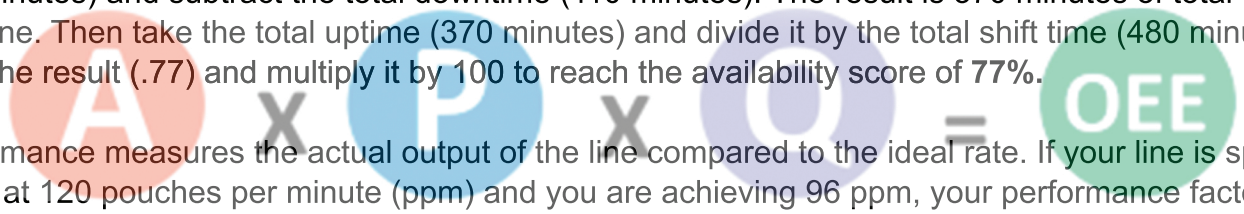
Overall Equipment Effectiveness (OEE) is one of the most important topics in packaging today. Improving your OEE will help you significantly increase your packaging line's output. Overall Equipment Effectiveness (OEE) is the benchmark used to measure the efficiency of a packaging line. The widely recognized formula for OEE is: Availability (A) multiplied by Performance (P) multiplied by Quality (Q).

Great. But what does that actually mean? How do you calculate it for your packaging application? Let's dive right in.

Availability represents the uptime of your line after all planned and unplanned production stops (including breaks, lunch, maintenance, planned stops, and unplanned stops) have been accounted for. Typical availability for an 8 hour shift might be 77% when lunch, 2 breaks, and roll change downtime are accounted for (110 minutes). To calculate availability, take the total hours of a shift (8 hours equals 480 minutes) and subtract the total downtime (110 minutes). The result is 370 minutes of total uptime of your line. Then take the total uptime (370 minutes) and divide it by the total shift time (480 minutes). Take the result (.77) and multiply it by 100 to reach the availability score of **77%.**



Performance measures the actual output of the line compared to the ideal rate. If your line is specified to run at 120 pouches per minute (ppm) and you are achieving 96 ppm, your performance factor is 96 divided by 120, or **80%.**

The Quality measurement accounts for defects produced, good products output count or total product output count. If your total output is 96 ppm, and your machine ran for an 8 hour shift (480 minutes) with 110 minutes of downtime (lunch, 2 breaks, and roll change downtime) 35,520 total line output pouches would be produced (480 – 110 = 370; 370 x 96 = 35,520) . If 500 pouches are rejected, the quality measurement is calculated by taking the total line production (35,520), subtract the rejected pouches (500). Then divide the result (35,020) by total line output (35,520) and the result is .9859 or **98.6%**

In this case the Overall Equipment Effectiveness score would be .77 x .80 x .986 = 60.7%

Automatic splicing eliminates the downtime resulting from roll changes (50 minutes in the above example), allows faster operation, and reduces waste. If we recalculate the OEE assuming the elimination of roll change downtime and the improved quality due to fewer pouches rejected around the splice (250 instead of 500 rejected pouches), our result is:

Availability: **420 / 480 = 87.5%**

Performance: **remains the same**

Quality: **35,270 / 35,520 = 99.3%**

The final OEE calculation is .875 x .80 x .993 = 69.5% which is 9 points of OEE improvement, or a 15% improvement!

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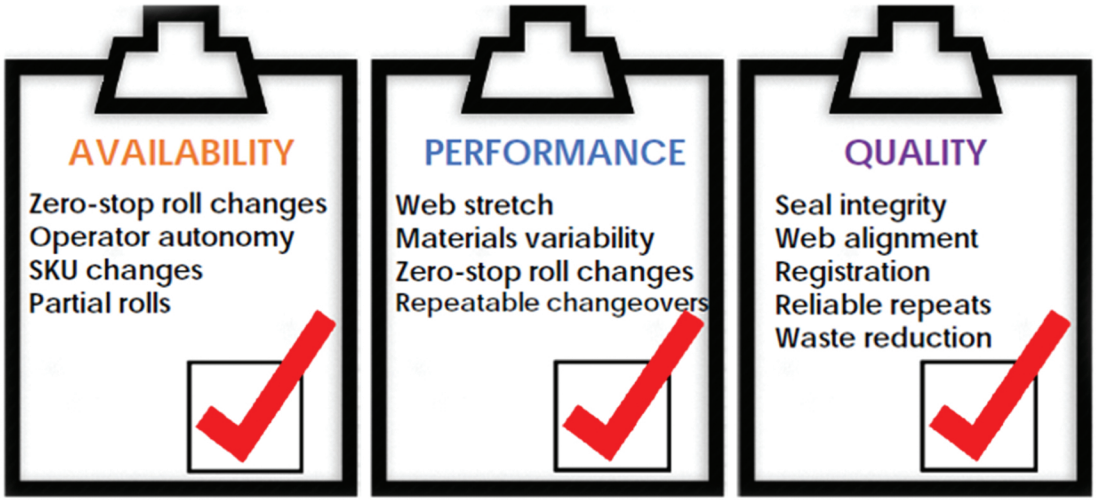
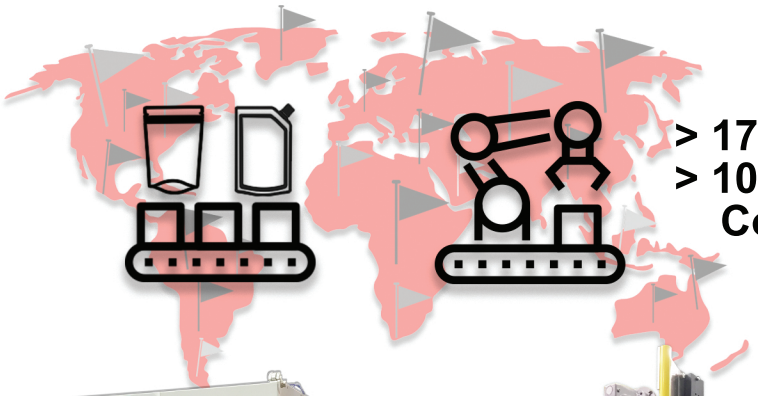
Butler Automatic Improves Overall Factory Output





> 17,000 systems installed worldwide
> 100s of OEM's and Packaging & Converting applications

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Improve Your OEE
Contact Butler Today

We hope this paper has described how much output and overall equipment effectiveness Automatic Roll Splicing solutions can deliver to your packaging application.

Interested in learning more? Talk to an expert. Here's how you can reach us:

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Considering the ROI of a Butler Automatic Splicer?
Click here to check out our calculator.

http://www.butlerautomatic.com/autosplicing-roi-calculator

OUTPUT BOOST
& Automatic Splicer ROI

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	(Customer Input)	
# Shifts per day	3	Shifts
Hours per shift	8	Hours
Days per week	6	Days
Weeks per year	48	Weeks
Minutes to run 1 roll	90	Minutes
Minutes of Downtime During Roll Change	4	Minutes
Roll changes per day	16	Changes
Line Speed (Packages per Minute)	60	Packs/Minute
Approximate Contribution Margin per Package	$0.10	per Package
Downtime Per Year WITHOUT Automatic Splicing	307	Hours per Year
Line OUTPUT BOOST Per Year	1,105,920	More Packages
Potential Margin Increase Per Year	$110,592.00	Additional Margin
Average Price for a Butler SP1 Automatic Splicer	$67,000.00	
Payback (in months)	7.27	*Months*