

# Study of 3<sup>rd</sup> Party Logistics in Automotive Manufacturer Company

Dhruva joshi, Dr. Nagendra sohani  
 Mechanical department, IET DAVV, Indore, India

## Abstract

Assembly line stoppage is vital issue in automotive manufacturing company. In this paper we proposed a method to reduce this by using 3<sup>rd</sup> party logistics. we collect data in automotive manufacturing company, outsource his internal movement of material and 'In plant warehousing' to a logistic company. We find the causes of assembly line stoppage those are related to 3<sup>rd</sup> party logistic and provide possible solutions.

**Keywords** — 3<sup>rd</sup> party logistics (3PL), Assembly line stoppage, material shortage, material rejection

## I. INTRODUCTION

Rapid changing in the business environment increased the instability and complexity than ever before. Therefore, many organizations have made frequent changes in their organizational structures and business processes to remain in the competition.[2]

Typically, a core company providing services or products is considered the first party; the customer (or customers) the second party. A third-party, then, is a firm hired to do that which neither the first or second party desires to do. A third-party logistics firm is a firm that provides outsourced or "third party" logistics services to companies for some portion or all of their supply chain management functions. 3PL typically specializes in integrated warehousing and transportation services that can be scaled and customized to customer needs based on market conditions and the demand and delivery service requirements for their products and materials (Skjoett-Larson, 2007). In last few years there has been considerable interest in the growth of third party logistics providers all over the world. Companies are rapidly focusing on logistics services. The 3PL's can improve the logistics processes by allowing the companies to focus on their core competencies that ultimately reduce the business costs and increase the customer satisfaction. Typically these firms (3PLs) provide logistic services. In addition to these services third party logistics providers may warehousing and internal movement of material of a company, manage the inventory. Internal movement of material covers all the logistic function within the company such as gate entry, unloading, storing and provide goods to assembly line.[8]

In this paper we are focusing on assembly line stoppage in automotive manufactures in

India.3PL consequently speed up the inventory dispatch process to the assembly line and eliminate the threat of line stoppage(s). We select 3PL Company working for an automotive manufacture company and find the causes of assembly line stoppage.3PL provides the "In plant warehouse" management solutions and internal movement of material. Internal movement of material includes gate entry process and unloading and storing. Goods are unloads and store by gate entry process.

Gate entry process is follow to proper collection and storing of Goods. All the paper and WSN (warehouse serial number) are check at security gate and generate bar code sticker. Physical verification of Goods, separation of DOL(direct on line) and NON-DOL Goods are done at dock.DOL Goods are send to store and NON-DOL Goods to holding store.[8]

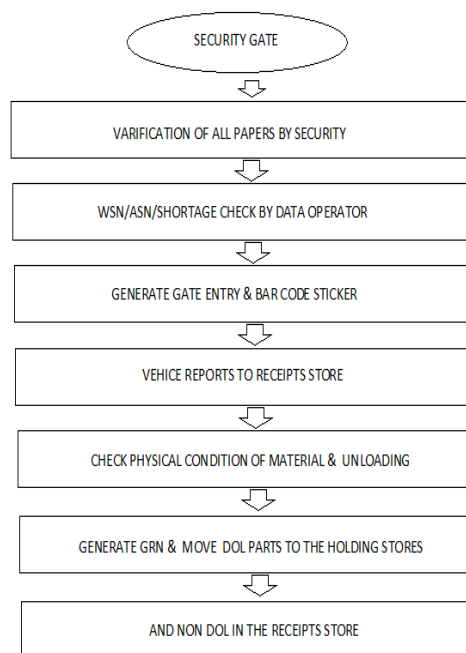


Fig. 1 Flow Chart of Gate Entry Process

## II. ASSEMBLY LINE STOPPAGE

Assembly line stoppage is occurred when no production (assembly of parts) activity performed due to material shortage, material rejection etc. There are so many reason of assembly line stoppage but we are taking 3PL related reason. Line stoppage report is made on the basis of data, shows delay supply of

material is main factor and delay supply is due to material shortage, material rejection and equipment breakdown.

Date	Shift	min	Category
3-Apr	A	100	STORES
3-Apr	C	7	STORES
4-Apr	A	20	STORES
4-Apr	A	20	STORES
4-Apr	A	61	STORES
4-Apr	B	20	STORES
6-Apr	B	98	STORES
6-Apr	B	25	STORES
7-Apr	A	40	STORES
7-Apr	B	130	STORES
7-Apr	B	35	STORES
7-Apr	B	75	STORES
9-Apr	B	45	STORES
9-Apr	B	10	STORES
9-Apr	B	30	STORES
10-Apr	A	10	STORES
10-Apr	B	10	STORES
10-Apr	B	8	STORES
14-Apr	A	45	STORES
15-Apr	B	50	STORES

Fig. 2 Sample of Line Stoppage Report

### III. PROPOSED METHODOLOGY

Production plan is made by planning team and send to store (3PL), demand report is made as per plan and send to suppliers, received Goods from gate entry process. Pick lists are generated from production department, these items are needed at assembly line.[8]

#### A. Material Shortage

While analysis the shortage report we found that there are two types of item “DD” (direct delivery) and “inward” item, “DD” item are normally used for new product development, “inward” item are used for normal production. Average number of “DD” (direct delivery) item shortage is 40 and “inward” item shortage is 118. There is miss match in generated report and existing item, stock report shows item in inventory but in reality it is not available in stock it is due to low accuracy of BOM (bill of material) and on line back flashing not done at assembly line. In case of production plan change, shortage is occurred due to non availability of required items at stock. On line back flashing can reduce mismatching problem, in online back flashing we manage a online report for material at assembly line which shows either material are used or not. If material is rejected or not used it is also indicate in online report so that stock is balance every time.

#### B. Possible Solutions for Material Shortage

Update BOM and remove miss match in both 3PL Company & manufacturing company

because planning is done by manufacturing company and stock is maintain by 3PL Company so same BOM required at both side. In case of plan change a collection vehicle is needed to collect items from supplier as these item required at short quantity and supplier willing to send at least a lot so collection vehicle is best option. Critical list made for short items and send to store so that priority is given to critical items.

Months	DDitems	Inward items
Jan	30	90
Feb	59	101
Mar	19	76
Apr	35	138
May	47	245
June	38	99
July	42	111
Aug	90	168
Sep	29	111
Oct	32	101
Nov	17	56
Total	438	1,296

Fig. 3 Data of Material Shortage

#### C. Material Rejection

Quality of material is very important, low quality material is rejected by quality department. Three types of rejection occurred that is dock rejection, QC rejection and line rejection. Dock rejection is due to wrong packing, short number of material etc. QC rejection is due to low quality and line rejection is due to wrong material supply. DOL (direct on line) parts not required quality check but NON-DOL parts required. Every 3<sup>rd</sup> lot automatically change in to NON-DOL. Assembly line stoppage is occurred when a lot or part rejected due to low quality or wrong material supply because it causes shortage o material.

#### D. Possible Solutions for Material Rejection

“Supplier quality assurance program” can help to maintain required quality parameter in this specific quality parameter are made and follow by supplier. Those item required 100% quality check such as engine parts or costly parts use supplier end QC (quality check). Every 3<sup>rd</sup> lot automatically changes in to NON-DOL it can be 5<sup>th</sup> or 7<sup>th</sup> by past record because it reduces extra burden on quality department. If production plan is changed quality checking is done as per changed plan.

MONTH	DOCK	QC	LINE
Jan	100	4	5
Feb	219	3	4
Mar	107	14	10
April	107	3	11
May	94	8	8
June	67	6	10
July	130	7	7
Aug	162	25	6
Sep	129	7	8
Oct	2	10	10
Nov	104	2	7
<b>Grand Total</b>	<b>1,221</b>	<b>89</b>	<b>86</b>

Fig. 4 Data of Material Rejection

- [4] Bolumole, “The Supply Chain Role of Third-Party Logistics Providers” - International Journal of Logistics Management Vol. 12 No. 2, pp. 87-102 march 2001.
- [5] Lieb, R.C., Millen, R.A., and Van Wassenhove, L.N. (1993), “Third Party Logistics Services: A Comparison of experienced American and European Manufacturers, “International Journal of Physical Distribution and Logistics Management, Vol. 23, No.6, pp. 35-44.
- [6] Langley Jr., C.J., Van Dort, E., Ang, A., and Sykes, S.R. (2005), Third-Party Logistics: Results and Findings of the 10th Annual Study.
- [7] Brewer, P.,C. and Speh, T. W. (2000) “Using Balanced Scorecard to Measure SupplyChain Performance”, Journal of Business Logistics, Vol.21, No.1, pp.75-93.
- [8] [http:// www.tvslogisticsservices.com](http://www.tvslogisticsservices.com)

#### IV. CONCLUSIONS

In this study we collect data of material shortage and material rejection from a 3PL company, analysis is done and provides possible solutions. We apply these solutions in 3PL Company for a short duration saying 1-2 month and observe line stoppage report. We found that line stoppage due to delay supply is reduce by a considerable factor.

#### FUTURE SCOPE

We are taking only two factors, material shortage and material rejection. Equipment breakdown and manpower shortage also affect the line stoppage. One can apply solutions one by one and find out real data of deduction.

#### REFERENCES

- [1] Soon-hoo So, JaeJon Kim, KiJu Cheong, Geon Cho, “Evaluating the service quality of third-party logistics service providers” -Journal of Information Systems and Technology Management Vol. 3 No. 3 March 2006.
- [2] Forrest B. Green, Will Turner, Stephanie Roberts, “A practitioner’s perspective on the role of a third-party logistics provider” -Journal of Business & Economics Research Vol. 6, No. 6 June 2008.
- [3] Skjoett-Larsen, “Third Party Logistics- From an Interorganizational Point of View” -International Journal of Physical Distribution and Logistics Management, Vol. 30 No. 2, pp. 112-127 june 2009.