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Need a better way to show the contributions of a reliability effort to your bottom line?

Most people in the reliability profession probably have heard the saying that the *maintenance of today is the capacity assurance of tomorrow*
. Many in our field would agree that business trends already have taken the industry to that day of the future. Our teams no longer maintain the status quo. What we do is strive to assure our assets' capacity by constantly optimizing equipment availability to make the product when it is scheduled to be made. We work hard to make sure that machines don't generate scrap. And we ensure that the equipment runs as close to the expected productions speeds as possible. For today's capacity assurance managers, overall equipment effectiveness (OEE) works very well as the key performance indicator of our success.

Our business leaders understand the importance of the reliability effort, too. But, they also understand the need to control manufacturing overhead. As a result, they must clearly see how a reliability effort contributes to the bottom line. What's the best way to make this type of business case?

Keep it simple

A reliability effort does contribute to an increase in the return on assets. The most direct and easy-to-understand impact resides in the expenses section of the income statement. There, it is apparent that the greatest part of the reliability financial benefit lies in the conversion costs reduction.

Let's think in simple terms. We expect a machine to be available for a certain period of time to make a specific number of product units. When the hard work of our maintenance teams leads to higher machine reliability, the company spends less time making those expected units of product. The machine is operational and the operators are standing by. Their labor costs in dollars per unit already are accounted for.

DESIGNATOR	DESCRIPTION
N	Number of Hours Equipment Was Scheduled To Run
X	Planned Number of Units of Product
UT1	Equipment Physical Availability (Uptime) Without Uptime Improvement
UT2	Equipment Physical Availability (Uptime) With Uptime Improvement
VL1	Direct Labor Costs Per Unit of Product Without Uptime Improvement
VL2	Direct Labor Costs Per Unit of Product With Uptime Improvement
V	All Other Variable Costs Per Unit of Production Besides Material and Labor
TLC1	Total Direct Labor Costs Without Uptime Improvement
TLC2	Total Direct Labor Costs With Uptime Improvement
W	Hourly Wage
CCU1	Conversion Costs Per Unit of Product Without Uptime Improvement
CCU2	Conversion Costs Per Unit of Product With Uptime Improvement
△	Conversion Costs Per Unit of Product Reduction Due To Uptime Improvement

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> An equipment uptime change causes a variance in conversion costs per product unit. That variance is directly proportional to labor costs per unit. The proportionally factor equals to the ratio between that uptime change (UT2-UT1) and the (2-UT1) value that reflects operating time adjustment necessary to compensate for equipment downtime.

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Machine, Area or Plant	% Uptime		Labor $/Unit	Total Units	Total Conversion Costs Variance Due To Uptime Change	
	Previous Time Period	New Time Period			Per Unit	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
A	80	85	$12.00	5,000,000	$0.50	$2,500,000
B	50	60	$30.00	3,000,000	$2.00	$6,000,000
C	90	95	$40.00	2,000,000	$1.82	$3,636,364
D	95	98	$7.00	12,000,000	$0.20	$2,400,000
E	95	98	$20.00	11,000,000	$0.57	$6,285,714
G	95	90	$15.00	50,000,000	-$0.71	-$35,714,286
H	88	80	$26.00	9,000,000	-$1.86	-$16,714,286
K	90	92	$10.00	22,000	$0.18	$4,000
L	60	62	$10.00	22,000	$0.14	$3,143
M	70	72	$10.00	22,000	$0.15	$3,385

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