

BUSINESS CASE BACKGROUND

The Quick Brown Fox Jumped Over The Lazy Dog.

TARGET CONDITION

1. The Quick Brown Fox Jumped Over The Lazy Dog.  
2.

CURRENT CONDITION

1. The Quick Brown Fox Jumped Over The Lazy Dog.  
2.

ACTIONS / METRICS / RESULTS / FOLLOW UP

No		COUNTERMEASURE	SPA	TRANSFER								
1a												
2a												
2b												
2c												
3a												
4a												
5a												
6a												
7a												
8a												
9a												
10a												
TIMELINES 2008 MONTHS												
	3/26/08	4/26/08	5/26/08	6/26/08	7/16/08	8/26/08	9/26/08	10/26/08	METRIC	OWNER	STARTED	COMPLETED
1a												
2a												
2b												
2c												
3a												
4a												
5a												
6a												
7a												
8a												
9a												
10a												

Last Print date 4/30/2009

The following slides are examples of my A3 thinking writing abilities. Because this is posted on the internet and contains private information, I have removed the names of the companies that I was either working or consulting for and any fully identifiable employees names along with any company logos or trademarks. I am replacing names and company logos or trademarks with the fictitious name of ACME Manufacturing Inc. The design of the A3 format is mine and the contents are of my intellectual insight and creation...

My A3 blank form.

## BUSINESS CASE

Technical training ratings of operator technicians is poor

We have a total of 20 inexperienced crew members with less than 2 year experience, 31 less than 2 year's experience

We are 10 operator technicians short

We are moving from a hands off group to a hands on group. New expectations

## TARGET CONDITION

1. To become fully staffed including two extra technicians that we can have in training
2. Technicians will be expected to do Set ups, Maintenance, Preventive Maintenance activities in alignment with new organizational structure
3. Process technicians will need to be involved in and document all operator training within their workgroup and shift
4. Standardized work for all tasks within department completed
5. Complete class room training
6. Complete all train the trainer class for technicians
7. Have all trainers in place in Forming and OMV
8. Develop a program for technicians working within Setup and Tooling
9. Have an updated trainee evaluation manual for operator trainee
10. Develop Line Technician manual for OMV and distribute to OMV Line Technicians

## CURRENT CONDITION

1. 10 technicians short
2. No clear path; no base line, we need to know what will be expected of the operators technicians
3. Process technicians not involved in training
4. No standardized work
5. No class room training
6. No formal trainers
7. No trained group of trainers
8. Operator technicians not working with Set up and Tooling again with a clear out line
9. Operator trainee evaluation manual for Greenville out of date
10. No training manual exists for OMV Line Technicians

## ACTIONS / METRICS

COUNTERMEASURE		SPA	TRANSFER							
1a	Fully staffed in next 60 days	Susan R								
2a	Initial guidelines and needs for what technicians require training in forming teams	Susan R								
2b	Forming team managers to roll out new organization of teams with clearly defined responsibilities	Andy Mc								
2c	Prepare and give to communication mem of ongoing expectations to FTM, SAs others	Susan R								
3a	Clear definition communicated to process Techs that they will be involved in the training of Techs	Andy T	Andy P							
4a	Forming team manager to provide John M and Fred W with prioritized standard work requirements	Andy M/Will	John & Fred							
5a	Develop classroom training for technician training	John & Fred	Eng. Group							
6a	Train the trainer	Andy T								
7a	Deploy trainers in forming and OMV at completion of 6a	Andy T								
8a	Bring new Techs 8 hours shift for first 6 weeks to work with trainers, set-up and tooling on different shifts	Andy T								
9a	Develop training skills matrix and post on storyboards in company recognition of employee skills levels	Fred W								
10a	Develop Training manual for OMV and distribute to OMV Line Technicians	John & Fred	Steve C							
TIMELINES 2008 MONTHS		METRIC	OWNER	STARTED	COMPLETED					
3/26/08	4/26/08	5/26/08	6/26/08	7/16/08	8/26/08	9/26/08	10/26/08			
1a								Susan R	3/26/2008	04/28/08
2a								Susan R	3/26/2008	05/01/08
2b								Andy Mc	3/26/2008	05/30/08
2c								Susan R	3/26/2008	03/28/08
3a								Andy P	3/26/2008	04/03/08
4a								Andy/Will/Jeff	3/26/2008	05/30/08
5a								John & Fred	3/26/2008	05/25/08
6a								Andy T	3/26/2008	05/30/08
7a								Andy T	3/26/2008	
8a								Andy T	3/26/2008	
9a								Fred W	3/26/2008	03/28/08
10a								Steve C	4/26/2008	06/06/08

50% Complete. 2nd round of training had to be postponed until August 08 as outside resource not available. Training will be: 8/06/07/08 and 08/13/14/08.

hours of missed flow because of manpower training

Prioritized list following operator training test

Line Technician training improvement A3.

## BUSINESS CASE

One of the customer quality requirements are the prevention of contamination (environmental, process excess or human contamination) to the products that we make for them. Pervious customer complaints for contamination have been:

**Metal in finished product.**

Human hair in finished product.

Burnt plastic in finished product.

Human hair in finished product has been the highest repeat complaint for contamination.

It is recommended that a review of our current standards of contamination control be revised.

### TARGET CONDITION

1. Line Technicians and Inspectors are to comply with contamination prevention requirement concerning human hair
2. Line Technicians and Inspector packer are to apply hand sanitizer, Need to move a hand sanitizer closer to the point of use to lab coat storage are and point of use work station on trim press.
3. N/A
4. Establish a standard work instructions need to be developed on proper usage and disposal of surgical gloves
5. Update current standard work instruction to proper procedure in lint roll of personal cloths.
6. Update current standard adding standard work on the wearing, disposal and care of lab coats that the Line Technicians and Inspector Packers wear – plus any other associate who works on the trim press during active production running of the line.
7. Will involve Process Technicians and Maintenance Technicians in all the above training.
8. Will develop 5S Kaban for line using the ideal culture model

### CURRENT CONDITION

1. Line Technicians and Inspector Packers are required to wear hair nets and beard nets anywhere in the work area - they do not always comply to this requirement in making sure that all hair is properly contained.
2. Line Technicians and Inspector Packers are required to apply hand sanitizer before working anywhere on the line - They do not always comply to this requirement.
3. Line Technicians and Inspector Packers are required to wear surgical gloves when working in the trim press area.
4. Line Technicians and Inspector Packers are required to remove surgical gloves and discard in trash can if they leave the trim press work area (e.g. going to break) and are required to wear a new pair of surgical gloves upon return to the trim press work area - They do not always comply to this requirement, leaving gloves in/on/around the work area.
5. Line Technicians and Inspector Packers are required to lint roll their personal cloths before putting on their lab coats - They do not always comply to this requirement.
6. Line Technicians and Inspector Packers are required if they leave the line (e.g. going to break) to leave on another end of the line to remove their lab coats - it is unclear if they are to dispose of their lab coats, necessitating them to have to wear a new lab coat on their return; hang their lab coats up, necessitating them having to lint roll their personal cloths and then lint roll their lab coats before wearing them again and returning to the line.
7. Any associate or contractor working in the trim press work area are required to comply with all of the above - they do not always comply with this requirement.
8. No environmental or process excess 5S Kanbans established to control contamination

Last Print date 4/30/2009

### ACTIONS / METRICS

[illegible]

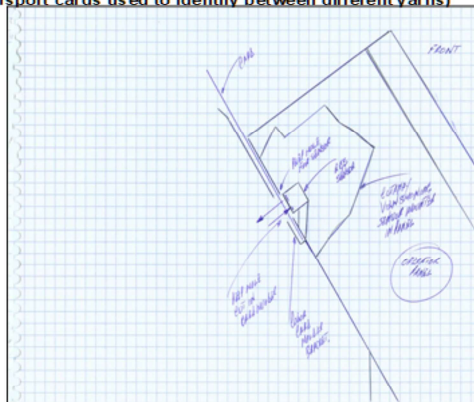

### Product contamination A3.

# A3 REPORT

Step #1. Project Name:					Step #5. Implementation Plan (Actions needed to get from Current to Future State):					
Computerized Maintenance Management System. A3 Statement: To reduce equipment related downtime by 30% thus increasing availability of revenue generating assets to improve business performance by avoiding associated costs of unplanned downtime.										
Step #2. Background/Business Case (Why did you select this project):					ACTION		TARGET DATE	WHO	STATUS	
Need. 10% equipment related downtime. Currently no system of maintenance computerize management control exists that is effective to properly manage, track, plan, schedule, execute, document asset management preservation actions.					Contact vendor of FaciliWorks to evaluate the CMMS and how it can help SBP maintenance efficiency and effectiveness.		14-Jul-09	BM	Done	
					Prepare information package to present ROI to bronze lean team. Schedule meeting with above and present for buy-in and support.		23-Jul-09	BM/FW	Done	
					Present A3 to top management and lean bronze team members to decide to purchase FaciliWorks CMMS software.		6-Aug-09	BM/FW	Lean bronze team unanimous in support of A3	
					Present A3 to company President, (Paul Pelinsky), Product Manager/Manager of Engineering (Tim Jackson) and Financial Controller (Lawton Garland).		TBD	BM/FW		
Step #3. Initial Condition (Current State):					Acquisition of FaciliWorks CMMS software		TBD	BM/JF		
No equipment related downtime records or performance tracking is kept. No purchasing item journal is use to alert the re-ordering of critical spare parts. No work analysis is performed to track human performance in managing work orders and the effectiveness of physical asset management reliability.					Receive Faciliworks CMMS software		TBD	BM/MK		
					Install CMMS software/hardware and commission		TBD	BM/MK		
					Online user training		TBD	BM/MK		
					Populate system with asset numbers equipment, work orders, inventory of spare parts etc.		TBD	BM/FW		
					Train all affected personnel in use of CMMS (entering work orders etc.)		TBD	BM		
No CMMS system is in use to properly manage inventory. No record keeping is current in use apart from a spreadsheet which is used to log oil filter information such as machine used on, type of filter etc. No physical counts, cycling counting or auditing is currently performed for oil filters, oil and coolant which is tied to a spreadsheet record.					Step #6. Indicators/Measurable:					
					MEASURABLE		CURRENT STATE	FUTURE STATE	ACTUAL YTD	% CHANGE
					Unplanned equipment downtime		10 %	<3%		30%
					Storages - Stock-outs		Not known	4 stock out per million inventory transactions		
					Return on investment		-	110 % in 1 yr		
Step #4. Desired Condition (Future State):					Payback Period		-	10 months		
Putting in place a proactive plan to install a computerized maintenance management system software package by FaciliWorks. This CMMS will better manage all work orders, preventive maintenance tasks and implement a perpetual inventory control system using this system and parts requisitioning system to better manage, track and report inventory spare parts to keep the right amount of inventory with overages and shortages and maintenance work analysis.					See supporting information tab for details					
Benefits of a Computer Maintenance Management System										
<ul style="list-style-type: none"><li>• Improved availability of revenue generating equipment</li><li>• Reduce inventory</li><li>• Improvement in equipment reliability allows WIP (work in process or safety stock) reduction</li><li>• Better accuracy</li><li>• Improved control and availability of spare parts</li><li>• Helps to build stronger planning and scheduling of PPMs</li><li>• Avoid dead stocks and obsolesces</li><li>• Reduced paperwork and manual administration</li><li>• Work order generation</li><li>• Predictive maintenance</li><li>• Ability to measure results</li><li>• Access to historical data</li><li>• Tracking, traceability</li><li>• Supports laying the groundwork for the company TPM initiative</li></ul>					Project Owner:		Team Members:			
					John Doe		Bronze lean team members			
							John Doe			
							Jane Doe			
					Project Coach/Mentor:					
					Fred Webberking					

Return on investment A3 for purchase of a Computerized Maintenance Management System. The layout and format in this A3 is not mine, but the A3 thinking behind is.



<b>Project Description:</b> Process step prevention of error in steam temperature being selected	
<b>Background / Business Case:</b> New steamer; it is possible to process material at the wrong temperature setting and as a result ruin the entire lot of material.	
<b>Initial Condition (Current State):</b> No mistake proofing devices or detection means presently exist on the new steamer and material can be process at an incorrect temperature thereby ruining the entire batch of material at a cost of approx. \$10,000 US.	
<b>Implementation Plan:</b> Purchase RGB sensor and have RGB programmed in such a matter that only the correct color transport card presented to the RGB sensor will allow the process to operate for the temperature selection. (The PLC will need to programmed such that a change of state at the sensor head is registered between each batch processed so the same or different color cards registers with the PLC of a new batch is to be processed e.g. yellow card/no card/yellow card again – yellow card/no card/red card and so on for all color transport cards used to identify between different yarns)	
<p>At the beginning of each shift this mistake-proofing device should be tested to qualify the process to run meaning that a deliberate attempt is made to make a mistake in any combination. If it does run. STOP! report it immediately</p> 	
<b>Proposed Condition (Future State):</b> Installation of mistake-proof feature (RGB sensor and programming of the machine's PLC) to eliminate the possibility of processing material at the wrong temperature..	
<p>Example of an RGB sensor or contact Keyence for application.</p> 	
<b>FACTS AND SUPPORTING SOURCE DATA:</b> <p><b>CURRENT STATE:</b> \$05.00 PER POUND MATERIAL X BATCH CAPACITY OF MACHINE 2,000 POUNDS = \$10,000.00 PER BATCH PROCESSED. DISCOUNTING IN-PROCESS VALUE, LOST OF PROFIT, RE-RUN OF MATERIAL COSTS, EXPEDITED FREIGHT BECAUSE OF INCREASE LEAD TIME, LABOR, LABOR OVERTIME, LOSS CAPACITY OF MACHINE NOW HAVING TO RUN THE MATERIAL AGAIN A RAW MATERIAL SCRAP LOSS OF \$10,000.00 ALONE WILL BE INCURRED IF THE MATERIAL IS PROCESSED AT THE INCORRECT TEMPERATURE.</p> <p><b>FUTURE STATE:</b> COST OF SENSOR \$500.00 + COST OF PROGRAMMING STEAMER'S PLC \$1,000.00 = \$1,500.00. COST OF MISTAKE \$10,000.00 MATERIAL ALONE – COST OF MISTAKE PROOFING THE PROCESS \$1,500.00 RESULTS IN AN IMMEDIATE ROI AT ANY OPPORTUNITY FOR THIS MISTAKE TO OCCUR.</p>	
<b>Project Leader:</b>	<b>Core Team Members:</b> A3 Author: Fred Webberking
<b>Project Owner(s):</b>	

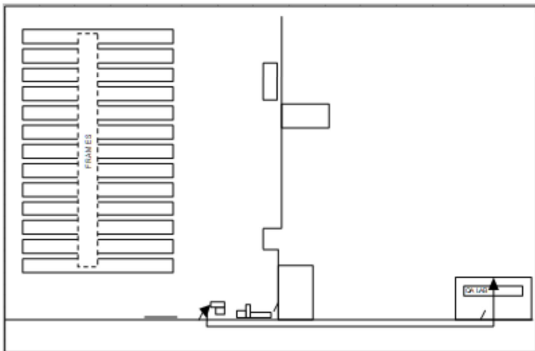
Written By: Fred Webberking

Poke-Yoke mistake proofing A3.

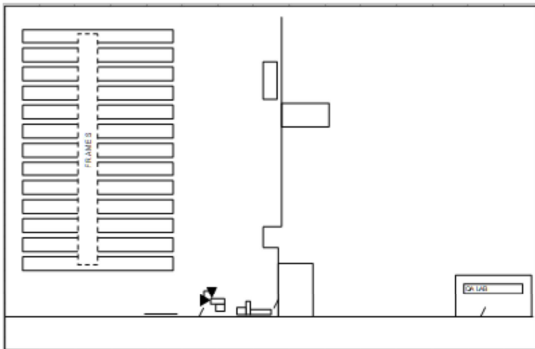
Project Description: Reduce time taken to conduct necessary quality tests associated with a changeover

Background / Business Case: Spinning: Excessive motion and time spent walking to and from quality lab to test weight of material by moving as much as possible quality testing apparatus line-side point of use. More cellular approach needed.

Initial Condition (Current State):



Proposed Condition (Future State):



Implementation Plan:

Purchase additional digital weighing scales (already on order)

Register as new gauge to quality lab

Install line side to the shift foreman's testing bench and cover with a non-metallic box with a Perspex flip up access lid.

Indicators:

Current

Target

% Improvement

Time:

60 hours/yr.

0 hours/yr.

100%

Labor Cost:

\$761.00/yr.

\$0.00

100%

Investment Required: weighing scales

\$700.00 (less than 1 year payback)

FACTS AND SUPPORTING SOURCE DATA:

CURRENT STATE: 60 PACES TO QA LAB 60 PACES BACK 120 PACES X 4 TIMES DAILY X 3 SHIFTS = 12 TIMES DAILY = 1,440 PACES. TIME TAKEN: 30 SECONDS X 2 TO QA LAB AND BACK 60 SECONDS X 4 = 4 MINUTES X 3 SHIFTS = 12 MINUTES DAILY X 6 WORKING DAYS = 72 MINUTES (1 HOUR 12 MINUTES) EACH WEEK WASTED. LABOR COST: \$12.95 /60 = \$0.21 MINUTE X 4 \$00.86 X 3 SHIFTS = \$2.58 DAILY WASTED X 6 WORKING DAYS = \$15.53 X 49 WORKING WEEKS OF YEAR = \$761.45 MINUS COST OF SCALES \$700.00 = \$761.45 PAY BACK IN ONE YEAR.

FUTURE STATE: (NEGILABLE) PACES TO QUALITY TEST APPARATUS (NEGILABLE) PACES BACK TO QUALITY TESTING APPARATUS X 4 TIMES DAILY = (NEGILABLE) PACES X 3 SHIFTS = (NEGILABLE) PACES X 6 WORKING DAYS = (NEGILABLE) PACES WEEKLY. TIME TAKEN 0 SECONDS X 2 = SECONDS X 4 TIMES DAILY X 3 SHIFTS = 0 SECONDS X 6 WORKING DAYS = 0 SECONDS (ALL NEGILABLE) PER WEEK. 0 MINUTES PER YEAR. NO LABOR COST.

Project Leader:

Core Team Members:

A3 Author: Fred Webberking

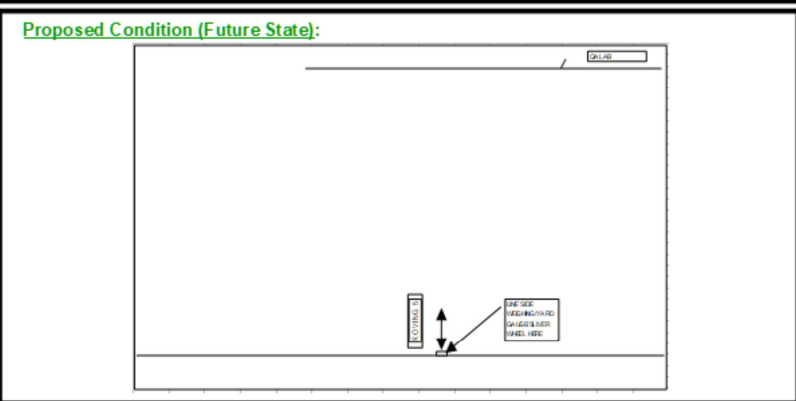
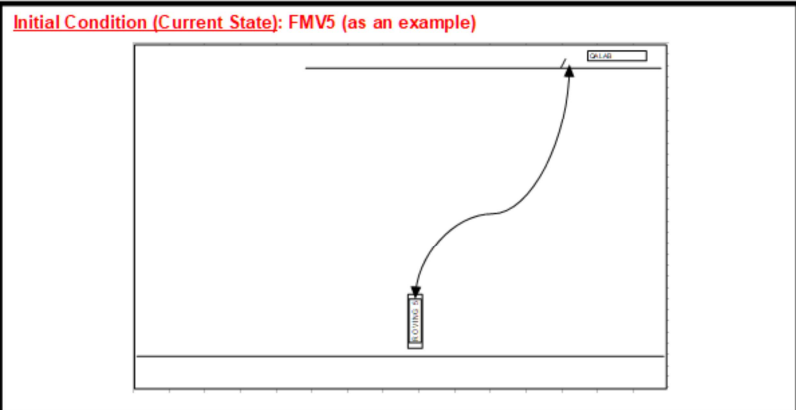
Project Owner/s

Written By: Fred Webberking

Process improvement A3.

**Project Description:** Reduce time taken to conduct necessary quality tests associated with a changeover

**Background / Business Case:** Roving: Excessive motion and time spent walking to and from quality lab to test weight of material by moving as much as possible quality testing apparatus line-side point of use. More cellular approach needed.



**Implementation Plan:**  
Purchase additional digital weighing scales, yard gauge and roving/s liver wheel  
Register as new gauges to quality lab  
install quality testing apparatus in a centralized location to all roving processes on the shop floor.



Indicators:	Current	Target	% Improvement
Time:	60 hours/yr.	10 hours/yr.	- 50 hours/yr. ( 83%)
Labor Cost:	\$777.00/ yr.	\$129.50/ yr.	\$647.50/yr.( 83%)
Investment Required:	Roving sliver reel & weighing scales		\$1500.00

FACTS AND SUPPORTING SOURCE DATA:

**CURRENT STATE:** 110 PACES TO QA LAB 110 PACES BACK 220 PACES X 4 TIMES DAILY X 3 SHIFTS = 2,640 PACES DAILY X 6 WORKING DAYS = 15,840 PACES WEEKLY. TIME TAKEN: 30 SECONDS X 2 TO QA LAB AND BACK 60 SECONDS X 4 TIMES DAILY = 240 SECONDS X 3 SHIFTS = 720 SECONDS X 6 WORKING DAYS = 4,320 SECONDS (72 MINUTES OR 1 HOUR 12 MINUTES) PER WEEK WASTED IN THIS MOTION (60 HOURS A YEAR BASED ON 49 WEEK YEAR). LABOR @ \$12.95 AN HOUR X 60 HOURS = \$777.00 PAID IN WASTED MOTION.

**FUTURE STATE:** 5 PACES TO MACHINE 5 PACES BACK TO CENTRALIZED QUALITY TESTING APPARATUS X 4 TIMES DAILY = 10 PACES X 3 SHIFTS = 30 PACES X 6 WORKING DAYS = 180 PACES WEEKLY. TIME TAKEN 5 SECONDS X 2 = 10 SECONDS X 4 TIMES DAILY X 3 SHIFTS = 120 SECONDS X 6 WORKING DAYS = 720 SECONDS (12 MINUTES) PER WEEK. 588 MINUTES PER YEAR (10 HOURS A YEAR BASED ON 49 WEEK YEAR). LABOR @\$12.95 AN HOUR X 4 TIMES DAILY X 3 SHIFTS \$38.85 X 10 HOURS = \$129.50

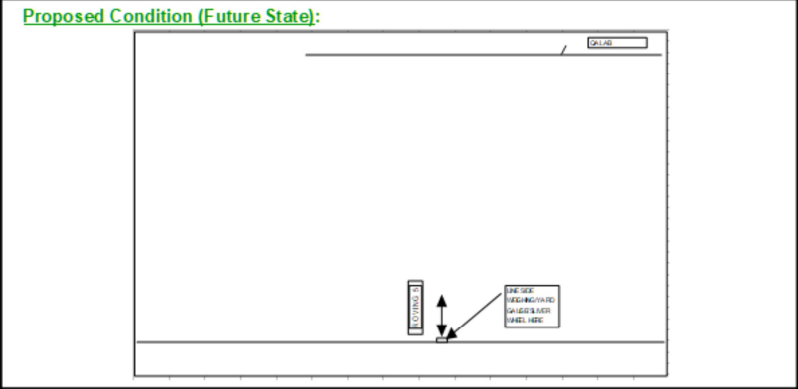
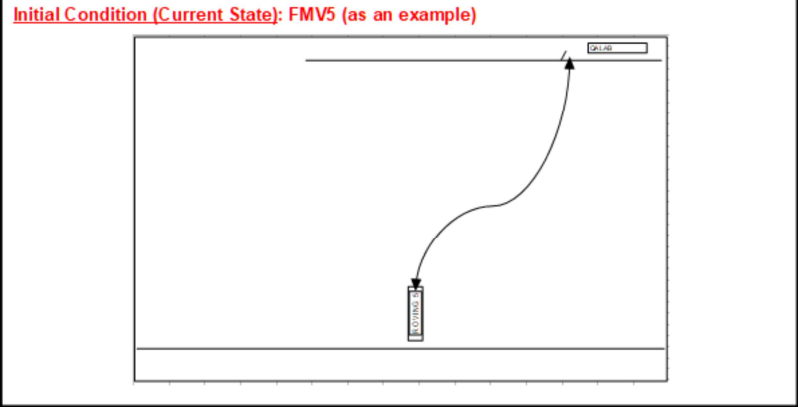
Project Leader:	Core Team Members: A3 Author: Fred Webberking
Project Owner/s:	

Written By: Fred Webberking

Process improvement A3.

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Register as new gauges to quality lab

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Project Leader:	Core Team Members: A3 Author: Fred Webberking
Project Owner/s:	

Written By: Fred Webberking

Process improvement A3.





# A3 Project Plan – Facility Floor Space Organization (5S)

<p><u>Project Description:</u> Utilize existing facility floor space in most effective manner by focusing on revenue-generating (value-added) activity and elimination of waste (non-value-added activity) through a comprehensive 5S initiative</p>	<p><u>Implementation Plan:</u> Develop and implement a comprehensive facility-wide 5S initiative:</p> <ul style="list-style-type: none"><li>•Sort</li><li>•Set in Order</li><li>•Shine</li><li>•Standardize</li><li>•Sustain</li></ul>	
<p><u>Background / Business Case:</u> The current level of floor space utilization for revenue-generating activity is not optimized. The location of certain processes does not necessarily facilitate the most efficient flow of information and material through the value stream</p>		
<p><u>Initial Condition (Current State):</u> There is a significant amount of facility floor space assigned to non-revenue generating activity (inventory) and non-value-added activity (inventory storage and un-needed items). In some cases, processes are not located in the optimum location to facilitate efficient material and information flow</p>		
<p><u>Proposed Condition (Future State):</u> Facility layout that compliments the product value stream</p>	<p>Quantitative goals of the project:</p> <ul style="list-style-type: none"><li>•20% Increase in Sales/square ft.</li><li>•20% Increase in Sales/associate</li></ul> <p>Qualitative goals of the project:</p> <ul style="list-style-type: none"><li>•Reduction in unnecessary inventory</li><li>•Improved associate morale through participative ‘lean’ culture management style</li><li>•Better associate job satisfaction</li><li>•Increase in associate involvement through empowerment</li><li>•Elimination of searching waste by eliminating disorganization</li><li>•Improved coordination of work content through standardization and visual plant management reducing confusion and mistakes</li><li>•Improved safety of work area</li></ul>	
	<p>Project Leader:</p>	<p>Core Team Members:</p>
	<p>Project Owners):</p>	<p>A3 Author: Fred Webberking</p>

Written By: Fred Webberking

5S A3.

**Project Description:** Best practices in maintenance tasks

**Background / Business Case:** Detrimental and inefficient maintenance practices have been identified that can be remedied. Repeat occurrences of equipment downtime

**Initial Condition (Current State):** Case in point: A gear had worn out and needed to be replaced for the apron drive shaft on #17 spinning frame. A hammer was used to drive the shaft off the gear while still attached to the gearbox casing. This unfortunately 'mushroomed' the end of the drive shaft making it impossible to pass through the worn gear bore. Measures had to be taken as the machine had by this time been down for over an hour. In the end the shaft had to be cut to allow it to pass out through the gearbox casing. Wiping a grease nipple off with a clean rag before pushing on the grease gun coupler is a good example of a maintenance best practice to prevent dirt from being pumped into the bearing being serviced. Removing a bearing from a shaft with a hammer isn't.

**Implementation Plan:** Establish a "Lessons Learned" approach to maintenance methods that focuses on preventing recurrence to downtime through the implementation of a root-cause analysis and problem-solving methodology and systemic improvements. Each unplanned interruption to production which is equipment related should warrant a documented and systematic investigation to develop a corrective action to prevent the recurrence of the interruption.

**Proposed Condition (Future State):** Lessons learned: Each time a mistake of this kind occurs we should learn from it. Maintenance manager should meet with his entire team and through the use of a formal corrective action process inform and instruct a single-point-lesson regarding how the correct practice for removing bearing and gears (and the like) from drive shafts. Pullers and soft metal drifts are used not hammers.

**Facts and supporting source data:**

At the time of the mistake the spinning frame was running material that is \$9.00 a pound and the standard machine capacity for the material being produced was 1,500 lbs a day. Revenue capacity \$13,500.00 per day.

Time estimate to replace gear using best practices - 30 minutes - \$282.00 loss

Time actually taken to replace gear using current practice - 300 minutes - \$2,820.00 loss  
Δ \$2,538.00

**Project Leader:**

Core Team Members: Maintenance department

**Project Owner(s):** All maintenance department

A3 Author: Fred Webberking

Written By: Fred Webberking

TPM A3.

# A3 Project Plan – Equipment Spare Parts Organization (TPM)

**Project Description:** Effective and efficient use of spare parts using CMMS

**Background / Business Case:** Impressive use of colored coded totes to store machine and equipment spare parts to indicate which processes or machines they related to. Though a good start it has fallen into complete mismanagement.

**Initial Condition (Current State):** No means of inventory control exists for machine or equipment spare parts. A \$3.00 spare part stock-out can keep a process in a failed state if its not available costing thousands of dollars a day in lost production.

**Implementation Plan:**

Identify critical spare parts deemed necessary to have on hand

- Update current 'Data Stream' MP2 to MP2 for MS Access (immediate action required)
- Sort parts by process
- Sort parts by machine
- Sort parts by manufacturer
- Sort parts by category (electrical/mechanical)
- Sort parts by determining min/max quantities to be carried
- Sort parts by physical size
- Determine totes sizes necessary based on min/max and physical size of spare part
- install spare parts to totes to spare parts room utilizing floor to ceiling of the walls
- Enter all necessary information into CMMS part numbers, vendors, lead times, cost centers, physical locations, purchasing journals, min/max replenishment levels etc.
- Every spare parts totes to have labels attached to them indicating description of part, part number, physical location and bar code and where possible attach spare part label to spare part itself
- Install dedicated computer to spare parts rooms (doesn't have to be new or expensive as it will only be used for accessing 'Data Stream' MP2 CMMS)
- No movement of spare parts without movement of data in CMMS (this must be strictly enforced)
- Install keypad lockset to all spare parts rooms

**Proposed Condition (Future State):** Categorize the machine spare parts and manage them accordingly: Focus on the critical spare parts (OEM spare parts) that if not immediately available can keep the machine in a failed state. Plan and procure inventory of critical spare parts based on lead time. Scheduled restoration spare parts (parts required for overhauls). Scheduled discard spare parts (items that are discarded as part of routine maintenance such as oil/air filters). These categories of spare parts ought to be very tightly (lock and key for unattended store room) managed by those maintenance personnel directly assigned to that machine or production line

**Goals of Project:**

Reduced equipment downtime due to waiting on replacement parts

**Project Leader:**

**Core Team Members:**

**Project Owner(s):**

A3 Author: Fred Webberking

Written By: Fred Webberking

Strategic dedicated equipment spare parts inventory A3.

**Project Description:** Removing lint from roving belts (FMV5)

**Background / Business Case:** Use of hook knives to remove lint has caused cutting of the roving apron belts resulting in accelerated deterioration and unnecessary down time of roving machines to change out roving apron belts

**Initial Condition (Current State):** The 'normal' deterioration or life cycle of the roving apron belts should be at least one year of production work.

**Implementation Plan:** Select and procure different tool that are available from McMaster-Carr. Though these tools have sharp tips which can easily hook up lint they do not have a cutting edge to them.



*Cushion Grip with Hook Pick*



**Proposed Condition (Future State):** Routinely the operator of the machine has to remove accumulated lint that is entangled in, on and around the roving apron belts. Presently a hooked carpet or hooked box cutter knife is used. Sometimes the apron belt is cut accidentally rendering its useful life to 3 months or less. Ban the use of these types of hooked blades knives and use other means to remove lint. Suggestions opposite.



Cost of apron belt	\$40 X 4 OCCURENCES/YEAR	\$160
Time taken to change out apron	2 HR X 4 OCCURENCES/YEAR	8 HRS
Labor @ \$13.00 hr (two man job)	\$52 X 4 OCCURENCES/YEAR	\$416
Loss production for 2 hours	\$500 X 4 OCCURENCES/YEAR	\$2,000
<b>Cost Avoidance</b>		<b>\$2,576</b>

Project Leader: Allen Presley

Project Owner's): Joe and all other shift foreman

Core Team Members:

A3 Author: Fred Webberking

Written By: Fred Webberking

Process improvement A3.



## CONTINUOUS IMPROVEMENT 2017

## I. Problem statement and business case - Why are we talking about this?

## Problem Statement - What is the performance gap?

JHI (AVL) is going through a period of rapid growth and significant organizational change. For 12 years Candler has experienced unchallenged competition from other non-union companies. However, competition from other companies has started up and poses a serious threat that are quite literally on our doorstep.

## Business Case - What is the customer or business need?

Our customers' expectations are to make products to their specification, free of defects, contamination, competitively priced and delivered on time. The challenge ahead for us is not to ruin it, but profitable growth from innovative new union relations.

We have had several customer complaints related to physical contamination from used splinter, metal particles and plastic tape. One of our largest customers was considering a new business with us because of repeat contamination of material that we sent to them as OI material. JHI Candler is in its adolescent age in its lean journey and resources need to be able to meet the challenge of high quality, on-time delivery and cost control.

## II. Current condition reflection and analysis - What have we learned, where are the problems, what are the causes? Recognize problems and opportunities.

1. Contamination prevention management is one of our biggest challenges we face. Although we have already seen improvements from the start of our contamination prevention campaign we have gone from a high of 10.2 total pollution per 2 kgm to a low of 2 total pollution per 2 kgm for Line 5 and 2.49 total pollution per 2 kgm to 0.33 total pollution per 2 kgm for Line 6.

2. Plant organization and housekeeping is not fully developed despite formal training and job cycles and audit schedule in place. Line 6 which has completed full implementation of 5S is only 70% audit completion rate and 50% compliance.

3. An underdeveloped lean leadership program has been a missing component of our overall strategy to support the acculturation of a company that values systematic problem solving. Reactive thinking has been the management of the day to day variance. Not meeting the challenge head on using analytical tools has not brought about measurable improvements in production, schedule achievement, waste and unplanned downtime.

4. Currently the Operations Excellence Manager is the only person that has experience in developing, organizing and running a Kaizen event. We need to transfer and expand this knowledge to a wider population of the workforce having a culture of Kaizen is not a single resource person.

5. Precursor water filtration has been a chronic problem from about August of 2016 affecting product appearance visual web aspects and has been a cause of production downtime on many occasions.

## III. Target Condition: Strategy goal statement and hypothesis - What are we planning to achieve? What will the improved state look like?

1. We will plan into action a comprehensive contamination prevention and control strategy consisting of regular plant go-basewalk, daily audit and corrective measures to protect our customers from physical, chemical, biological and allergenic hazards. We will relentlessly go forward with our contamination campaign using the HACCP principles as the management system.

2. Continue to implement plant wide visual controls across the operations implementing systematized housekeeping throughout the plant's functional departments using 5S visual management methods.

3. We will better utilize the inherent talent we have in our people, especially our six sigma greenbelts. We will develop a lean leadership training program starting with fostering a greenbelt project mentoring and coaching routine to guide them through their assigned projects. The emphasis will be on completion of the Plan-Do-Check-Adjust management iteration cycle.

4. Develop Kaizen facilitator program by training the trainer on how to develop, organize and facilitate Kaizen events. Each Kaizen event facilitated by the Operations Excellence Manager will be a time opportunity to attract new Kaizen facilitators to run their own Kaizen events. For 2017 a set goal of 6 Kaizen events will be facilitated by the Operations Excellence Manager from which 6 additional Kaizen events will be chartered for the new Kaizen facilitators.

5. By the end of 2017 we will have completed a Failure Mode Effects Analysis on Line 5 & Line 6 Water Filtration for all filtration loops to highlight potential problems and developing these risks into failure reporting, analysis, and corrective action plans.

## VI. Action Plan - What must be done to implement the strategy?

Item	Owner	Start Date	End Date	Status	Comments
1. Contamination prevention management	Operations Excellence Manager	2017-01-01	2017-12-31	In Progress	
2. Plant organization and housekeeping	Operations Excellence Manager	2017-01-01	2017-12-31	In Progress	
3. Lean leadership program	Operations Excellence Manager	2017-01-01	2017-12-31	In Progress	
4. Kaizen event	Operations Excellence Manager	2017-01-01	2017-12-31	In Progress	
5. Failure Mode Effects Analysis	Operations Excellence Manager	2017-01-01	2017-12-31	In Progress	

## VII. Improvement Metrics/Targets/Savings - How will we measure the improvement?



## VIII. Approvals RACI Responsible/Accountable/Consulted/Informed

Item	Responsible	Accountable	Consulted	Informed
1. Contamination prevention management	Operations Excellence Manager	Operations Excellence Manager	Operations Excellence Manager	Operations Excellence Manager
2. Plant organization and housekeeping	Operations Excellence Manager	Operations Excellence Manager	Operations Excellence Manager	Operations Excellence Manager
3. Lean leadership program	Operations Excellence Manager	Operations Excellence Manager	Operations Excellence Manager	Operations Excellence Manager
4. Kaizen event	Operations Excellence Manager	Operations Excellence Manager	Operations Excellence Manager	Operations Excellence Manager
5. Failure Mode Effects Analysis	Operations Excellence Manager	Operations Excellence Manager	Operations Excellence Manager	Operations Excellence Manager

Continuous Improvement A3. Again, this is about information density as well a documented plan of action. It can get a little busy. This my CI plan. A lot of the difficulty in these A3 is just getting started, overcoming inertia and once you have it established it's easy to take care of and building other A3 as well.

I. Problem statement and business case - Why are we talking about this?		VI. Action Plan - What must be done to implement the strategy?																					
<b>Problem Statement - What is the performance gap?</b> <ul style="list-style-type: none"> <li>* What is wrong with what? Who is?</li> <li>* Write here your problem statement</li> <li>* Why are you doing this in the first place</li> <li>* Impacts to the business - Safety, Quality, Delivery, Cost</li> <li>* Brief description of the incident or issue</li> <li>* SWs Who, What, Where, When, Why, How, How Many?</li> </ul>		<ul style="list-style-type: none"> <li>* What are the defined corrective action items (fill out Action Plan tab and then copy and paste here as picture)</li> <li>* How does it relate to the business case?</li> <li>* Are there any bridge gaps that need to be in place to allow the action plan to be effective</li> <li>* Who is going to do what, buy when and follow up</li> <li>* Start date for all action items</li> <li>* End date for all action items</li> <li>* <b>WAS AN ACTION PLAN MENTIONED HERE</b></li> </ul>																					
<b>Business Case - Why is the customer or business need?</b> <ul style="list-style-type: none"> <li>* Internal / external customer?</li> <li>* Why is correcting or improving the problem statement important or critical to the business</li> <li>* What are some of the pay-offs or benefits if the problem is addressed</li> </ul>		<b>VII. Improvement Metrics/Targets/Savings - How will we measure the improvement?</b> <ul style="list-style-type: none"> <li>* Current</li> <li>* Indicators leading, lagging</li> <li>* Update periodically, weekly, monthly</li> <li>* Think what are the critical success factors and critical success metrics i.e. a critical success factor for a safety program would be conducting regular safety audits and a metric to that factor is a would be the compliance rate to the criteria of the audit or score and the audit compliance rate score or are the audits actually being done and on time.</li> <li>* Remember a metric needs to be actionable</li> <li>* <b>SHOULD HAVE A MEASURABLE METRIC ABOUT IT MENTIONED HERE</b></li> </ul>																					
<b>II. Current condition reflection and analysis - What have we learned, where are the problems, what are the causes?</b> <b>Recap key problems and opportunities.</b> <ul style="list-style-type: none"> <li>* What are the known current measured areas that have given rise to the problem</li> <li>* Processing flow</li> <li>* Machines</li> <li>* Equipment</li> <li>* Materials information</li> <li>* Provide some initial information that you have gathered</li> <li>* Primary business case e.g. cannot produce to customer demands or specifications or cannot hold tolerances</li> <li>* Root causes identified</li> <li>* Graphic charts and other statistical analysis diagrams?</li> <li>* In what mode or situation did the problem occur?</li> <li>* <b>EVERY CURRENT CONDITION BULLET POINT MENTIONED HERE THAT IS ACTIONABLE</b></li> </ul>		<b>VIII. Approvals RACI Response/Accountable/Consulted/Informed</b> <p>Sign-offs to ensure this comes down to the person and support</p> <table border="1"> <thead> <tr> <th>Customer Manager/Manager/Support</th> <th>Production Manager/Manager/Support</th> <th>Process Manager/Manager/Support</th> <th>Production Manager/Manager/Support</th> <th>Production Manager/Manager/Support</th> <th>Production Manager/Manager/Support</th> <th>Production Manager/Manager/Support</th> <th>Production Manager/Manager/Support</th> <th>Production Manager/Manager/Support</th> <th>Production Manager/Manager/Support</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Customer Manager/Manager/Support	Production Manager/Manager/Support	Process Manager/Manager/Support	Production Manager/Manager/Support	Production Manager/Manager/Support	Production Manager/Manager/Support	Production Manager/Manager/Support	Production Manager/Manager/Support	Production Manager/Manager/Support	Production Manager/Manager/Support										
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<b>III. Target Condition: Strategy goal statement and hypothesis - What are we planning to achieve?</b> <b>What will the improved state look like?</b> <ul style="list-style-type: none"> <li>* Define year end of target condition</li> <li>* Verify that target condition supports business case</li> <li>* <b>WAS A TARGET FUTURE STATE CONDITION MENTIONED HERE BULLET POINT</b></li> </ul>		<b>IV. Going to happen from the previous panel information</b>																					

This is a different style of A3 but keeping with the 4 to 7 panels of current state to future state. This is an instructional guide that I created to assist other A3 users on how to use the A3 thinking process.

My first A3 was composed in 1999 and was drafted on A3 (279 × 432 mm) size paper manually with pencil. A lot of A3s have gone electronic now typically using MS Excel. This another such version using Excel. Using Excel you can use multiple tabs to enter additional information about the A3 such as an evidence tab with hyperlinks to A3 driven project folders, a countermeasure tab where you explain why an action is late or pending.

<b>1. (Business Case) - Background - Incident Summary</b>	<b>3. Target Condition</b>
<ul style="list-style-type: none"><li>• Problem Statement</li><li>• Areas Impacted - Safety, Quality, Delivery, Cost, Environment, Production, Maintenance</li><li>• Brief Description of Problem, Issue, Incident</li><li>• Who, What, Where, When, How, How Many</li></ul>	<ul style="list-style-type: none"><li>• Flows, Process, Material, Data, Information</li><li>• Define Year End or Desired Target Condition</li><li>• Verify Target Condition Supports Business Case</li></ul>
<b>2. Current Condition - Root Cause Failure Analysis</b>	<b>4. Action Plan</b>
<ul style="list-style-type: none"><li>• Flows, Process, Material, Data, Information</li><li>• Gather Evidence, 5Ms, 5 Whys</li><li>• Primary Business Case</li><li>• Root Cause/s Identified</li><li>• Fishbone diagrams, Graphs, Charts, 7 Quality Tools</li><li>• Supporting Information</li></ul>	<ul style="list-style-type: none"><li>• Improvement Activities, Correction Actions</li><li>• Highlight Re-Schedule Activities</li><li>• Relate to Business Case</li><li>• Bridge Gap Between Current and Target Condition</li><li>• Timeline, Who, What, Where, When, How, Follow Up</li></ul>
	<b>5. Metrics</b>
	<ul style="list-style-type: none"><li>• Start, End, Current, Milestones</li><li>• Percent, Defects Per ?, Occurrences, MTBF, Counts</li><li>• Indicators, (Leading - Lagging)</li><li>• Daily, Weekly, Monthly Reviews, Reports</li></ul>

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1. (Business Case) - Background - Incident Summary	3. Target Condition
	4. Action Plan
2. Current Condition - Root Cause Failure Analysis	
	5. Metrics

Drag (or pic and place if cutout) each description box to the correct panel heading on the A3 image above

This is training version of an A3 that I constructed. The participants in the class drag and drop the description placards in the appropriate panel box in the A3.

Describes how the change or improvement is measured

Describes the problem and areas impacted

Describes conditions preventing the achievement of best practices

Describes the ideal conditions after the plan is executed

Describes steps needed to current condition to ideal conditions



1. (Business Case) - Background - Incident Summary	3. Target Condition
<div>Describes the problem and areas impacted</div>	<div>Describes the ideal conditions after the plan is executed</div>
	4. Action Plan
	<div>Describes steps needed to current condition to ideal conditions</div>
2. Current Condition - Root Cause Failure Analysis	5. Metrics
<div>Describes conditions preventing the achievement of best practices</div>	<div>Describes how the change or improvement is measured</div>

Drag (or pic and place if cutout) each description box to the correct panel heading on the A3 image above

The answers.

Describes how the change or improvement is measured

Describes the problem and areas impacted

Describes conditions preventing the achievement of best practices

Describes the ideal conditions after the plan is executed

Describes steps needed to current condition to ideal conditions

Remember, an A3 is essentially a problem solving plan, it's a communication device, it's a reporting medium and project tracker. It should be visited daily and updated daily.