



CHOOLS CONSULTING SERVICES

Deep Dive - REPORT



Deep Dive

MOH Summary

MOH OPPORTUNITIES

SANITATION Optimisation



**Excess Labour Is
Being Used To
Complete
Sanitation**

MOH Spend Optimisation



**MOH Spend
Office Supplies
Consumables**

QUALITY Optimisation



**Opportunity to
review
Organisational
Structure of
Quality
Department**

MAINTENANCE Optimisation



**Opportunity to
reduce
Maintenance
Spend –
Maintenance &
Parts**

QUALITY



OPPORTUNITIES IN LABOUR

**Review Quality Department
Organisational Structure**

**Optimization Of The Quality Structure
Can Deliver 225M**

MAINTENANCE & RELIABILITY

LABOUR

Optimize Engineering Structure

73 M

SPARES MANAGEMENT

Spares localization drive

Opportunity 60M

SPARES MANAGEMENT

Reconditioning program

Opportunity 40M

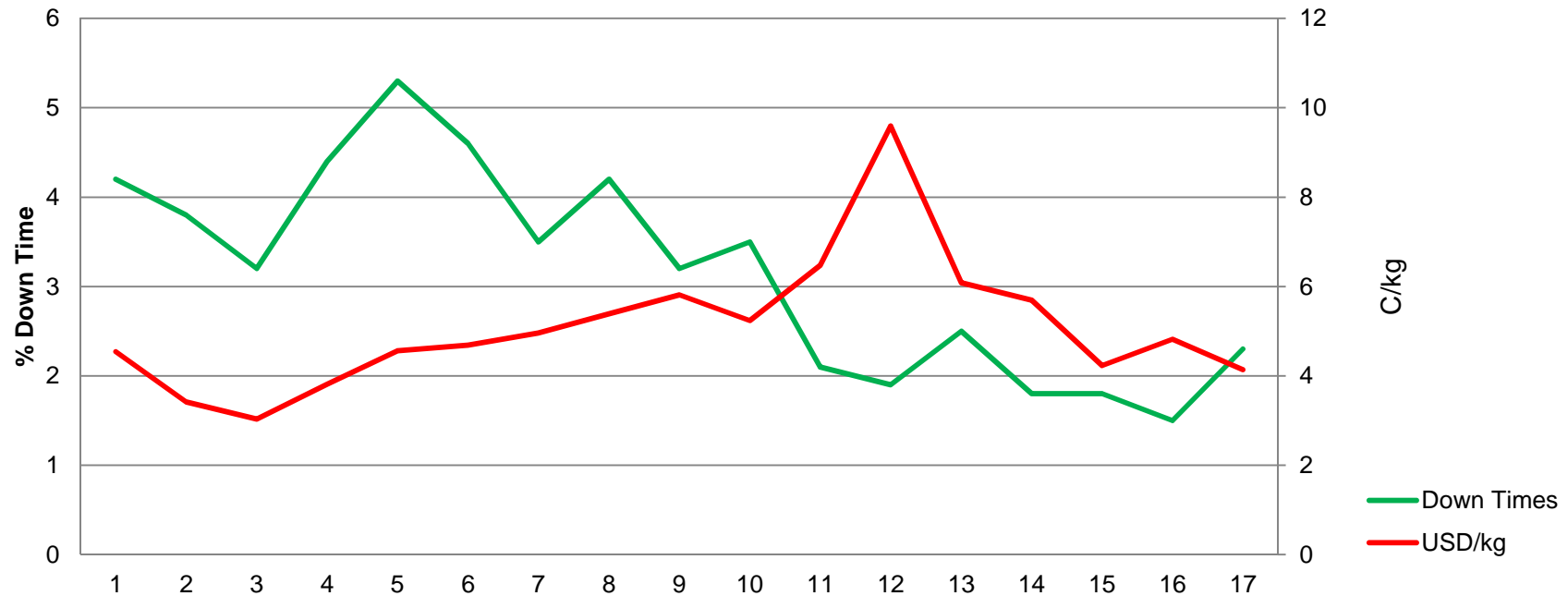


Reconditioning
Before After



MAINTENANCE & RELIABILITY

Spending VS Reliability



- **Improvements in equipment reliability**
 - **Shifting from Corrective to Preventive maintenance**
 - **Increasing Costs (Phase 1), Now Optimising (Phase 2)**

SANITATION

OPTIMISED SANITATION PROCESS

Reviewed current sanitation resources vs Global Standard sanitation

Excess Labour is being used to sanitize all equipment

Positive Opportunity per Packaging Bay during sanitation only to reduce labour by - 23 Labour & 4 PMO

Potential Savings 23M/yr

Historically sanitation hours were calculated based on the number of people that worked on the tubes in the bay that was to be sanitized. We compared the actual time taken for cleaning each part of the packaging hall and exit.

- Previously 45 people plus 6 PMO's for 1 bay would be utilized.
- The timings for cleaning each part of equipment varies.
- Once the people are optimized the number of people required for 8 hours sanitation on 1 bay would be 22 labors and 2 PMO's

MOH Team Action List

Issue	Action plan	Owner	Annualized Value
Quality Department Labour	<ul style="list-style-type: none"> Review the Quality Department Structure Implement Changes 	QA Manager	225M
Engineering Department Labour	<ul style="list-style-type: none"> Review the Engineering Department Structure Implement Changes 	Engineering Manager	73M
Maintenance Spares	<ul style="list-style-type: none"> Evaluate parts from local suppliers rather than from the Official Supplier to reduce cost Recondition worn parts 	Engineering Manager	60M
		Engineering Manager	40M
Sanitation	<ul style="list-style-type: none"> Reduce No of Labours & PMO's who work on sanitation 	Production Manager	23 M

421 M



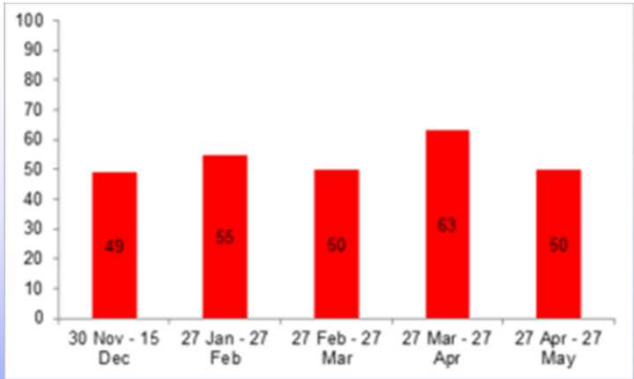
Deep Dive
TE Summary

Converged to following 3 TE Big Bets

Extruded Change-over optimization



PC/Extrusion Rate Optimization

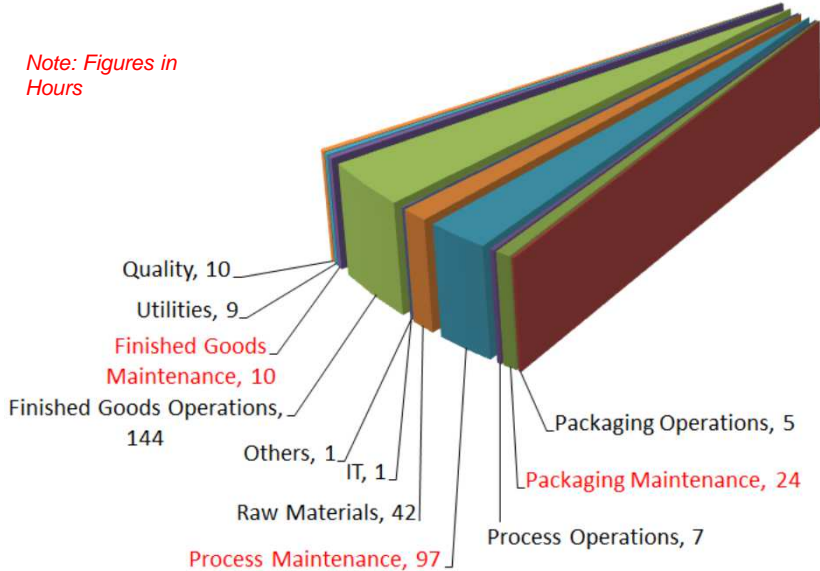


Scheduled/Unscheduled Downtime

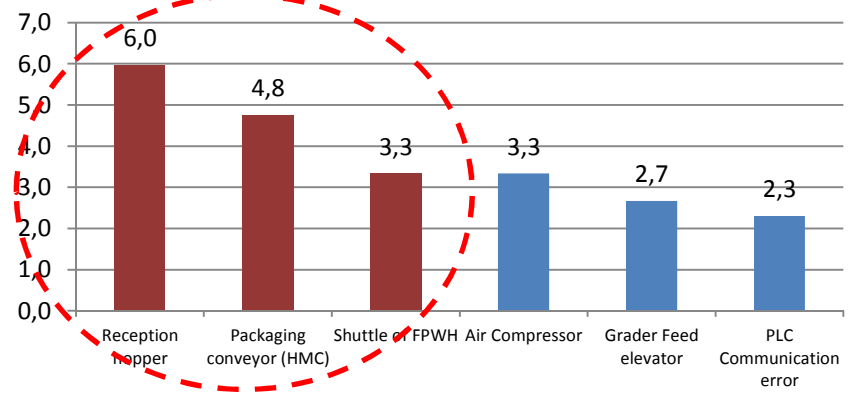


PC50 A&B Unscheduled Downtime

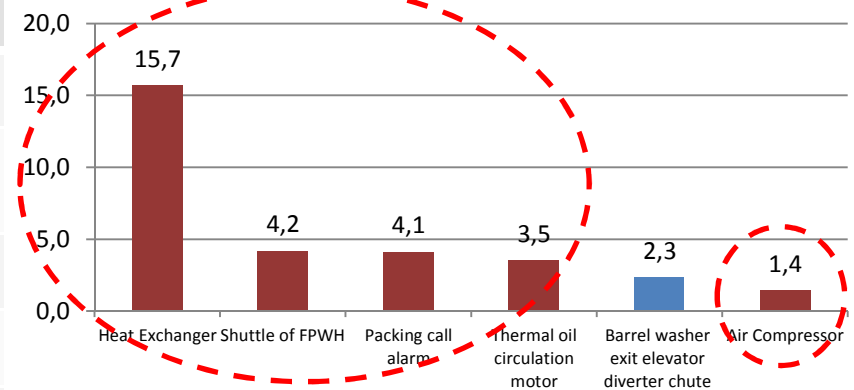
Note: Figures in Hours



PC50A Line machine breakdown



PC50B Line machine breakdown

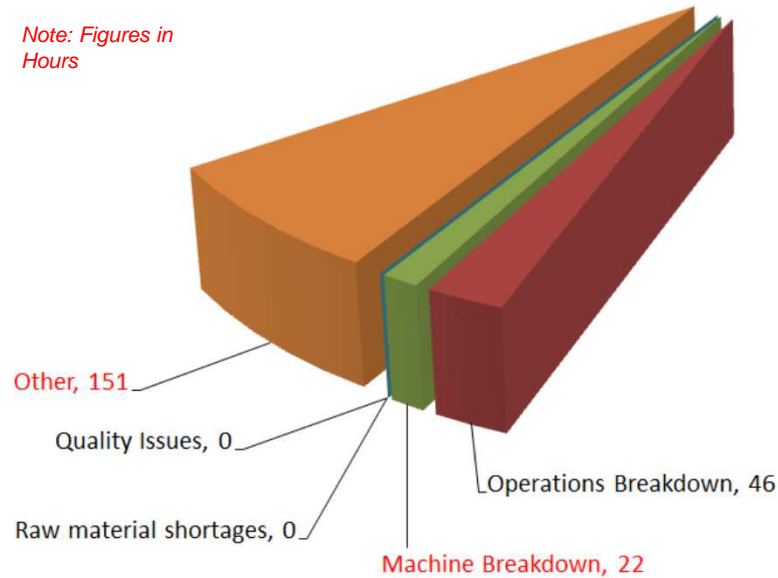


Machine / Area	Correction
Reception Hopper	<ul style="list-style-type: none"> Belt replacement and relocation of sensor Scheduled preventive maintenance
Packaging Conveyor HMC	<ul style="list-style-type: none"> Upgraded electrical breaker (400 Amps to 600 Amps) Scheduled preventive maintenance
Warehouse Shuttle	<ul style="list-style-type: none"> Maintenance of safety stock level for spare parts Scheduled preventive maintenance
Thermal Oil Circulation Motor	<ul style="list-style-type: none"> Maintenance of safety stock level for spare parts Scheduled preventive maintenance
Heat Exchanger	<ul style="list-style-type: none"> Scheduled cleaning of carbon deposits from the flame sensor and replaced natural gas pressure switch
Packaging Call Alarm	<ul style="list-style-type: none"> Modification of PLC program to identify source of error
Finished Goods Operation	<ul style="list-style-type: none"> Strengthen Planning

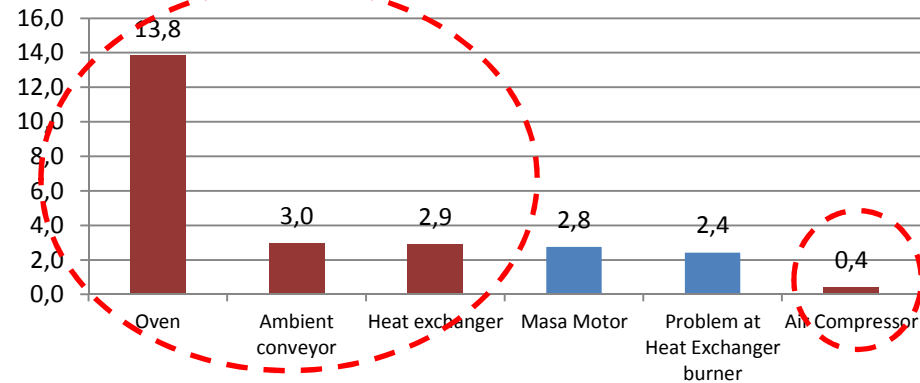
Reduce machine breakdown by 57% and increase TE by 1.3% (PC50A), 1.9% (PC50B)

TC Unscheduled Downtime

Note: Figures in Hours



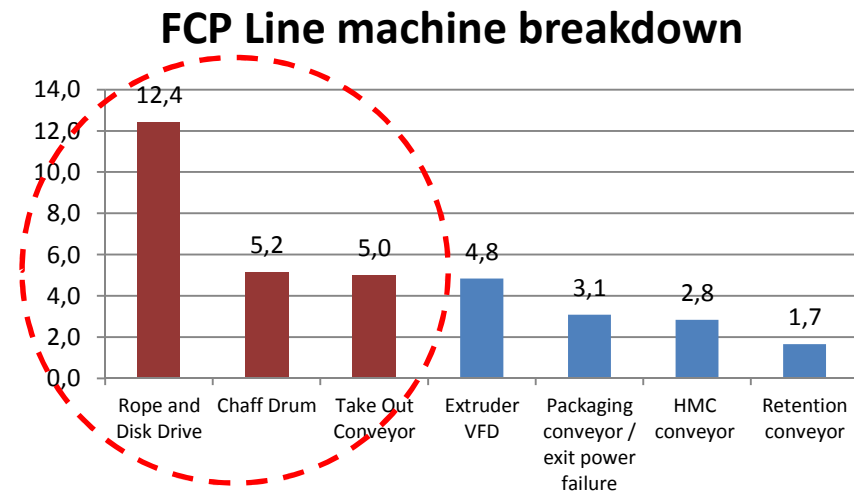
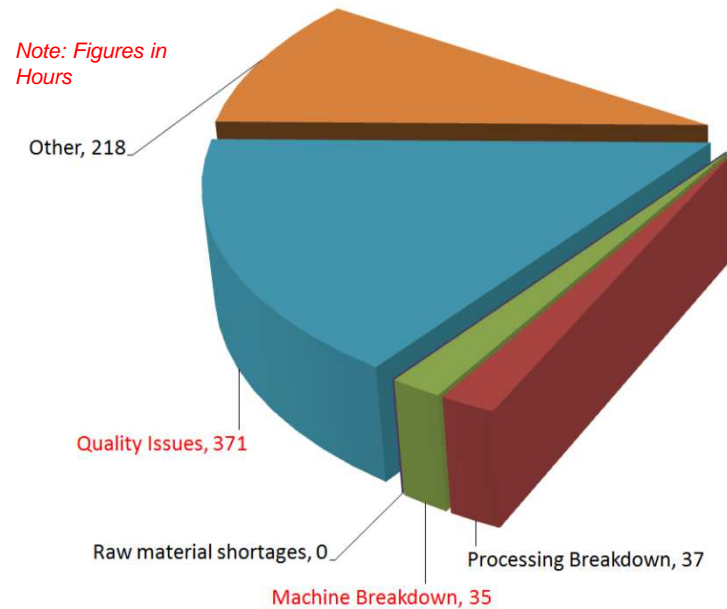
TC Line machine breakdown



Reduce machine breakdowns by 34% and increase TE by 1.7% by conducting

Machine / Area	Correction
Oven	<ul style="list-style-type: none"> Spare replacement according to parts service life. Scheduled intensive preventive maintenance,
Ambient Conveyor	<ul style="list-style-type: none"> Strict adherence to spare parts replacement based on parts service life. Maintenance of safety stock level of spare parts Scheduled preventive maintenance,
Heat Exchanger	<ul style="list-style-type: none"> Scheduled cleaning of carbon deposits from the flame sensor and replaced natural gas pressure switch
Finished Goods Operation	<ul style="list-style-type: none"> Strengthen Planning Implement service level agreement

FCP Unscheduled Downtime

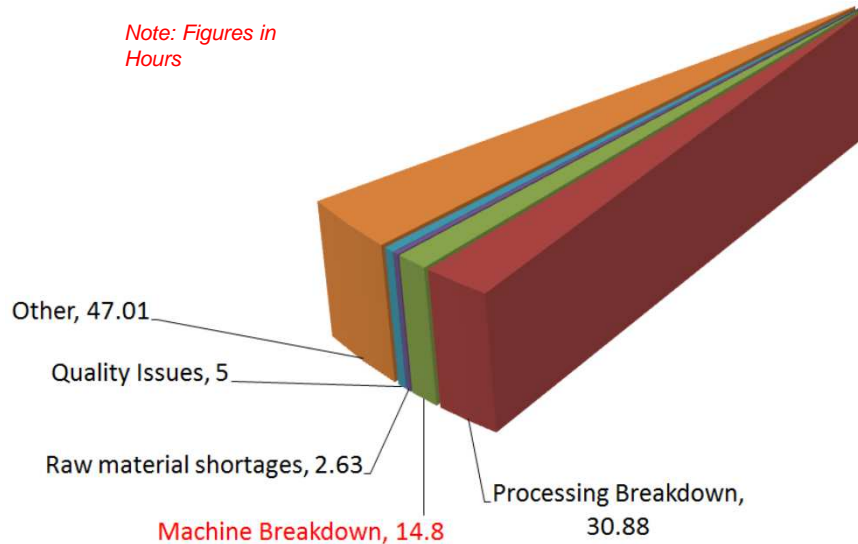


Reduce machine breakdown by 72.6% and increase TE by 1.8%

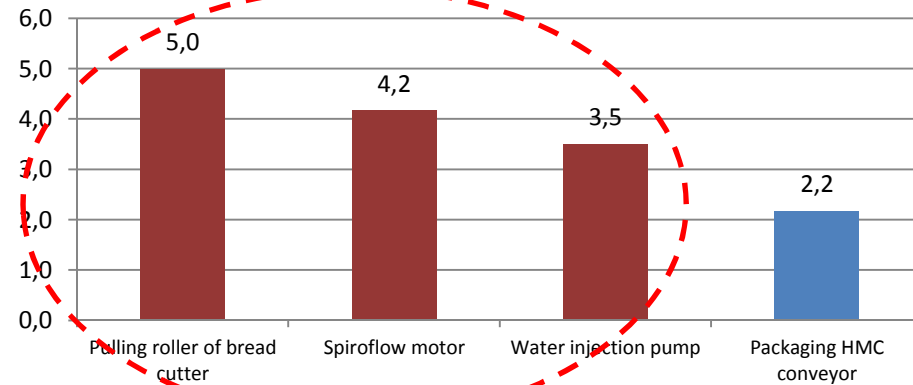
Machine / Area	Correction
Rope and disk drive	<ul style="list-style-type: none"> Spare replacement according to parts service life Maintenance of safety stock level of spare parts Scheduled intensive preventive maintenance,
Chaff Drum	
Take out conveyor	
Finished Goods Operation	<ul style="list-style-type: none"> Strengthen Planning Implement service level agreement
Quality Issues (Corn Grits)	<ul style="list-style-type: none"> Use specification compliant corn grits (<1.0% Through 300 microns particle size)

Schaaf Unscheduled Downtime

Note: Figures in Hours



Schaaf Line machine breakdown

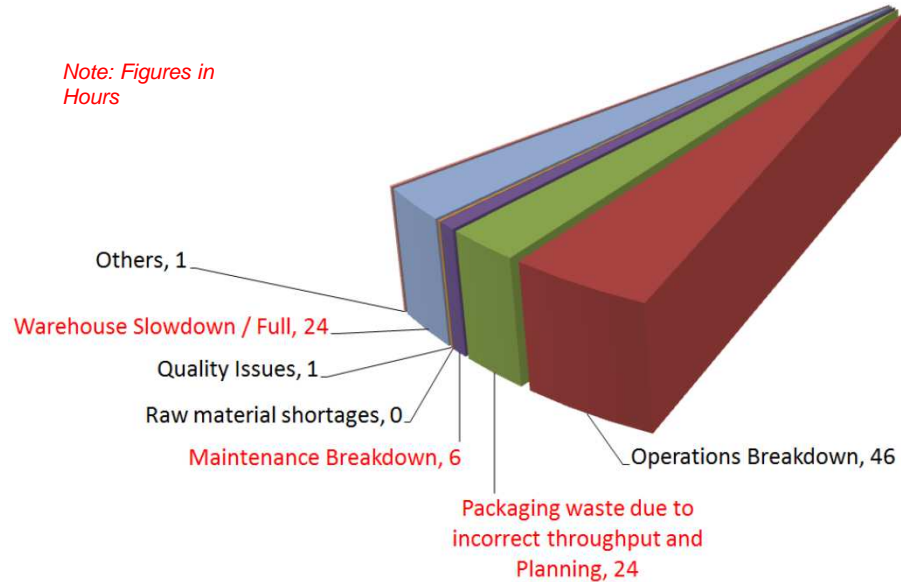


Reduce machine breakdown from 76% and increase TE by 1.07%

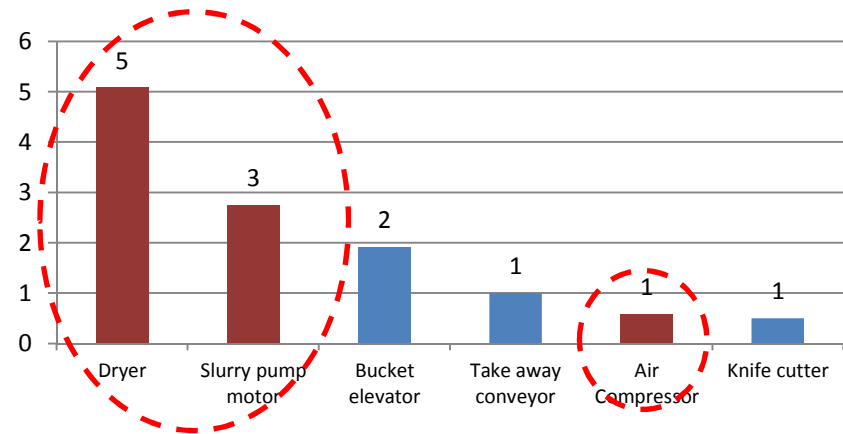
Machine / Area	Correction
Pulling roller of bread cutter	<ul style="list-style-type: none"> Spare replacement according to parts service life Maintenance of safety stock level of spare parts Scheduled intensive preventive maintenance,
Spiroflow motor	
Water injection pump	
Bread cutter clogging	<ul style="list-style-type: none"> Reformulation of coloring recipe Blade replacement according to parts service life Coloring coverage adjusted from 100% to 70%

Clextral Unscheduled Downtime

Note: Figures in Hours



Clextral Line machine breakdown



Reduce machine breakdown from 55% to and increase TE by 1.65%

Machine / Area	Correction
Packaging waste due to incorrect throughput and Planning	<ul style="list-style-type: none"> Alignment with proper throughput calculation Allocation of correct resources in packaging (Tubes and Labor)
Warehouse slowdown / Full	<ul style="list-style-type: none"> Strengthen Planning Implement service level agreement
Dryer tripped and suddenly not working.	<ul style="list-style-type: none"> Spare replacement according to parts service life Maintenance of safety stock level of spare parts Scheduled intensive preventive maintenance
Air Compressor tripped.	<ul style="list-style-type: none"> Reconditioning of cooling tower Installation of additional compressor

Throughput Loss – PC50 A&B



Solids	Capped Throughput	Rated Throughput	TE% Difference
23.3	3,250	3,250	0.0
24.0	3,250	3,362	3.4

- Adjust cap on solids for software for both PC 50s.
- Unlocks extra capacity for Gross Solids > 23.3 %.
- Approximately 10 % of FY total crop received was above 23.3% solid

Throughput Loss – FCP



- Use specification compliant corn grits (<1.0% through a screen of 300 microns) will increase TE by **34.2%**

Max Capacity		Capped Capacity		Delta	
RPM	Kg/Hr	RPM	Kg/Hr	RPM	Kg/Hr
145	1,549	100	1,068	45	481

Throughput Loss - Cleextral



Action Plan

- Allocate tube and labor resources in packaging to accommodate the volume produced by process will **reduce the production time by 31%** and increase **TE by 23.2%**

Product	Max Capacity			Commissioning Capacity			Delta			
	Throughput (Kg/Hr)	Tubes Required	Labors Required	Throughput (Kg/Hr)	Tubes Required	Labors Required	Kg/Hr	%	Tube	Labor
Cheetos Curls	1,196	14	30	989	12	28	207	17.3%	2	2
Twisted Curls	828	8	16	677	5	14	150	18.1%	3	2
Shots Cheese	798	16	40	660	12	32	138	17.3%	4	4
Shots Ketchup	666	16	40	606	12	32	60	9.0%	4	4
Sticks Ketchup	1,130	14	30	1,028	12	28	102	9.0%	2	2

**Short list of opportunities for site to pursue potentially worth
124 M in annual saving**

Issue	Action plan	Owner	TE Gain %	Annualized Value
Unscheduled Downtime	<ul style="list-style-type: none"> • Top equipment failures preventable thru robust preventive maintenance program • Fast track hiring of Maintenance Technicians • Build Production plant planner capability 	Manufacturing (PC50 A&B)	PC50A –1.3 % PC50B – 1.9 %	40 M
		Manufacturing (TC)	2.36 %	8 M
		Manufacturing (Extrusion)	FCP – 1.80% Schaaf – 1.07% Clextral – 1.65%	23 M
Throughput	<ul style="list-style-type: none"> • Remove capacity cap • Use specification compliant corn grits (<1.0% Through 300 microns particle size) 	Manufacturing (PC50 A&B)	0.46%	12 M
		Manufacturing (FCP)	34.20%	31 M
Scheduled DT: Changeovers	<ul style="list-style-type: none"> • Reduce change-over by 50% per week 	Manufacturing(Clextral)	2.60 %	10 M

Note:
Savings based on overtime cost hour / per line

124 M



Deep Dive
PC Summary

PC Gap Analysis reveals low opportunity

GCCF -Riyadh site Deep Dive YTD Gap Analysis

		Period			
Area		Actual	BIC	Basic GAP	Oil Efficiency lost %
Pre fryer	Soil	0.000%	0.00%	0.00%	
	Receiving	0.400%	0.00%	0.40%	
	Peeling Loss	1.50%	2.00%	-0.50%	
	Inspection and WPS	0.40%	0.50%	-0.10%	
	Slicer fines	0.76%	0.50%	0.26%	
	Starch loss	10.30%	8.50%	1.80%	
Post fryer	Fryer moisture dumps	0.10%	0.10%	0.0%	0.10%
	Chip sorting / Optyx waster	0.10%	2.00%	-1.90%	0.10%
	Processing Base Chip Fines Floor/Catch				
	Pan/Conveyor	0.20%	0.60%	-0.40%	0.20%
	Packaging total waste	0.90%	0.90%	0.00%	0.90%
	Grams Giveaway	0.20%	0.00%	0.20%	0.20%
		14.86%	15.10%	-0.15%	1.50%
		85.15%	84.90%		98.50%

PC Waste improvement opportunity

40 mm size whole potato captured in peeler drain



- 24kg of raw potato being wasted/day.
- 2605 \$/Year**

PCA Moisture belt



- 268.8kg of good chips being wasted/month.
- 3335 \$/Year**

Oil Re-sell efficiency – Oil extraction

Oil Extraction study

Defect Chip in YTD = 384 tons.

Oil extraction Capacity (Reference HT) = 50%

Oil Recovery = $384 \times 35\% \times 50\% = 63.4$ tons.

Benefit

- Waste re-sell

Proposed Saving of oil only : $63.4 \text{ tons} \times 1.39 = 23,500$ \$/year (Based on 2013 data)

Selling of animal feed after extraction : $384 - 63.4 = 320.6$ tons = 320.6×0.26

= 22228.26 /year

Current Saving of animal feed : $384 \text{ tons} \times 0.26 = 26624$ /year

Total savings in Annum : = 19 104 /year



Starch Recovery – Pulvariser

Starch retaining from Fines and waste

Total trim and Slicer fines waste = 92 tons.

Recovery = 50% starch efficiency

Starch Recovery = $92 \times 22\% \times 50\% = 10.12$ tons.

Benefit: Re sell the starch



Proposed Saving of starch : $10.12 \text{ tons} \times 0.89 \times 12 = 28821$ /year

Total savings in Annum : = 28 821/year

Pulvarisor cost ; 10,000

Best in class PC crewing standards

	Operator						Contract				
	SBW	Peeler	Slicer	Fryer	Season	Total	Trim	Inspect	Season	Clean	Total
Current	1	1	4	2	2	10	6	6	2	4	18
Proposed	1	1	4	2	2	10	5	5	1	2	13

**Saving
of 5**

Opportunities:-

Total Savings of 5 Contract labor per shift ~ 120 M

- Site to Implement operator taking cleaning ownership.
- Operator multi skill required in all unit operation.

Antifoam Dosing at Slicer Station

Antifoam dosage has been optimized to slicer station rather than feed dip washer.

Benefit : Starch loss/surface quality. Improvements.

This is for piloting a potential productivity project – further analysis TBC



Short list of opportunities for site to pursue potentially worth 173.8 M in annual saving

Issue	Action plan	Line	Annualized Value
Oil Extraction	- Using oil extractor to recover waste oil from defects chips for resell.	Manufacturing (both PC 50)	19.1 M
Pulvariser	- Recover starch from trim waste and slicer fines with pulvariser.	Manufacturing (both PC 50)	28.8 M
Labor savings	- Reduction of contract labour	Manufacturing (All lines)	120.0 M
Whole chips in fryer fines	- Arrest the gap between transfer point	Manufacturing (Old PC line)	2.6 M
Whole potato size less than 40 mm found in peeler drain	- gap between body and disc need to be controlled - Peeler discharge chute need a rubber sheet	Manufacturing (Old PC Line)	3.3 M
Total Annum Savings	- Control	Manufacturing (All PC 32 lines only)	173.8 M



Deep Dive

Extrusion & Sheeted Summary

Extrusion & sheeted Opportunity

Clextral & FCP
Efficiency



- Proposed 1%
Basic Efficiency for
both line
10M

Schaaf Efficiency



- Proposed 1%
Basic Efficiency
46M

Crewing



- Optimize Process
Crewing
120M

FCP & Clextral Efficiency improvement

Issues	Actual	Opportunity
- Low basic efficiency due to out of spec corn grits.	94%	1%

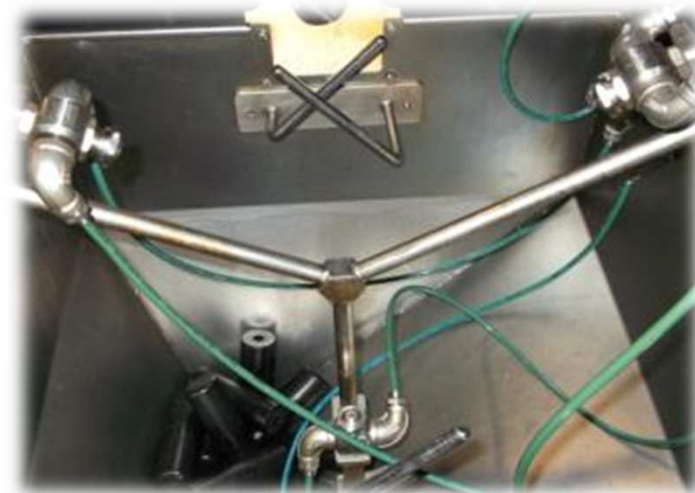
Current specification		Plant Specification	
Mesh size	Actual	Mesh size	AIM
On 600	34.79%	On 600	40% - 45%
On 300	5.75%	On 300	0.0 – 1.0%
Moisture	10 to 15	Expecting Moisture 12.5 to 15	

➤ **Benefits** - High throughput and good quality of product if receive good Corn grits.

Schaaf Efficiency improvement

Issues	Actual	Opportunity
- Product sticking inside the Bread cutter due to coloring issue	95.3%	1%

- **Benefits** – Improve basic efficiency and product Quality if made right recipe of coloring.



Extrusion & Sheeted Crewing details

Existing setup			Global setup
Line	Area	Crewing	
FCP	Mixing	2	2
	Extruder	0	0
	Seasoning	1	0
	Cleaning	0	0
SCHAAF	Mixing	2	2
	Extruder	0	0
	Seasoning	1	0
	Cleaning	0	0
CLEXTRAL	Mixing	2	2
	Extruder	0	0
	Seasoning	1	0
	Cleaning	0	0
RBS	Mixing	1	0
	Sheeting	1	0
	Seasoning	1	0
	Cleaning	0	0
Total		12	6

Total Savings - 144M

> Saved total 12 employees per day .

TC & Extrusion Action plan

Issue	Action plan	Owner	Annualized Value
- Corn grits out of specification in FCP & Clestral Lines.	- Arrange raw material with right specification.	R&D/Ops	10M
- Schaaf coloring issue in Schaff Line.	- Move back to the previous recipe or make another trail with new recipe.	R&D/Ops	46M
- Crewing management Across Extruder & Sheeted Lines	Implement global STD crewing matrix.	Ops	144M

200M



Deep Dive

Packaging Summary

Packaging Big Bets

Crewing

- Optimize Pkg Crewing, move to Global labour Standards

435M

Automation in Pkg



To reduce contract labour
Packaging Automation
and Productivity is
already in SBP

Extruder FP waste



- Reduce Pkg
Cletral FP by 50%
26M

Riyadh vs. Global Crewing Standards

Bay1 Standard Crew (14 Tubes running)		
Crew	Standard	Actual Crew
PMO	0.25	4
Cleaners (Bay)	2	1.8
Scrap Counter (Bay)	1	1
Shredder (Packaging)	0.60	0.6
EHS (Packaging)	0.20	0.2
Material Feeder (Packaging)	0.60	0.6
		8.2

Global Standard Crew Bay1		
Crew	Standard	Standard Crew
PMO	0.25	3.5
Line Supply	0.1	1.4
		4.9

Crew	Global Standard Duties
PMO	GMP / Cleaning for his machine parameter area
	Waste separation (bad packets will separate product to film)
	Quality checks (Packets Quality Attribute / EHS & Residual Oxygen)
Line Supply	Materials In to the Packaging
	Waste Out to the Packaging

Note:

Riyadh plant already performs @ global standards for packing.(SS, Poly, Duplex)

Potential Cost Saving for pkg.room

		Bay 1	Bay 2	Bay 3	Bay 4	Bay 5
Riyadh Actual Crew	Actual Running Tubes	16	18	24	19	21
	PMO	4	5	6	5	6
	Cleaners (Bay)	2	2	2	2	2
	Scrap Counter (Bay)	1	1	1	1	1
	Shredder (Packaging)	0.6	0.6	0.6	0.6	0.6
	EHS (Packaging)	0.2	0.2	0.2	0.2	0.2
	Material Feeder (Packaging)	0.6	0.6	0.6	0.6	0.6
	Total Crew	8.4	9.4	10.4	9.4	10.4
	Global	PMO	4	4.5	6	4.75
Line Supply		1.6	1.8	2.4	1.9	2.1
Total Crew		5.6	6.3	8.4	6.65	7.35

Cost Savings	
12	Per Shift (Crew)
24	Per Day (Crew)
288 M	Total Savings

Crew Difference	2	3	2	2	3
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Clextral FP waste location

**Overflow and rejection
from Distribution conveyor**



0.9 %

Pkg. floor waste



1 %

Total FP waste



1.9 %

Action plan to reduce waste by 50%

Issues	Action plan	Owner	Annualized Value
Contract labor high turnover	<ul style="list-style-type: none"> - To increase FTE % and reduction of contract labor - Automation 	Production	26M
New/Unskilled labors in Non PC line	<ul style="list-style-type: none"> - Need on line continuous training to new labors - To mix new labors with skilled labors - 	Production	
Un controlled shift transition leads to rejection and overflow from conveyors	<ul style="list-style-type: none"> - Pkg.FLM & Contract FLM to ensure that shift transition done properly 	Production	

Short list of opportunities for site to pursue potentially worth 461M in annual saving

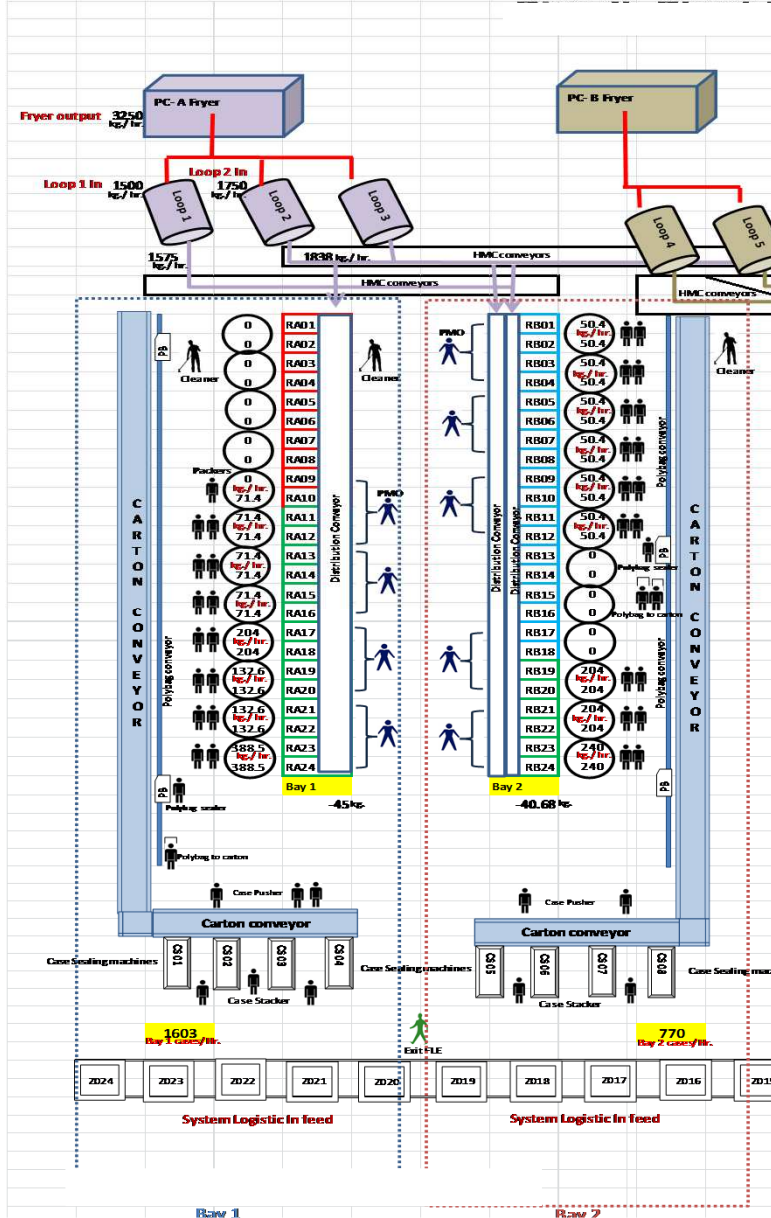
Issue	Action plan	Owner	Annualized Value
Crewing to Global Standards	<ul style="list-style-type: none"> - Trial already performed last 25th June - Tools for the job required, eg. Twin Bins. 	Raees Ahmed	288M
Packaging Hall Automation (already \$ in SBP)	<ul style="list-style-type: none"> - Evaluate options. - Trial of new Duplex & polybag machine. 	Eli Chaiban	In SBP
CLEXTRAL Line Finished Product Waste	<ul style="list-style-type: none"> -Increase FTE% and reduce contract labour. -Control the shift transition -Automation 	Category manager	26M



314M

Best Practice Identified in Plant

Template for machine and crewing



Manpower Allocation						
	Bay 1	Bay 2	Bay 3	Bay 4	Bay 5	Total
Total # of tube running	16	18	24	19	21	98
PMO	4	5	6	5	6	26
Packer	16	18	24	19	22	99
Polybag Sealer	1	1	2	1	2	7
Polybag to carton	1	2	3	1	3	10
Case Sealer	3	2	4	4	5	18
Case stacker	3	2	5	4	4	18
Exit FLE/ Pallet labeller	1		1		1	3
Scrap Counter	1	1	1	1	1	5
Cleaner	2	2	2	2	2	10
Material preparation	2					2
Material feeder (Film)	3					3
Material feeder (Carton PACLINE CONVEYOR)	1	1	2	2	2	8
EHS/ N2 Checker	1					1
Scrap shredding area	3					3
Empty pallet feeder	1					1
	Total					214

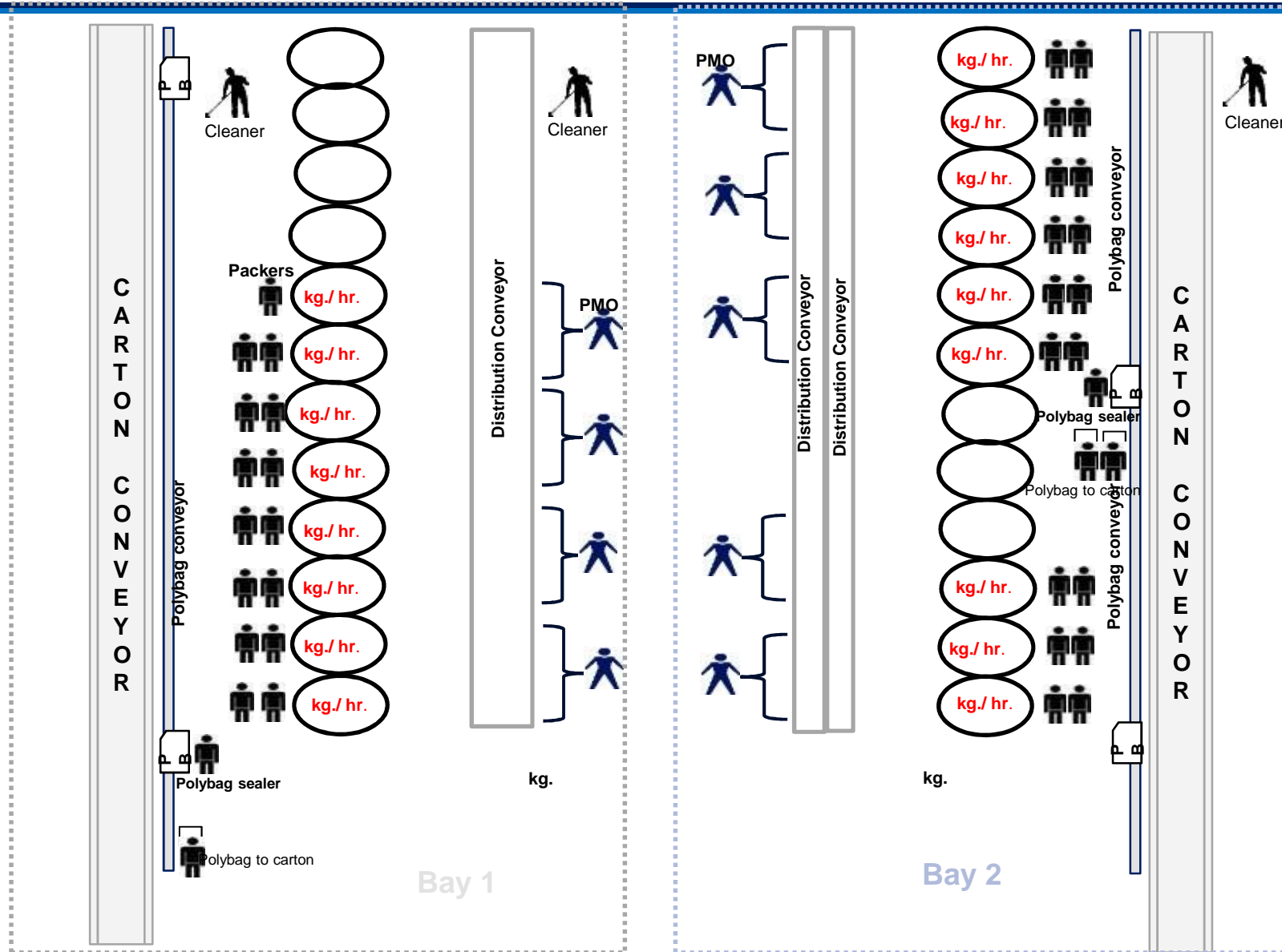
APPENDIX

Headcount / Labor Optimization

Issue	Action plan	Owner	Annualized Value
Quality Department	<ul style="list-style-type: none"> Review the Quality Department Structure Implement Changes 	QA Manager	225M
Engineering Department	<ul style="list-style-type: none"> Review the Engineering Department Structure Implement Changes 	Engineering Manager	73M
Labor savings	- Reduction of contract labour	Manufacturing (All lines)	120 M
- Crewing management Across Extruder & Sheeted Lines	Implement global STD crewing matrix.	Ops	144M
Crewing to Global Standards	<ul style="list-style-type: none"> Trial already performed last 25th June Tools for the job required, eg. Twin Bins. 	Raes Ahmed	\$288M
TOTAL			850 M

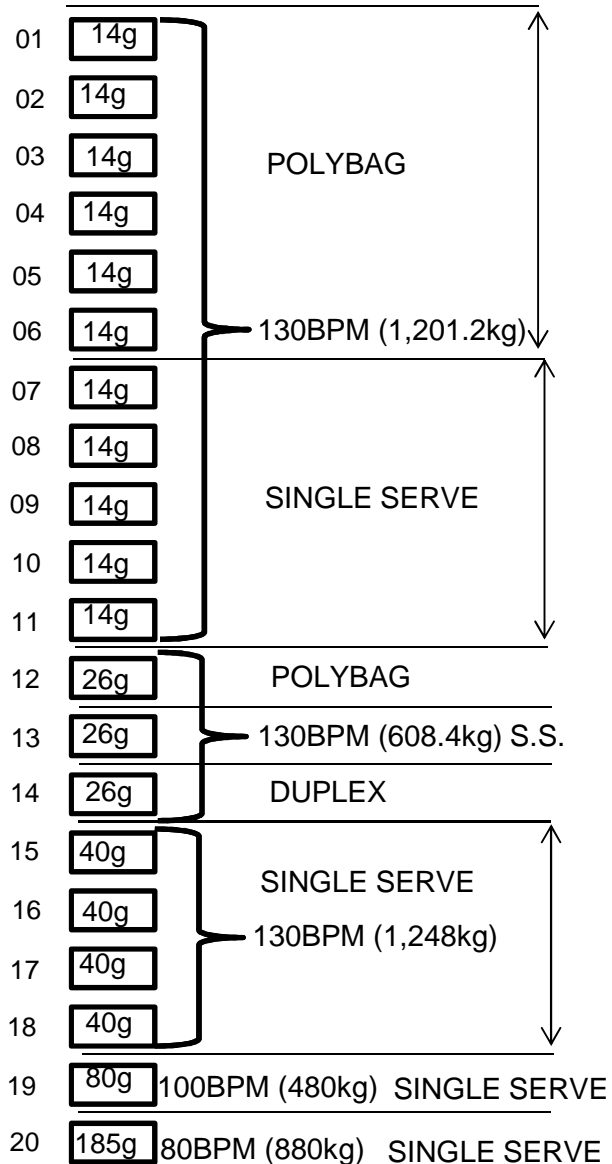
72% of total

Current set-up on (Bay1 & Bay 2) Total 48 tubes



Another Option for Automation (Bay1 & Bay 2)

20 TNA Tubes - *Appendix*



Capital Cost:

1. TNA(SHS)Conversion + Individual Weigher x 220k = **4.4MM**
2. Automatic Case Packer 12 x 280k each = **3.36MM**
3. Polybag Automation 7 x 200k each = **1.4MM**

Approximate Capital Cost = \$9.16MM

Benefits:

1. Direct Labor Cost Savings @ **1.5 MM per year**

Potential Additional Indirect benefits:

1. Spare parts Ave. Cost WRIGHTS & GEMINI @ **13,706 per year.**
2. Reduce Sanitation Material Cost @ **7,200 per year.**
3. Reduce Consumer Complaints by **8%.**
4. Packaging Waste
 - Film Waste Difference [TNA-Woodman] = **0.24%**
 - Total Film Improvement @ **0.5% to 0.41%**
 - Product = **21,000 kg per year**