

Process Improvement Study of Freemeyer Industrial Pressure (Preliminary Analysis)

This preliminary report is a culmination of what I have as an intern understood and analyzed about the problems that the company faces for the past 4 weeks and the possible solutions which I feel would be a good fit for the future of the company.

A) Issues Troubling the Company

My initial 2 weeks was mostly observing the issues that the company is facing and this is my understanding of the issues the company faces, They are the following:

- 1) The company is visibly understaffed, due to this under staffing people are juggling multiple hats whilst not being fully able to concentrate their primary assigned jobs.
- 2) There is no design freeze period given to Designer whilst adding new order designs to the already stretched up design portfolio this results in incomplete attention to any one given design or unit that has already started its production run.
- 3) This results in a erratic arrival of part drawings to the purchase and production teams instead of getting a standard Bill of Materials.
- 4) Because of these erratic part drawings supply production team making do with temporary hacks with existing parts of similar make thereby affecting the uniformity and quality of the product, whilst also giving a chance for potential reworking of the unit along with maintenance issues.
- 5) A possible documentation of various designs based on their complexity and time of make not kept this has resulted in working from square one for older designs.
- 6) No preventive maintenance system wherein the company documents past maintenance issues in the units based on model and make and thereby maintain before issue crops up beforehand (Connected to under staffing Issue).
- 7) Workers do not have work standardization schematics that are visual in nature that prevent them from making potential errors.
- 8) Coming to the purchasing department, items ordered in a ad hoc manner when there is visible shortage or items instead of having a predetermined buffer stock and reorder points and documentation for it using an ABC Classification scheme.

- 9) Because of the issue of erratic Bill of Materials and Disorganized method of part ordering, there has been visible expense involved in expediting orders, Ordering incorrect products from suppliers, multiple orders belonging to the same vendor being ordered.
- 10) Visible lack of cleanliness in the plant with bolts and fasteners along with other debris lying all around (Workers jokingly refer to a fastener deposition area as a graveyard for the sheer number of unused lower level components like fasteners lying around).
- 11) There is a issue of communication and non-availability of up to date information between various departments especially between Purchasing and design departments
- 12) Informal Gemba style meetings daily before production that involves not just leaders but the workers, discussing the weekly goals and potential delay issues caused on previous day or week , instead we get long drawn meetings that may not necessarily serve their purpose.
- 13) Workers are not cross trained and work on experience rather than a standard operating procedure (Standardizing) apart from the one specific skillset of their work in addition to excessive worker movement and potential fabrication bottle necks (Having a single plasma cutting machine in 28th street).
- 14) Due to production delays associated with the units there doesn't exist a solid policy of what to fabricate inhouse and what to outsource.
- 15) Maybe if it is to get production running quickly or low procurement cost there is no standardization in the component ordering by purchasing department Thereby they either order a fully built in engine unit sometimes or they order it sub components separately increasing excess workload on the Design department.

b) Possible solutions.

My next 2 weeks of time was mostly dedicated to look into the possible solutions for the issues

1) For workplace organization

Use 5S Implementation for the shop floor, 5S essentially means the following:

a) Sort

Sorting tools , low level components based on what is needed and what is not needed Using a **red tag region** in the plant where tools or components that aren't being used often or have been lying around are sorted and placed irrespective of departments so as to eliminate and scrap the non-value added waste . Would involve a 30 to 40 min prior checking of the work area. The red tag looks something like this:

No.: _____

5S RED TAG

Name: _____
Date: _____
Item/Description: _____
Location: _____
Qty: _____

CATEGORY

Equipment or Tools
 Files
 Finished Goods
 Maintenance Supplies
 Office Equipment or Supplies
 Raw Materials
 Work-in-Process
 Unknown
 Other _____

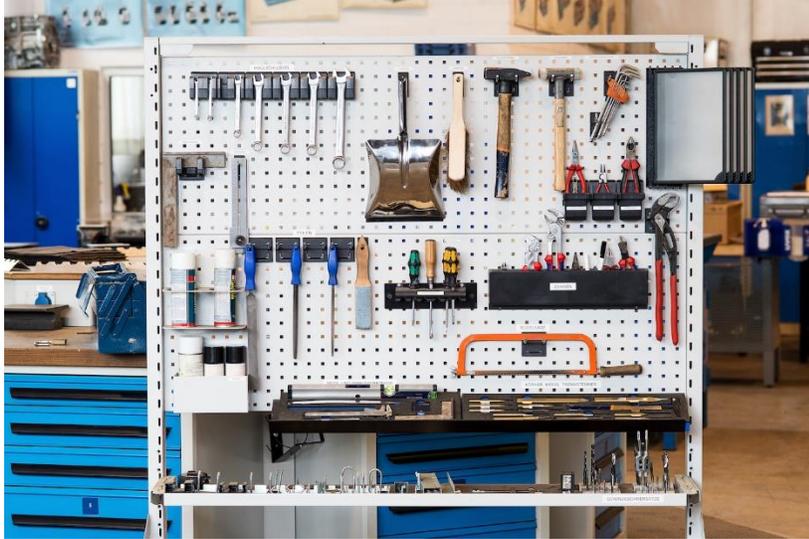
b) Set In order

This primarily involves usage of shadow boards near worker wherein tools for the specific task involved are placed and involves worker discipline in placing the tool in same place due to the missing tool or component shadow with proper labeling and color coding used to identify different types of components (Will elaborate upon once it is practically implemented)

Potential issue with this suggestion -The company has a policy wherein the workers should bring their own tools and this would require housing of the tools within the company or the company investing in new tools for a standard workforce

c) Shine

This primarily involves keeping the worker workplace clean, tidy, decluttered and ergonomically easy to use , should involve a sense of personal involvement from the worker especially before he leaves the workplace .A 5S workplace looks something like this :



(For Visual Representation only)

d) Standardize

Use 5S sheets (A3 sheets) with significant input from company , workers and me to prepare a checklist sort of sheet both for workstation and overall plant work auditing

The sheets look something like this (For Visual Reference)

	Activity	Responsibility
1	Sweep the entire area at the end of the shift	See Rotation
2	Put away any material that was removed from its assigned storage location	Kevin
3	Take empty pallets out of the area and store in an appropriate location.	Team
4	Empty garbage's as needed at the end of every shift	See Rotation
5	Restock materials from overflow area when space permits	Kevin
6	Move full pallets to designated areas away from shipping dock	Team

e) Sustain

Involves worker discipline in maintaining the above 4 tenets diligently something a personal talk from management can help ease out

Additional suggestion for decluttering workplace – Usage of military style pouch belts for workers for keeping in fasteners and nuts with them in close vicinity instead of dumping them on a trailers mud guard.

Note – 5S works on the principle of designated work place for workers

2) For coordination and establishing communication channels

Use Visual management techniques

In a Place which everyone can see use a white board which shows the work progress in the plant both in the overall sense and in the localized sense for every department to keep a tab on their progress along with providing information to the overall management so that delays or issues are sorted out as and when they occur through Continuous Improvement Meetings . Magnetic Stickers of the color of red, green, yellow can be used to indicate whether the work is on track, delayed or on hold due to external factors so that something could be done about it.

The company can utilize a Kanban card system or a Bin system to show the completion of components so that the purchasing team reorders it or to be specific refills it based on their availability in the ware house

It works something like this if you use 2 way kanban card system , the in house kanban card located in the workplace of the worker would contain information about the component , its barcode or product code , order quantity (as assigned by design and followed by Warehousing department) , Warehouse Aisle location and so forth , the worker would place this card at a mail box(For easy reference doesn't have to be a mail box) with a movable red flag or any other audiovisual signal , located near to his workplace .Now a dedicated warehouse worker in a tug , forklift or in person (**I call him the postman , company can call him anything**) tasked with seeing this notices the signal , goes and collects the Kanban cards, takes them to the warehouse where there is an another Kanban card acting as visual reminder that shows the order replenishment to be done in case of low inventory levels fills up the a fresh bin with components and delivers to the worker before entering manually or bar code scanning the component usage and thereafter delivering to the worker , this prevents unnecessary worker movement .

It involves good investment on merchandise on part of the company so this has to be implemented after company successfully implements 5S

KANBAN

ITEM: _____

PART NO: _____

QTY: _____

LOCATION: _____

SUPPLIER: _____

**RETURN KANBAN
CARD TO:** _____

Part Description				Part Number	
Smoke-shifter, left handed.				14613	
Qty	20	Lead Time	1 week	Order Date	9/3
Supplier	Acme Smoke-Shifter, LLC			Due Date	9/10
Planner	John R.		Card 1 of 2		
		Location	Rack 1B3		

(This is how a Kanban Card for worker and warehouse personal respectively)

Reason for this suggestion – The Achilles heel of the company is essentially a lack of communication and excessive worker movement without the need for it

Develop dedicated teams for the units

The 6 types of fabrication units produced by the company can be classified to my understanding into 3 or 2 value streams on the basis of decreasing complexity with each value stream containing 2 product types or 3 product types given that on my measurement most of the trailer are almost of the same measurements and make. Instead of separate departments, cross functional teams (Including people from design , purchasing and production and warehousing located in close vicinity to each other in same chamber perhaps) dedicated to these value streams would ensure dedicated workforce on projects instead of the juggling game that happens right now whilst also ensuring proper communication.

This can have an added benefit of having extra workforce in the crucial department of engineering and Warehousing/Purchasing when similar bulk orders crop up.

This predominantly involves mapping the process of fabricating these units from start to finish including its supply sources so as to understand the redundant steps and would require considerable effort from the company

Downsides- It boils down to finances of the company and their willingness to recruit persons of specific talent in the engineering and warehousing department.

