



REDUCTION OF HOSE CONSUMPTION IN BLOOMING MILL

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Abstract: In metallurgical plants the blooming mill is an intermediate link between the steel-casting shops and the rolling shops, which turn out the finished product. Blooming mill department, in that one of the major issue is frequent host failure in roller conveyor the cooling water supplying through hoses should be in proper working condition because it helps in maintaining microstructure of steel properly. Hence we analyzed the causes of hose failure and we modified the hoses and replaced it wherever necessary.

Index Terms -

I. INTRODUCTION

In metallurgical plants the blooming mill is an intermediate link between the steel-casting shops and the rolling shops, which turn out the finished product. In modern plants, blooming mills work together with continuous billet mills, which turn out billets for the shape mills.



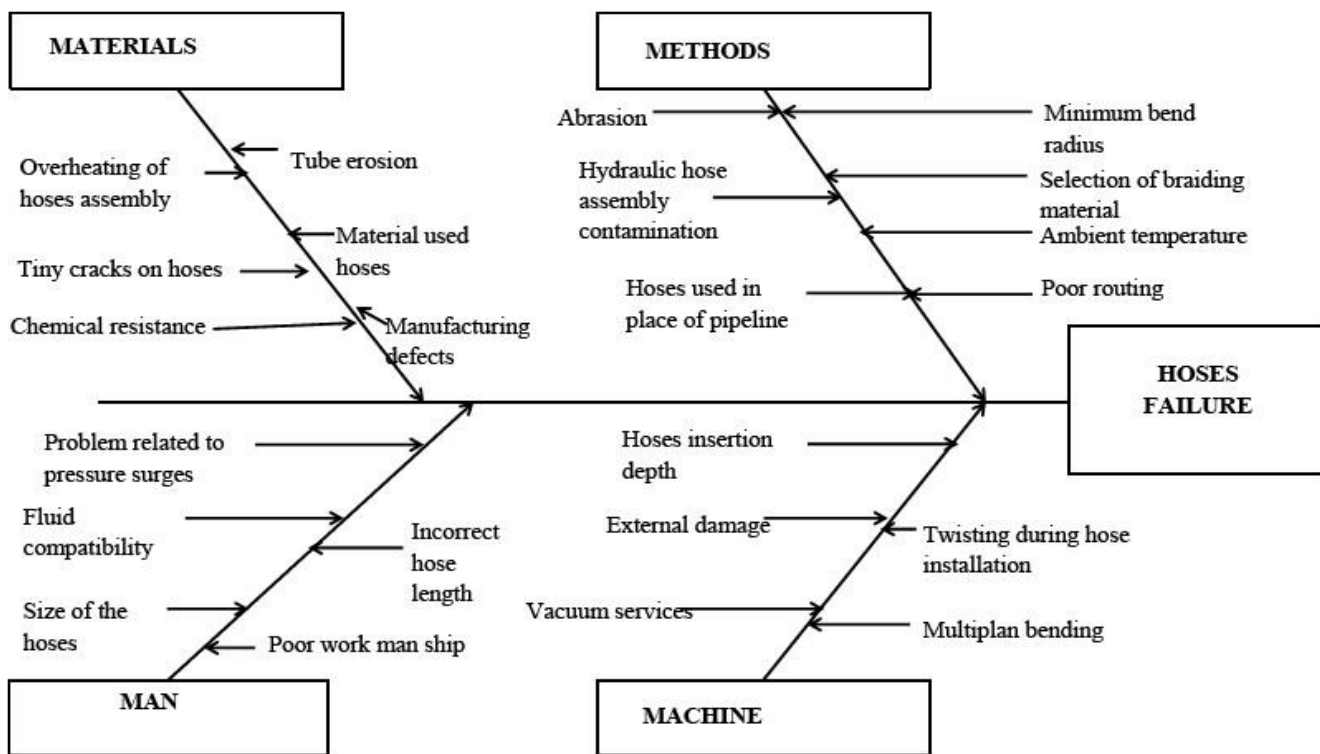
There are various problem occurs in blooming mill department, in that one of the major issue is frequent hose failure in roller conveyor. The cooling water supplying through hoses should be in proper working condition because it helps in maintaining microstructure of steel properly.

The scope of the project is to find out the hose failure in blooming mill and it's rectification by the following methods;

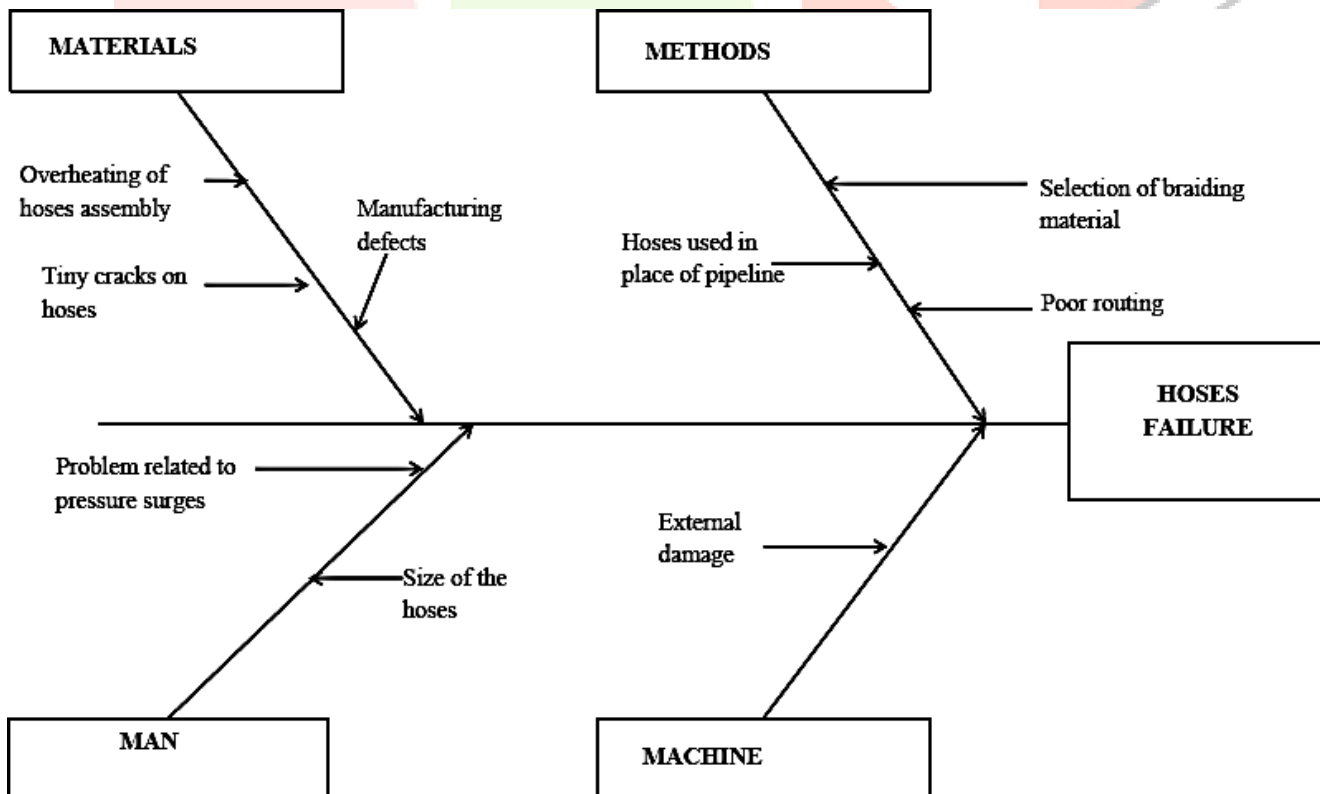
- To find out the problem that affect the blooms production
- To analyses the causes of the problem
- To provide the necessary action plans for reducing production time
- To standardize the action plans in process

II. ANALYSIS

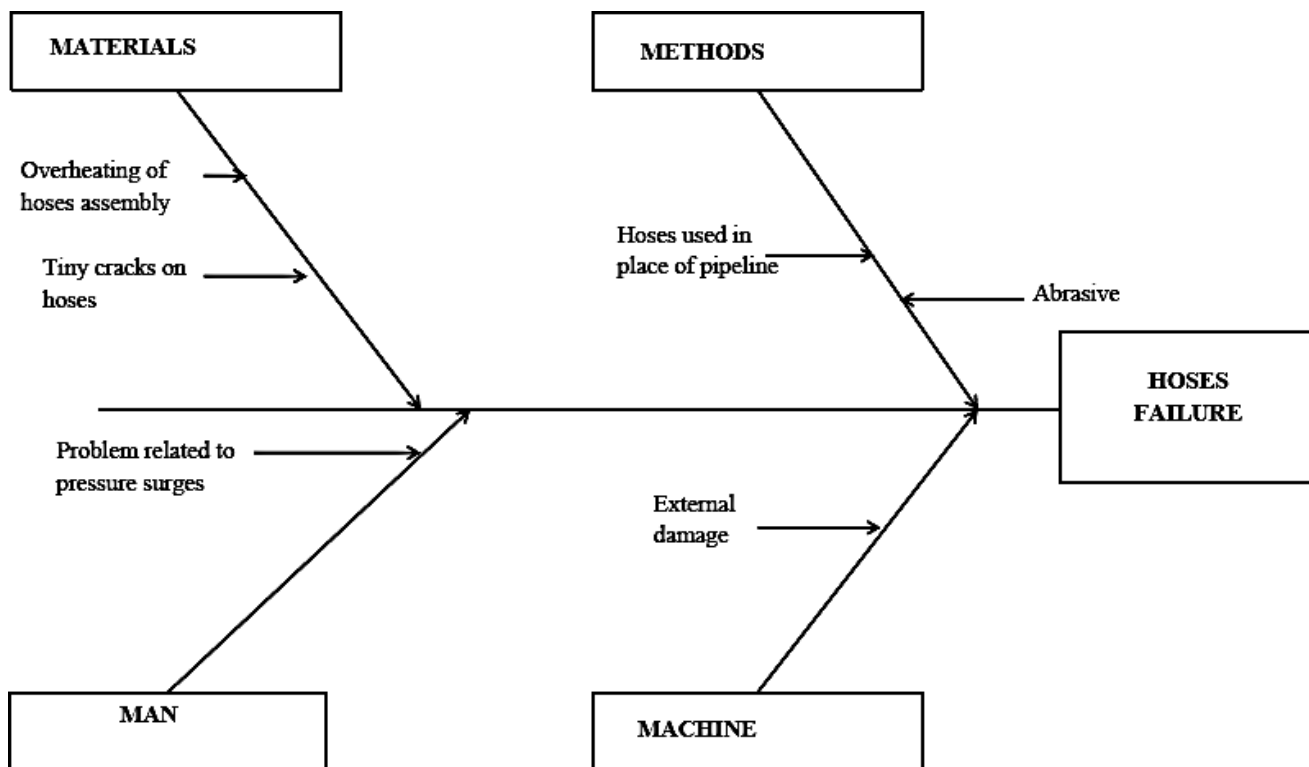
Cause And Effect Diagram- Level 1



Cause And Effect Diagram-Level 2



Causes And Effect Diagram- Level -3





III. RESULT:

Cause No. 1: Overheating of Hoses Assembly

Selected Counter Measures:



Replace the hose with one that has higher qualification temperature rating

Sl.NO	PARTICULARS	RATING	
		BEFORE	AFTER
1	Image		
2	Properties	Handles higher temperatures and resists petroleum additives	Reinforced with tough, high temperature resistant polyester textile cords
3	Lubricant	SAE 20R3 Class A Tube and Cover.	SAE 20R1 (Class B Tube, Class C Cover, Heavy Wall).
4	Temperature Limit	-40°F to +212°F (-40°C to +100°C),	-40°F to +212°F (-40°C to +100°C),
5	Material	Nitrile rubber	Silicone rubber

Cause No 2: Abrasion:

Selected Counter Measures:



Use protective sleeve or hose guards and hose assembly should be rerouted I required

SI. NO	PARTICULARS	RATING	
		BEFORE	AFTER
1	MATERIAL	R35TC-40	RS35TC-48
2	IMAGE		
3	DESIGN FACTER	4:1	2.5:1
4	CYCLES	Impulse tested to more than 1.5 million cycles at +120°C	Impulse tested to more than 1.5 million cycles at +120°C
5	WORKING PRESSURE	35.0 MPa (5000 psi)	42.0 MPa (6000 psi)

Cause No. 3: External Damage.



Selected Counter Measures:

Replace the hose assembly and reroute it, add clamps if required.

SI. NO	PARTICULARS	RATING	
		BEFORE	AFTER
1	Image		
2	Loses	No contraction loss	Contraction loss occurred
3	Rate Of Heat Transfer	Rate of heat transfer rate is low	Rate of heat transfer rate is high
4	material	Nitrile rubber	Nitrile rubber
5	Coolant	Coolant fluid where wasted	Coolant fluid where saved

Cause No. 4: Hose Used In Place Of Pipelines**Selected Counter Measures:**

Use pipelines in place of hose fails frequently.

SI. NO	PARTICULARS	RATING	
		BEFORE	AFTER
1	MATERIAL	U PVC	STEEL
2	IMAGE		
3	CYCLES	Impulse tested to more than 1.5 million cycles at +30°c to +50° c	Impulse tested to more than 1.5 million cycles at +120°c to +320°c
4	WORKING PRESSURE (1/2)	600 (psi)	1300 (psi)

IV. CONCLUSION:

The problems occurring in hoses of blooming mill has been listed and tabulated, from that the significant (main) problem are taken into consideration and that problem is rectified.

The problems rectified through this analysis are as follows,

- Overheating of hoses can be replaced by high temperature rated hoses,
- Abrasion problem is decreased by using sleeve and hose guard in the existing hose,
- External damage of hoses can be replaced by hose assembly and re-routed it,
- Finally in failure areas the hoses were replaced by pipe lines.

Due to this action taken, the productivity is increased with 90%, cost spending for hoses is greatly reduced, and finally delivering steels to customers is increased.

References

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