



Productivity Improvement Through Performance Management

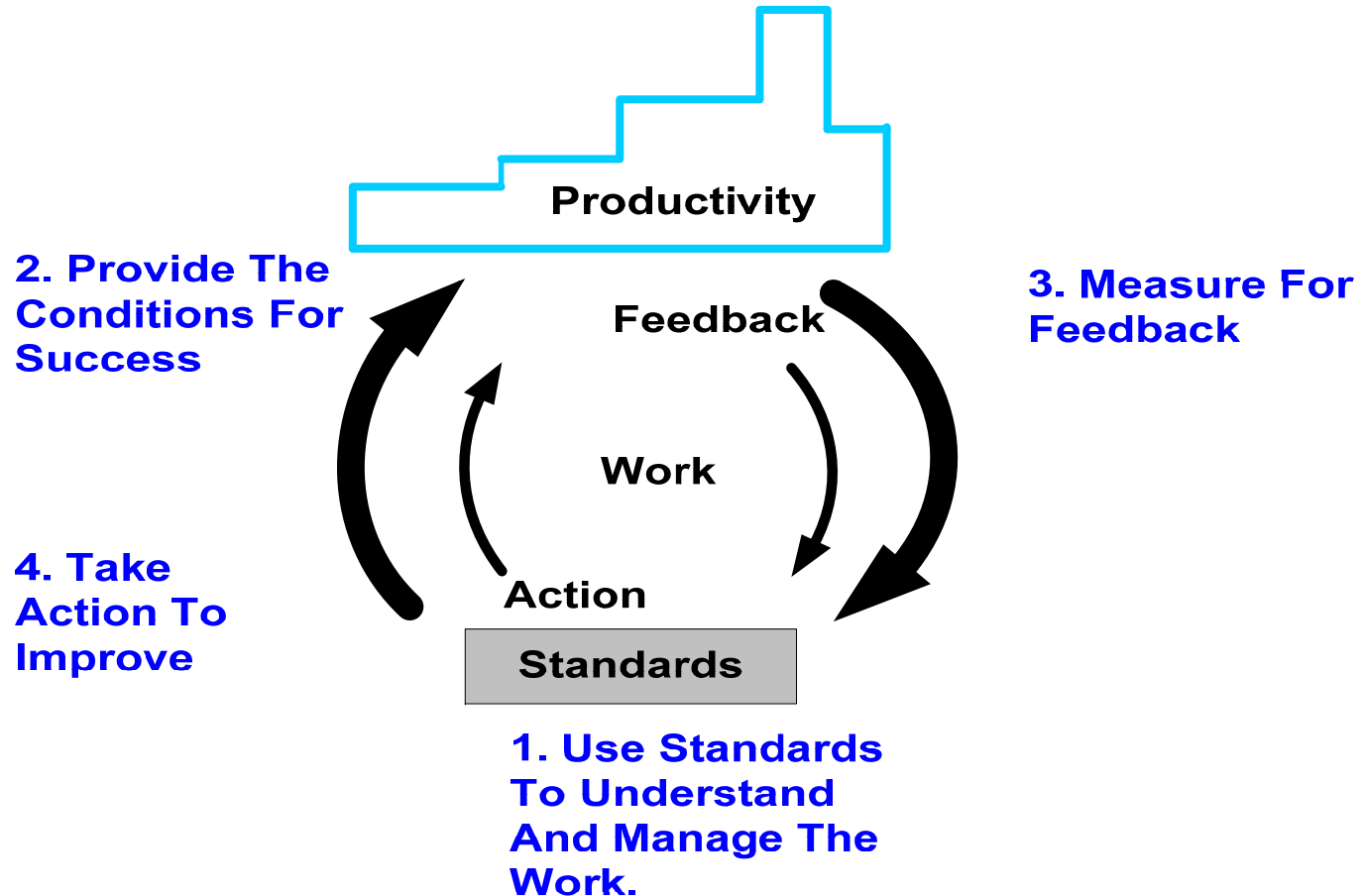
- Dave Gregory – Director Industrial Engineering – Maple Leaf Consumer Foods
- Brian Stephens – Senior Industrial Engineer – Maple Leaf Consumer Foods



Performance Management : A Key Role For Plant Management

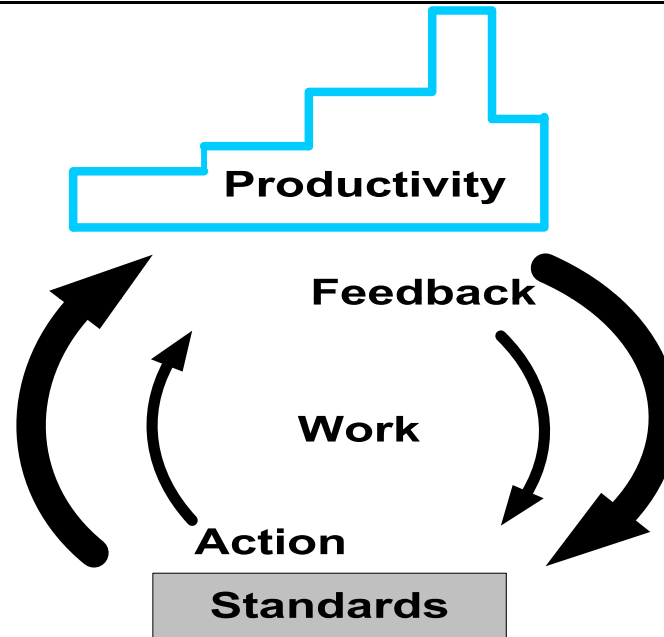
Shop Floor performance management is an approach to ensure the effective utilization of people, process and equipment. The role of Industrial Engineering and plant management is to achieve and maintain gains from improvement opportunities.

Performance Management : Maynard Performance Management Model



Maynard performance management model

Maynard Performance Management Model - Standards



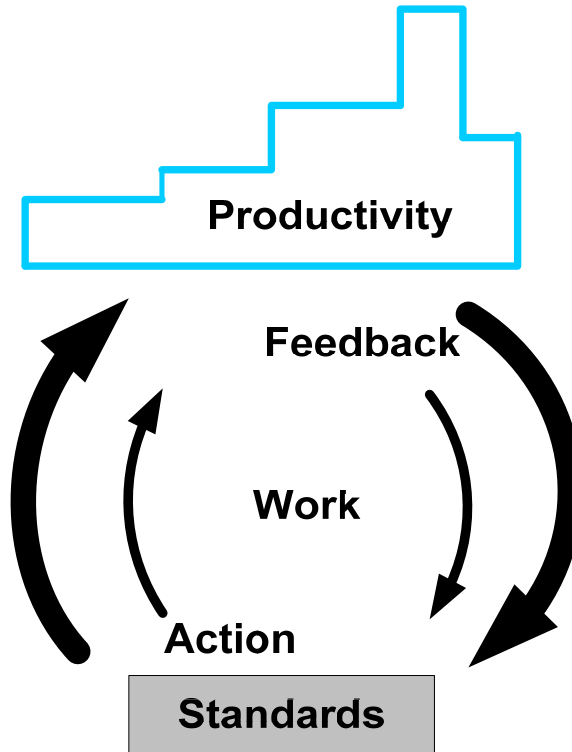
1. Use Standards To Understand And Manage The Work.

- Optimize, standardize and document methods and procedure
- Set objective goals to measure performance and give feedback

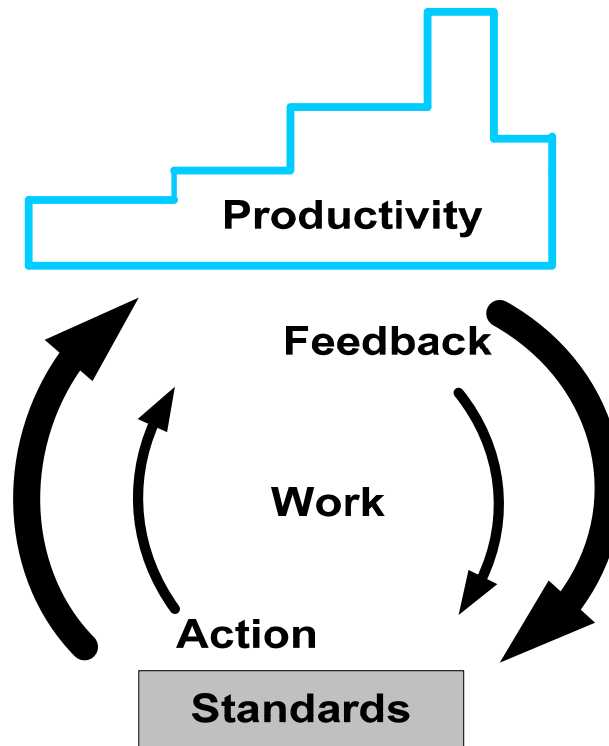
Maynard Performance Management Model – Conditions For Success

2. Provide The Conditions For success

- Understanding critical success measures
- Training
- Resources
- Motivation



Maynard Performance Management Model – Measure For Feedback



3. Measure For Feedback

- Progress toward goals and conformance to time standards
- Overall effectiveness of a work group

Maynard Performance Management Model – Measure For Feedback

THIS YR Line Efficiency Monitoring

Week: 50

Shift: Day Shift
 Production Line: Slicing Line

Day: 5 Thursday

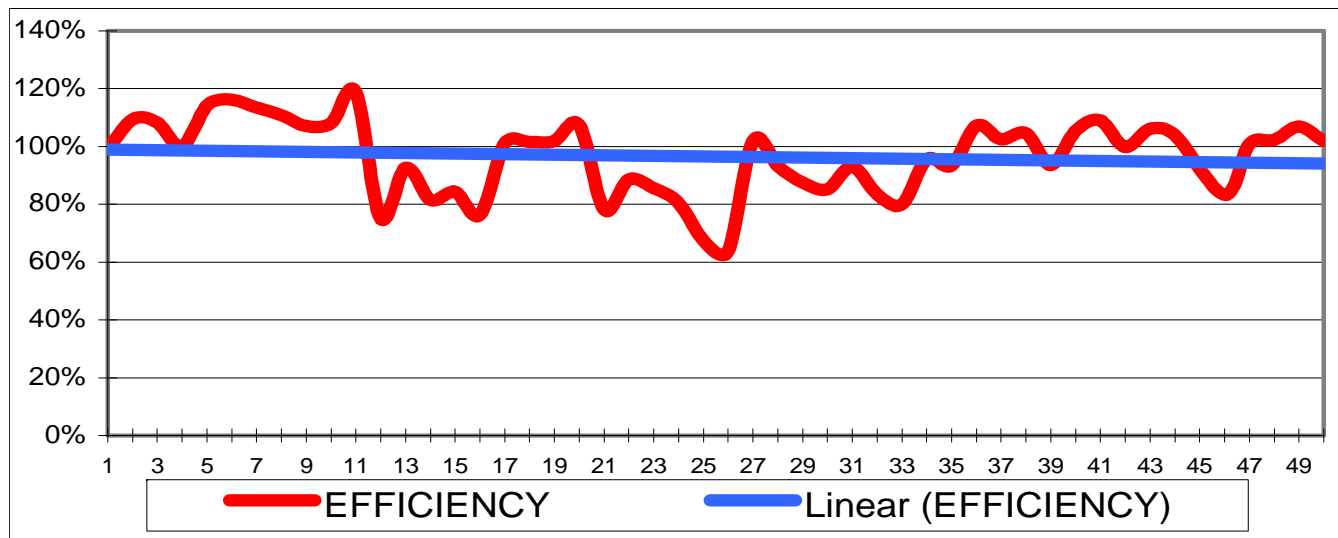
Product#	Product Description	Std. Ctn./Hr.	Weight Per Carton	Crew Size	Std Crew Size	≡	Total Production Run Time					Net Time (Hours)	Mech. Down Time (Hours)	Prod'n Delays (Hours)	Actual Cartons Produced	Expected Cartons Produced	Earned Eff. Incl. D.T. actual staff	Comments	
							Total Elapsed Time			Chg over Time (Hours)	Breaks (Hours)								
							Start Time	Stop Time	Time (Hours)										
	HONEY HAM	290	4.63	8	8	D	7:00 AM	8:23 AM	1.38	0.05	0.00	1.33	0.22	0	393	387	102%		
	MAPLE HAM	292	4.63	8	8	D	8:23 AM	9:23 AM	1.00	0.03	0.00	0.80	0.1	0	259	235	110%		
	MAC & CHEESE	290	4.63	8	8	D	9:23 AM	1:34 PM	4.18	0.18	0.63	3.37	0.68	0	1099	976	113%		
	LUNCHEON	297	4.63	8	8	D	1:34 PM	3:12 PM	1.63	0.13	0.30	1.37	0.58	0	370	407	91%		
		Summary																	
		Total Production Time							8.20 Hours						Cartons Produced	Cartons Expected	Average Efficiency		
		Total Breaks & Changeover							1.32 Hours		16.1%								
		Total Mechanical Downtime							1.58 Hours		19.3%		1	Day Shift	2121	2005	105.8%		
		Total Production Delays							0.00 Hours		0.0%								
		Total Productive Time							5.30 Hours		64.6%		2	Afternoon Shift					
													OVERALL		2121	2005	105.8%		

Maynard Performance Management Model – Measure For Feedback

THIS YR Line Efficiency Monitoring

Line: Slicing Line
Year to Date Summary

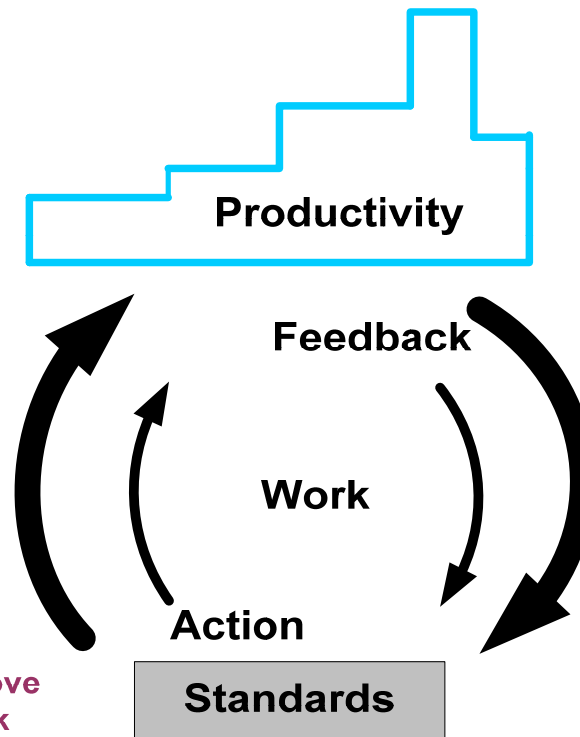
Efficiency
Days Shift



Maynard Performance Management Model – Take Action To Improve

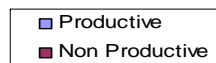
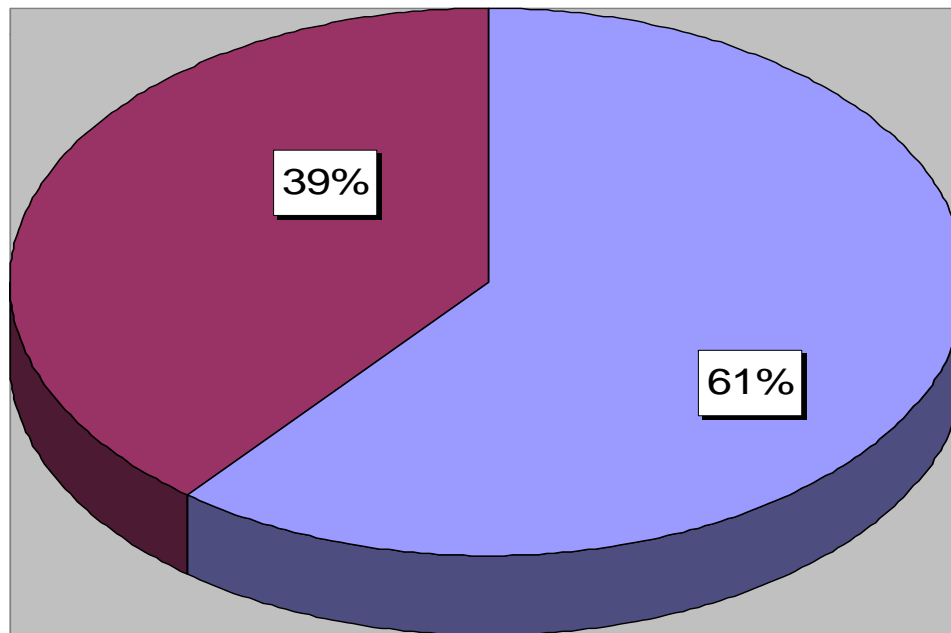
4. Take Action To Improve

Take action to improve
-Recognize feedback and take corrective action
-Analyze and improve



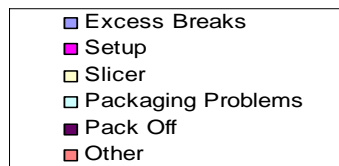
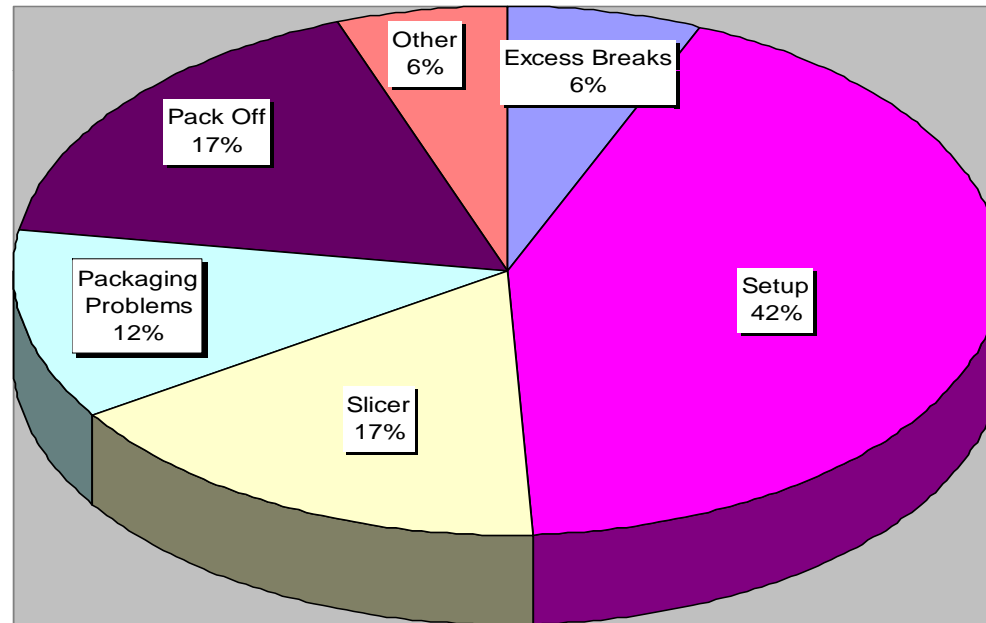
Maynard Performance Management Model – Take Action To Improve

PRODUCTIVE VS NON PRODUCTIVE SLICING LINE



Maynard Performance Management Model – Take Action To Improve

MACHINE DOWNTIME SLICING LINE





Labour Standards, Productivity Improvement & Capacity

Brian Stephens

- Engineered Labour Standards
- Use Work Measurement Techniques To Drive Productivity Improvements
- Capacity Analysis Using Throughput Data



Work Measurement & Productivity Improvement

Engineered Labour Study

Simplified Steps

- 1 Determine current line positions and existing staffing levels
- 2 Establish current best practices or methods used by position
- 3 Time study elements of job position rating performance levels
- 4 Apply fatigues and frequencies to establish labour standard position by position
- 5 Conduct a line balance exercise and work redistribution as required
- 6 Determine maximum equipment parameters based on manufacturers specifications
- 7 Establish control position for existing operation (man and equipment analysis)
- 8 Determine utilization of all positions to see if further opportunities exist
- 9 Rebalance and modify standards as required work with shop floor management
- 10 Calculate required line staffing and control hours per 100 kg
- 11 Establish Allowances (Standard - contractual obligations)
(Indirect - crew activities on average shift)
(Auxilliary - shared line service & overtime line duties)
- 12 Determine operating labour standard in kg / 100 hr

Work Measurement & Productivity Improvement

Bag Sealer Line

Time Study Summary : Operation #1 Strip Nugget

	Description	Observed Minute	Frequency	Fatigue	Standard Minute
<u>Present Method</u>					
1	Obtain Rack	0.3500	1/40	18.0%	0.01033
2	Piece to Table	0.1200	1	5.5%	0.12660
3	Obtain Knife from Table	0.0900	1	3.5%	0.09315
4	Strip Net	0.0300	1	6.0%	0.03180
5	Cut into Halves	0.0120	1	4.5%	0.01254
6	Knife Aside to table	0.0850	1	3.5%	0.08798
7	Align Half to Bag Infeed	0.0400	2	5.5%	0.08440
8	Hone Knife	0.2000	1/30	7.5%	0.00717
9	Rack Aside	0.2500	1/40	18.0%	0.00738
Total for Operation					0.46133

<u>Improved Method</u>					
1	Eliminated				
2	Piece to Table	0.0800	1	5.5%	0.08440
3	Obtain Knife from Scabbard	0.0350	1	3.5%	0.03623
4	Strip Net	0.0300	1	6.0%	0.03180
5	Cut into Halves	0.0120	1	4.5%	0.01254
6	Knife Aside to Scabbard	0.0500	1	3.5%	0.05175
7	Align Half to Bag Infeed	0.0550	1	5.5%	0.05803
8	Hone Knife	0.2000	1/30	7.5%	0.00717
9	Eliminated				
Total for Operation					0.28191

Methods Improvement

Operations 1 & 9 eliminated by Service man locate racks to line	Percent Eliminated
Simplify operation #2 by moving racks closer to line	33.3%
Operations 3 & 6 improved by providing Scabbard	8.6%
Improve methods for Operation #7	31.3%
Overall Improvement	38.9%

Work Measurement & Productivity Improvement

Bag Sealer Line

Allowance Calculation :

Line Operators ▶ 6 Employees x 480.0 Min. = 2880.0 Min.
 Number of Shifts 1 6 Shifts per week

Standard Allowances

	Coffee AM	15.0 Min.	Days			
	Afternoon Coffee	15.0 Min.				
	2 Washroom	20.0	10.0 Min			
<hr/>						
Total	6 Employees	x	50.0 Min.	=	300.0 Min.	÷ 2274.6 Min. = 13.19%

Indirect Allowances

	3.0%	Misc. Delay	12.9 Min.			
	1	Major Changeover	15.0 Min.	15.0 Min		
		Train Allowance	Min.			
	4	Minor Change	20.0 Min.	5.0 Min		
	1	End Shift Clean	3.0 Min.	3.0 Min		
<hr/>						
Total	6 Employees	x	50.9 Min.	=	305.4 Min.	÷ 2274.6 Min. = 13.43%

Total Available Minutes/shift 2274.6 Min.

Auxillary Allowances

	AM Start Up on OT	45.0 Min.	1 People	3/4 hr		
	AM Set Up on Overtime	Min.	People	hr		
	PM Tear Down	Min.	People	min		
	Shut Down Line	Min.	People	min		
	Auxillary Sheet	720.0 Min.			4320.0 / 1/6	
<hr/>						
Total		765.0 Min.			÷ 2274.6 Min.	= 33.63%

Total - Allowances	60.25%
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Work Measurement & Productivity Improvement

LABOUR STANDARD SUMMARY Present Standard

Product Number : 018745								Date: 03/19/08	
Product Description : Bagged Product - Nugget							File No: File #10		
Department No. / Desc: xxx Packaging					Line #/Desc: Bag Seal Line #1				
Pack Size : 2000 grams		6 Bag / Carton		Carton Weight 12.0		# / Skid 60			
Operation Description	OPER	CNTL	UNIT DESC	MIN	Feet	Kilogram Per Unit	100.0% YIELD	Hrs / 100 Kilogram	Util
Strip Net from Nugget	3		Piece	0.46133		4.000	1.0000	0.064074	96.1%
Nugget to bag	1	Cntl	pkg	0.08000		2.000	1.0000	0.066667	100.0%
Bag to Platen	1		pkg	0.06750		2.000	1.0000	0.056250	84.4%
Make, Load & Label Carton	1		ctn	0.44500		12.000	1.0000	0.061806	92.7%
Machine Specifications									
Cryovac	15.0 Pack/min	1	Pack	0.06667	2	Rej	8%	0.060386	90.6%
CONTROL HOURS/100 KG:		0.066667							
TOTAL OPERATORS:		6							
PREVIOUS STD. Crew		Total Hours/ 100 Kilogram					0.40000		
Hrs		Std. Allowance					13.19%		
DATE:		Ind. Allowance					13.43%		
REASON FOR CHANGE:		Sub-Total					0.50646		
		Aux. Allowance					33.63%		
		Std. Hours/ 100 Kilogram					0.64099		
		Standard Kilogram / hour					1185		
Prepared By: Brian Stephens		Actual Kilogram / hour					1500		

Work Measurement & Productivity Improvement

LABOUR STANDARD SUMMARY Improved Method Standard

Product Number : 018745								Date: 03/19/08		
Product Description : Bagged Product - Nugget							File No: File #10			
Department No. / Desc: xxx Packaging				Line #/Desc: Bag Seal Line #1						
Pack Size : 2000 grams		6 Bag / Carton		Carton Weight		12.0		# / Skid 60		
Operation Description	OPER	CNTL	UNIT DESC	MIN	Freq	Kilogram Per Unit	100.0% YIELD	Hrs / 100 Kilogram	<i>Util</i>	
Strip Net from Nugget	2		pkg	0.28191		4.000	1.0000	0.058731	88.1%	
Nugget to bag	1	Cntl	pkg	0.08000		2.000	1.0000	0.066667	100.0%	
Bag to Platen	1		pkg	0.06750		2.000	1.0000	0.056250	84.4%	
Make, Load & Label Carton	1		ctn	0.44500		12.000	1.0000	0.061806	92.7%	
Machine Specifications										
Cryovac	15.0 Pack/min	1	Pack	0.06667	2	Rej	8%	0.060386	90.6%	
CONTROL HOURS/LB:		0.066667								
TOTAL OPERATORS:		5								
PREVIOUS STD. Crew		Total Hours/ 100 Kilogram						0.33333		
Hrs		Std. Allowance						13.19%		0.04396
DATE:		Ind. Allowance						13.43%		0.04476
REASON FOR CHANGE:		Sub-Total								0.42205
Reduction of 1 Cutter - method Improvement		Aux. Allowance						33.63%		0.11211
		Std. Hours/ 100 Kilogram								0.53416
		Standard Kilogram / hour								1185
Prepared By: Brian Stephens		Actual Kilogram / hour								1500



Work Measurement & Productivity Improvement

Bag Sealer ; Productivity Improvement

Present Standard	0.64099	Man hr/100 kg
Improved Standard	<u>0.53416</u>	Man hr/100 kg
Difference	-0.10683	Man hr/100 kg

Labour Rate
(Including Benefits) \$18.00 /hr

Productivity Improvement Benefit

.1068 man hr / 100 kg x \$18 / hr **-\$0.019**

Crew Size Reduction 1 person



Work Measurement & Productivity Improvement

Engineered Labour Study

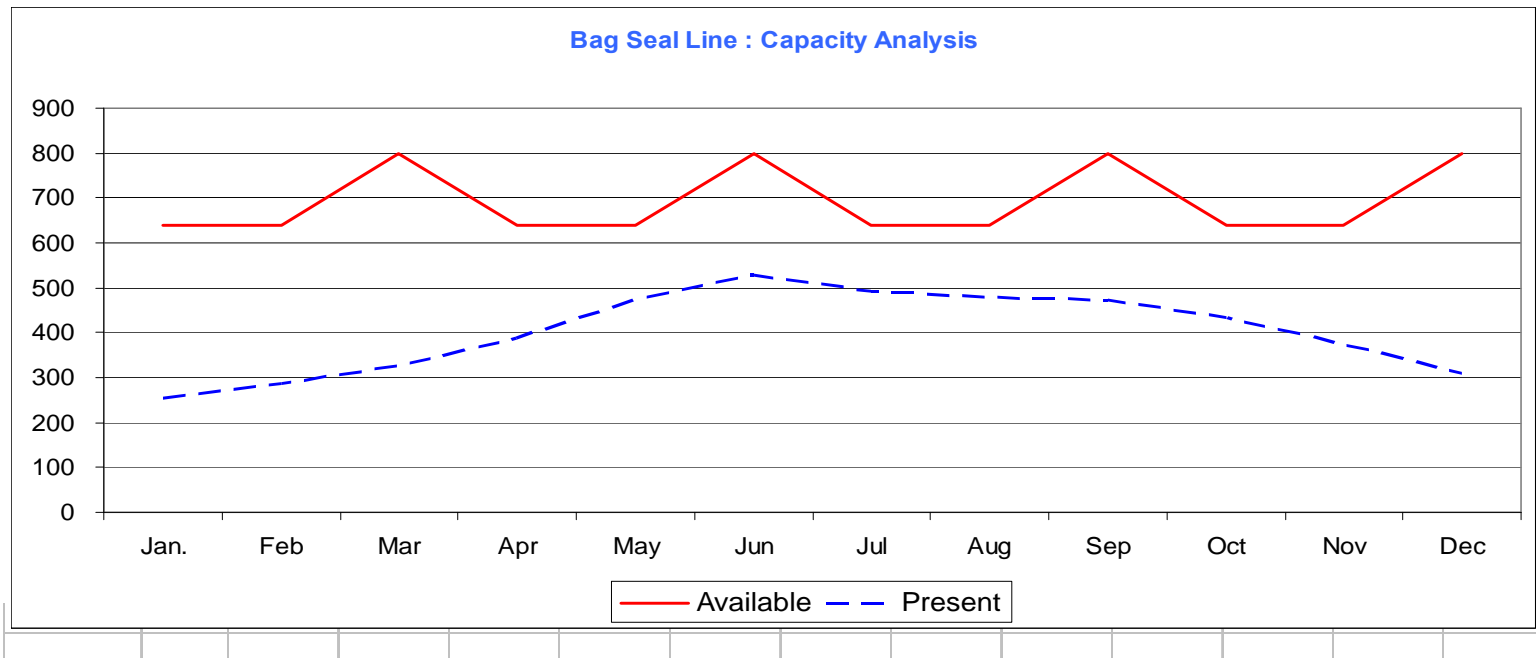
Uses for Engineered Labour Standard

- 1 Determine accurate product costs for accurate product margins
- 2 Utilized for line efficiency or performance monitoring (shift by shift)
- 3 Scheduling to establish throughput times and production schedules
- 4 Capacity analysis (for bottlenecks over year and overtime requirements)
- 5 Facility modelling models (long term equipment requirement & Marketing forecast)
- 6 Allows simulation of capital spending, changes to product and process changes
- 7 May allow for quickly estimating labour requirements for new products

Work Measurement & Productivity Improvement – Capacity Analysis

Bag Sealer Line Capacity Analysis

Period Projection(kg)	January	February	March	April	May	June	July	August	September	October	November	December	
18745	125,000	125,000	150,000	145,000	140,000	135,000	200,000	220,000	225,000	200,000	160,000	120,000	
20565	65,000	80,000	90,000	140,000	200,000	250,000	185,000	170,000	165,000	145,000	120,000	100,000	
33456	90,000	105,000	115,000	115,000	125,000	115,000	110,000	95,000	90,000	105,000	115,000	110,000	
Total	280,000	310,000	355,000	400,000	465,000	500,000	495,000	485,000	480,000	450,000	395,000	330,000	
Present Volume			4,945,000										
Production Hours	Jan.	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Available	640	640	800	640	640	800	640	640	800	640	640	800	
Present													
18745	1185	105.5	105.5	126.6	122.4	118.2	114.0	168.8	185.7	189.9	168.8	135.1	101.3
20565	750	86.7	106.7	120.0	186.7	266.7	333.3	246.7	226.7	220.0	193.3	160.0	133.3
33456	1435	62.7	73.2	80.1	80.1	87.1	80.1	76.7	66.2	62.7	73.2	80.1	76.7
Total	254.9	285.4	326.8	389.2	471.9	527.4	492.1	478.6	472.6	435.3	375.2	311.3	
Utilization	39.8%	44.6%	40.8%	60.8%	73.7%	65.9%	76.9%	74.8%	59.1%	68.0%	58.6%	38.9%	
Average Utilization	57.9%		Peak Utilization				76.9%	Growth Available		1,485,656			





Productivity Improvement Through Performance Management - Conclusion

- Define what employees need to do and provides them with the tools they need to use
 - Documented standards that identify work content and target expectations and training will establish a baseline
 - Standards can be used for capacity planning, costing, performance measurements and provide a baseline for productivity improvement measurements
- Measures performance, against objectives, to let them know how they are doing
 - Establish ways of providing feedback on performance that identifies progress toward goals
- Identify what changes are needed to take corrective action to fix whatever is broken
 - Implement work measurement techniques, establish problem solving procedures, provide coaching and best practices
 - Continuous Improvement – ongoing cycle



Productivity Improvement Through Performance Management

- Questions?