

GLOBAL JOURNAL OF ENGINEERING SCIENCE AND RESEARCHES REDUCTION OF JOB CHANGE OVER TIME AND POSSIBLE WAYS AND MEASURES TO OPTIMIZE THE JOB CHANGE OVER TIME IN WEB-FED GRAVURE PRINTING

(A Case study of “Huhtamaki PPL Ltd.” Rudrapur)

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Abstract

Gravure Printing technique is used for fine quality Printing Jobs. It is impossible to imagine survival of human beings without Printing. Sir Johannes Gutenberg, Father of Printing, was declared as ‘Man of Millennium’ by Time magazine. And, Printing is declared as the ‘Greatest Invention of Millennium’ again, by Time magazine. Present era is meant for the ‘Survival of the Fittest’. And, this is where Printing has touched one and all. It is said that Printing had started with humanization. On a parallel track, it has an association with human lives till time. It’s not a dictum that society is concerned about environmental damages. We try to aware our society about the practices with which we can protect our ecosystem. Printing is also making its way to the outer world regarding the protection of environment from harmful materials. Like any other strata of our society, Printing also own three factors for its optimization – Time, Money, & Energy.

I. INTRODUCTION

This Paper is about to reduce the job change over time along with the optimum utilization of job change over time and explore the possible ways of optimum utilization of the job change over time used in Gravure Printing process.

II. RESEARCH OBJECTIVE

The objective of this study is to reduce the job change over time along with the optimum utilization of job change over time and explore the possible ways of optimum utilization of the job change over time used in Gravure Printing processes in “Huhtamaki PPL Ltd” Rudrapur”

III. RESEARCH METHODOLOGY

The whole study has been divided in 3 sub parts to consumption of job change over time improve web-fed gravure printing works along with the cost, efficiency, consumption of time and influence of utilization of job change over time used in web-fed gravure printing presses

The following methodology will be adopted during the study.

1. Study of different web-fed gravure printing machine used in printing industries.
2. Study of the job change over time used in different web-fed gravure printing work along with the cost, efficiency, consumption of time.
3. Different jobs of the " web fed gravure printing presses" during project work consuming time of job change over time will be selected and the study will be conducted on each selected job.

Data collection will be done during the study

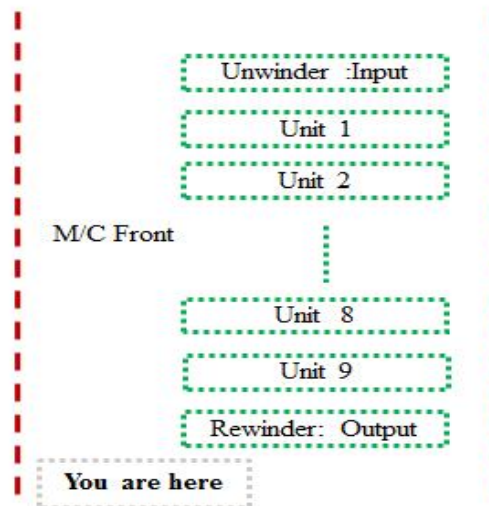
IV. DATA COLLECTION & ANALYSIS

Huhtamaki PPL, LTD RUDRAPUR

Name of Machine : CERUTTI-1 PRINTER
 No. of Units : 9 COLOR
 Machine Speed : 350 M/M
 Change over time of job on machine : Min 1.5 hr
 Per day minimum production approx. : 150KM
 Copies wastage during production (per job) : 4 to 5 % Approx.
 Types of ink : PU Based, Vinyl based & Acrylic Based
 Material used : PET, BOPP, PEARLISED BOPP, PVC

METHODS

JOB SETUP TIME REDUCTION ON CERUTTI PRINTER



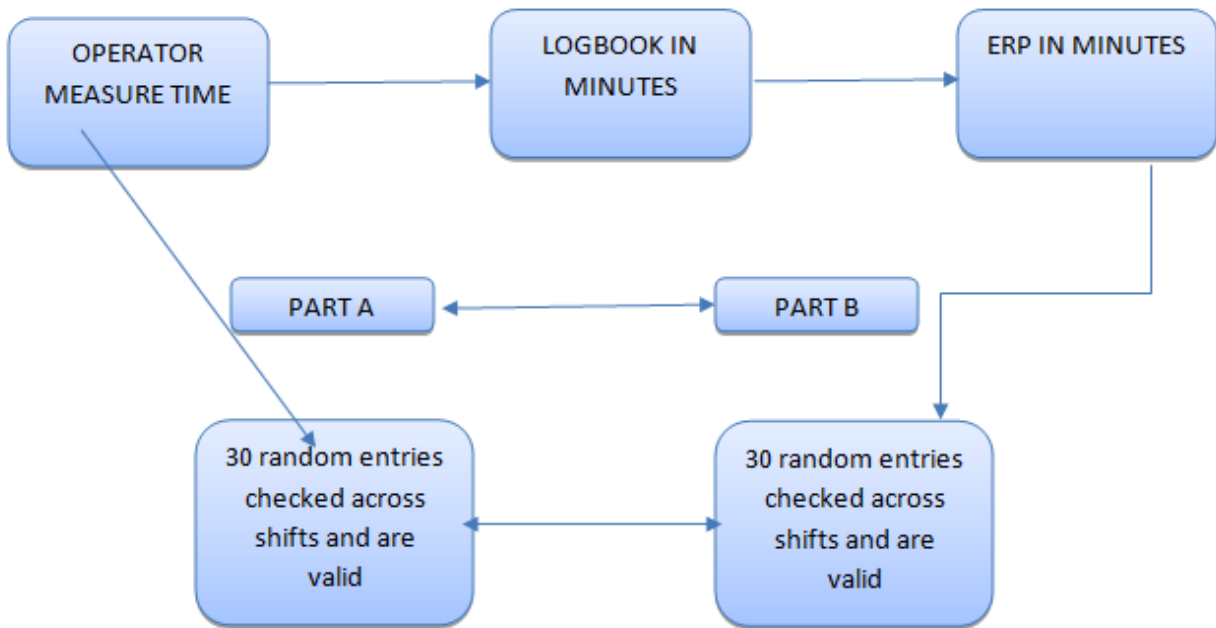
DEFINE

Title	Description
Name of the project	Study of Web Fed Gravure printing for optimum utilization of job change over time
Problem description	Average job set up time in Printing Department from June 2016 to Jan 2017 is 8.61 min per cylinder

What is success	To reduce job set up time of Cerutti 1 Printer from 8.71 to 7.88 min per cylinder by Dec 2017
Savings	14.19 KEUR (1 EUR = 77.5 INR)

MEASURE AND ANALYSIS

- Set up time per cylinder : Total time / No of cylinder

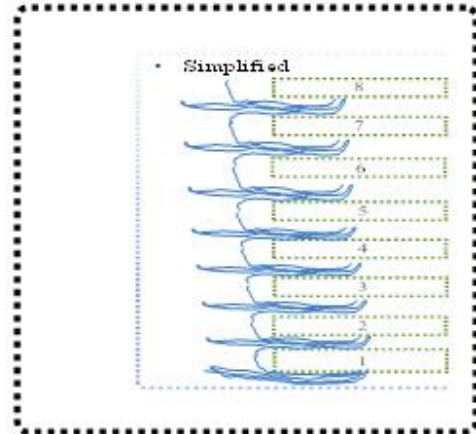
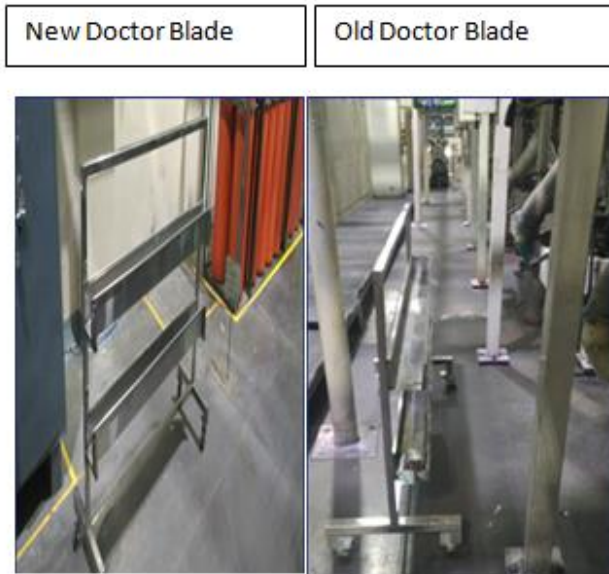


- From Part A, Part B validation we conclude that measurement system is invalid

V. IMPROVE

Doctor Blade C/O

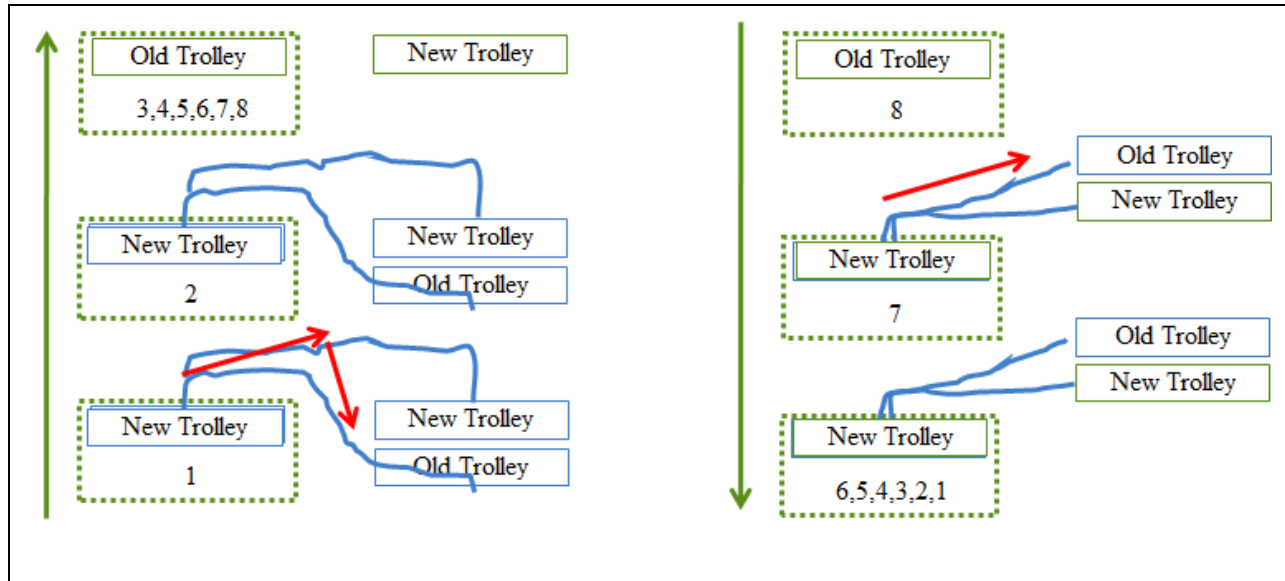
- Simplify Doctor blade C/O
 - Trolley to be made which will move with member
 - Before C/O time : 16 min , 240 meter
 - Current C/O time : 10 min , 108 meter (55% reduction in movement)



Doctor blade trolley

Trolley C/O

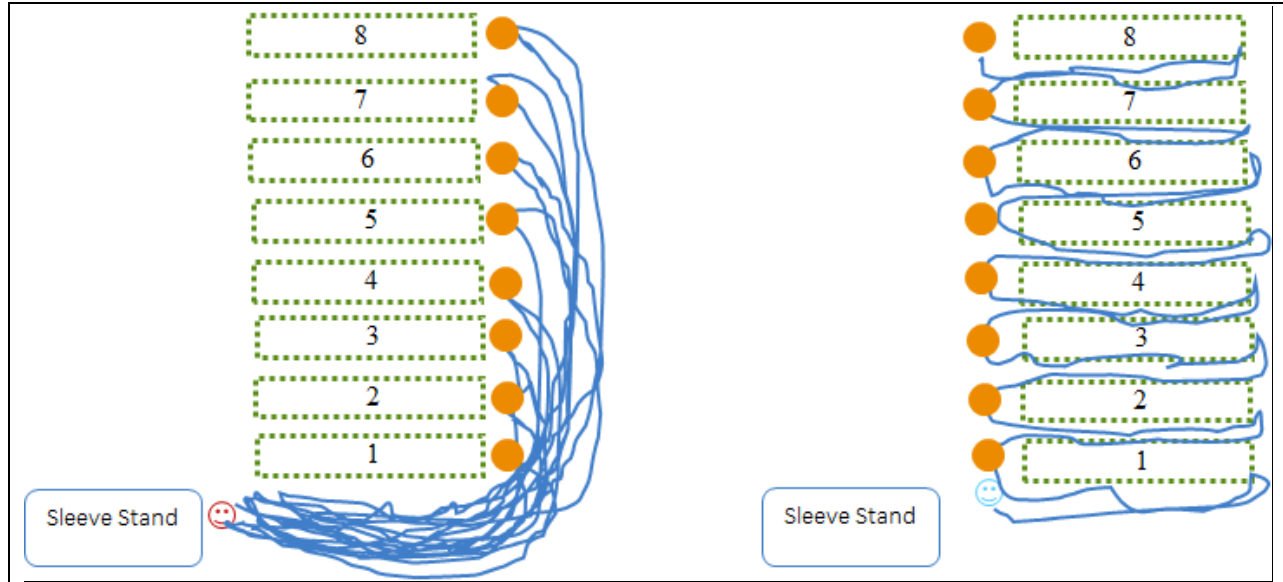
- Before : Trolley are removed randomly from station 1 to station 8
- To change direction of trolley twice
- Cumbersome to move trolley , C/O time 20 min



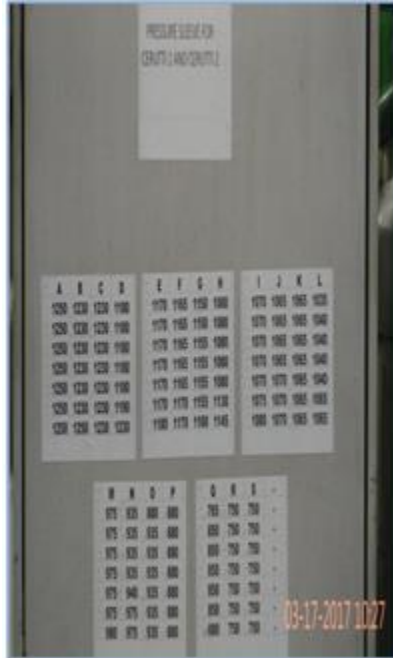
- After : Trolley will be removed from station 8 to station 1
- Change direction of trolley once
- Simple and effective, Current time 12 min
- This method helps to line up for offline ink removal activity

Pressure sleeve C/O

- Place sleeves in front of station, same step repeated for loading sleeve and keeping old at sleeve stand
- Before C/O time : 22 min , 228 meter

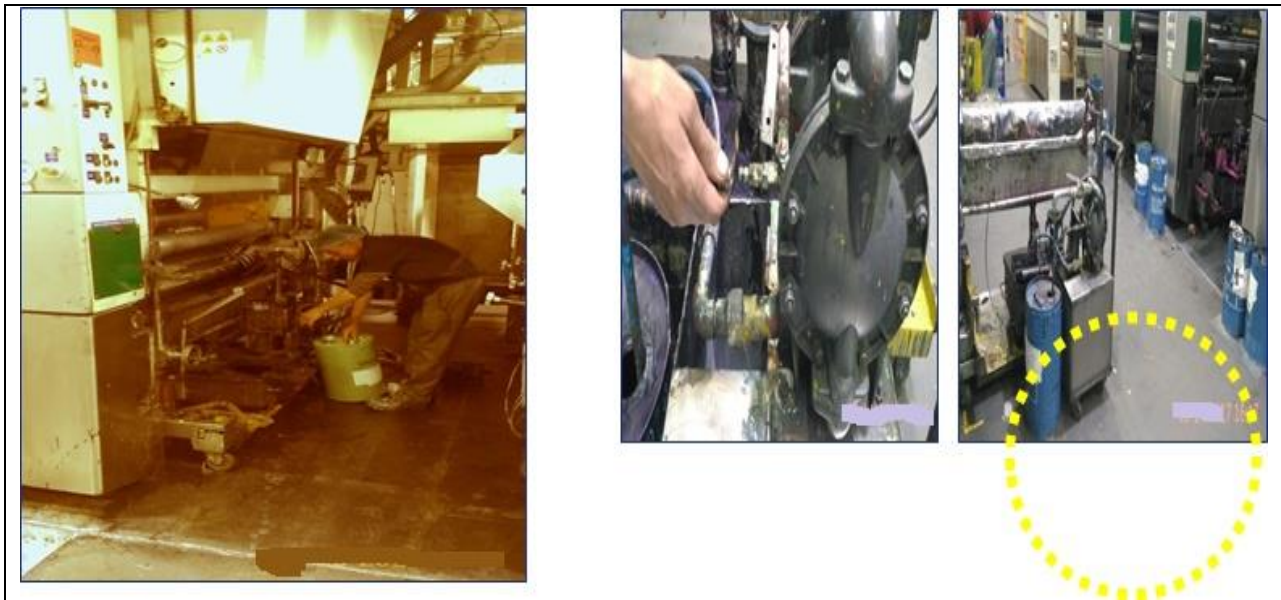


- Place Sleeve at backside of station (converting a part of activity from internal to external)
 - Current C/O time : 15 min , 108 meter (53% reduction in movement)
- 2S for Pressure Sleeve C/O
- Before : Sleeves kept randomly in stand, minimum 10 min to search 8 sleeves for a job from 133 sleeves in all
 - After : Sleeve stand 2S done to locate right sleeve for job in less than 2 min (e.g. D rack has 1180 sleeve size)
 - It helps operator to locate sleeve easily and carry offline activity of keeping sleeve in backyard of machine.

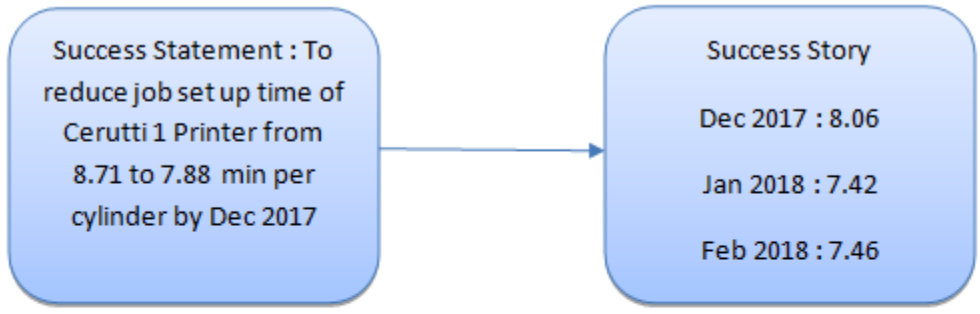


Improve ink removal

- Before : All ink station removed online
- The most crucial activity to be converted from online to offline
- C/O time ink removal : 30 min



- After : Remove ink offline
- Modification
- One supply air line provided in front of machine where all trolley will be placed
- One pneumatic mobile pump made to remove ink
- Expected reduction of 30 min in total job change over time , trials in progress



Savings from DEC 2016 to FEB 2017 is 4.99 KEUR as against budget of 3.54 KEUR

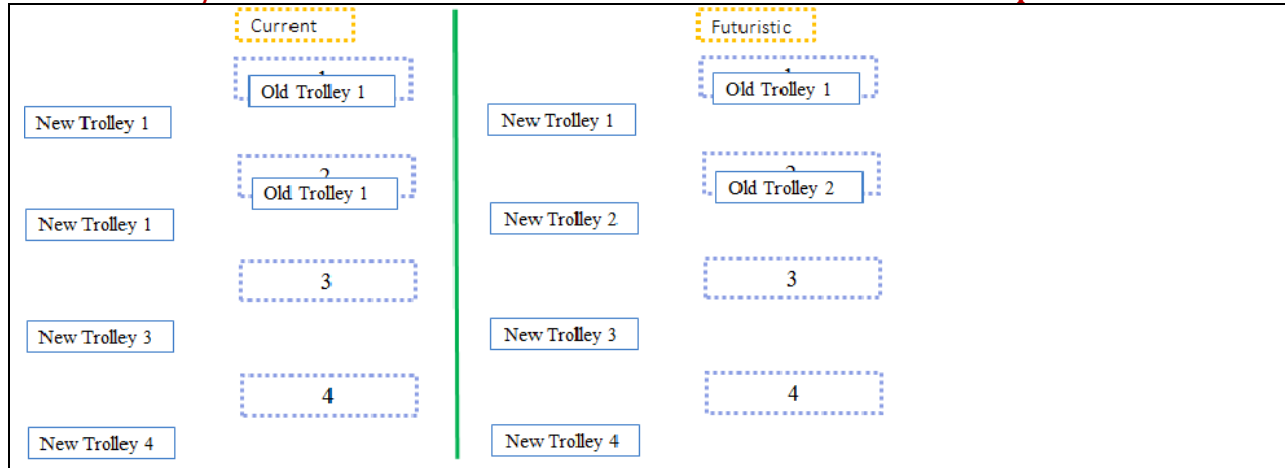
Control

- Role Clarity defined for every team member with timelines
- New SOP training given to all team members and same displayed at point of use



Way forward to similar project

- Possible Layout for New Printing Machine utilize both side of machine for C/O
- Better space management will thus impact Job set up time



VI. CONCLUSION

The study may be concluded in a manner that, if all suggestions were implemented in a matter of practice on web-fed gravure press Machine, consumption of job change over time will go down. However researcher feels that limited facilities or infrastructure was available in city like Rudrapur. The result may vary depending upon type of Machine/Technology, and skill man power.

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