

# Effective Maintenance of Mechanised Log Handling System in Star Paper Mills Ltd. Saharanpur

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## Introduction

In this article, the Author has endeavoured to discuss the salient points on maintenance of Mechanised Log Handling system installed in Star in April, '75. The Mechanised Log Handling system was installed to achieve the objective of higher rate of production of chips & to minimize the labour forces involved in stacking & handling of wood.

The mechanised log handling system is divided into two parts:-

1. Handling of logs.
2. Handling of Chips.

### 1. Handling of Logs

The mechanised log handling comprises of chain conveyors, carry over Rolls & Belt Conveyor. The Chain Conveyors are further divided into 4 types:-

1. 80 M Chain.
2. 20 M Chain.
3. Stacker chain.
4. Jack Ladder Chain.

These chains constitute the entire conveying system of logs. The wear & tear on these chains is very heavy because of dumping of logs & they necessitate thorough

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*The Paper Industry in India is at present in developing stage. Concentrated efforts are required to fill the gap in/between demand of paper & its production in India. Needless to say that effective maintenance is the back bone of the industry. The effective maintenance generally includes preventive maintenance of the equipment, cutting down of the stoppage of M/c to bare minimum and finally to reduce the cost of maintenance. A down time of a production machine in a 100 T/day paper mill, for about 2-3 hours, cost around couple of thousands which in turn digs deep in the profitability of the concern.*

maintenance. The carry over rolls are the junction points, between the two different length of chains i. e. in between 80 M & 20M chains and in between 20M chains & Belt conveyor.

With a short period of running this system, we have experienced the following troubles which we have tackled as below:-

The tension of the 80 M chain is to be checked regularly so that it does not obstruct on its return passage. The synthetic material strips on which the return chain drags is to be given attention to prevent its wear & tear. We have made continuous lubrication arrangements for this synthetic material strip which has helped a great deal in lowering down the load factor & increasing the life of synthetic

material strip. The 80 M chain is equipped with hydraulic drive. In the hydraulic system the temperature of the oil is very important.

In order to achieve this, objective schedule checking is done on the in-line filter & Temperature gauges.

The jack ladder chain and stacker chain are also driven by hydraulic system and in this a regular checking schedule has been made for oil Filter speed regulators & hydraulic cylinder. The stack ladder has also wooden bearings which are to be lubricated at fixed intervals.

The junction points, where the carry over rolls are to be attended for the replacement of rubber discs every 4 months.

The carriers of the chains get

broken due to excessive impact of wood during the process of dumping of logs on the chain. Strict arrangements have been made so that all the wood is dumped on the platform to safeguard the breaking of carriers of chain, however in case of breakdown of carriers, a special type of electrode known as 'TENACITO' has been used which is indigenously available.

Coming to the belt conveyors, we can not relax our attention because of the fact that it is subjected to the maximum wear & tear by different sizes of logs. An elaborate system of running the Belt Conveyors in centre has been made to minimise its down time. A suitable tensioning arrangements has also been incorporated. The trough idlers bearings are lubricated and attended as per definite schedule.

#### **Handling of Chips**

Pneumatic chips blowing system has been supplied to us by the famous firm Rader Pneumatics. This consist of Blower, Feeder and chip conveying pipes. The Blower follows the well known roots principle. The Blower is a precision built

product based entirely in the accuracy of shape of two involute impellers and the casing in which they are enclosed. The provision of thermal expansion has been made in fine clearances between the impeller & casing.

The Feeder is comprised of a housing and rotor and two scraper knives. In this case the scraper knives are to be checked everyday for clearances. These scraper knives are to be ground at regular intervals. The brass sealing rings are located at each end of the rotor of the Feeder & is used to maintain as small clearances as possible. These clearances are to be checked and adjusted as per schedule. Internal clearances must be held to a few thousands of an inch to prevent excessive air loss.

The chip line is provided at certain places with injectors which divert the course of flow of the chips. These injectors are to be replaced after about a year otherwise they cause plugging of pipes with chips. The bends in the pneumatic system will eventually wear because of the abrasive chara-

cteristics of high velocity bulk material. When this occurs bends are replaced immediately as the air loss may be serious enough to cause plugging of the Pipe line. Bends are made of heavier wall sections of the Pipe line.

The Rader Pneumatic system is equipped with a control panel which consists of 2 air pressure operated mercury switches and one pressure gauge. This system is provided for:—

1. To prevent the overload of material from plugging the system.
2. To prevent damage to the blower by running the blower at pressure above its designed rating.

In the end all possible efforts are done to keep the mechanised log handling in good shape to obtain maximum running hours with minimum down time. The mechanised wood handling system has reduced the running of chipper from 24 hrs. to 16 hrs. Thus it has helped to a great extent in minimising the cost of production of chips as well as cost of handling of logs.