



MAINTENANCE OF ROLLERS FOR PAPER INDUSTRY

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BACKGROUND



Rollers constitute one of the most important parts of the paper machine

To take maximum output from machine, maintaining the rollers is necessary

With highly competitive paper market, focus on increasing production and reducing costs

IF PAPER MACHINE IS BODY, THEN ROLLS ARE THE BONES AND FLESH OF THIS BODY

INTRODUCTION TO ROLLERS



Different kinds of rollers and coatings for different applications

Design depends on the environment, loading pressure, diameter, speed etc of machine

Good quality rollers can vastly enhance machine's performance and paper quality

Cost of maintaining a roller is very less in comparison to the losses due to downtime

Improper Rolls cause:

- Unplanned Downtime
- Lower Paper Quality
- Damage to other components like felt and wire
- More Power Consumption
- Higher Transportation Costs in Roll Servicing
- **NO Peace of Mind**



1) NIP IMPRESSION

Important for Press Rolls, Size Press Rolls, Touch Rolls

Helps to ascertain

- that crowning on the roll is proper
- That load applied is equal on both ends
- That roll pressure is uniform throughout the length

Should be taken without felt

Clearly mention Roll Name and Position, Date, Load.

Save the nip impression till the roll is under usage

Check that nip impression length is equal to roll length



1) NIP IMPRESSION (CONTD)

If nip impression is not uniform, it creates uneven load on roll cover, leading to

- Non uniform moisture profile on the paper
- Early grinding requirement of roll due to uneven wear
- Possibility of rubber damage due to torque forces on the roll
- Vibration in the machine

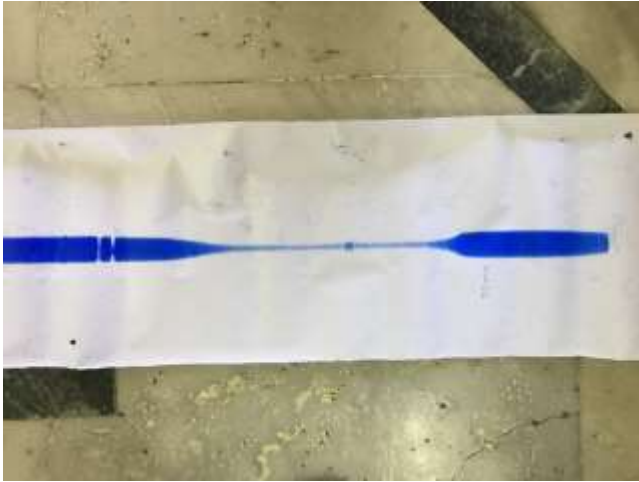
Nip impression should be signed by supervisor before running the roll

Impression should be taken twice, at 90 degree angle

Added advantage if impression can be taken at the time of removal of roll as well



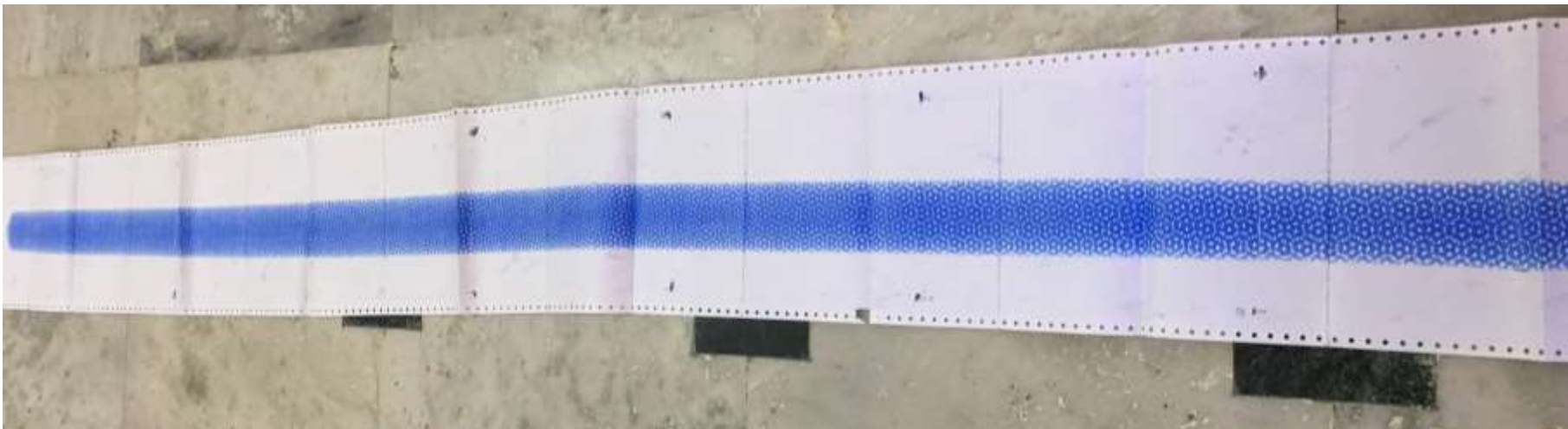
1) NIP IMPRESSION PHOTOS



NON UNIFORM



TAKEN WITH FELT





2) SCHEDULED GRINDING

Rubber is an abrasive material, which faces wear and tear with time

Grinding recommended after every 6 months for high load press rolls

With time, crowning fades away, leading to high load on both ends

Scheduled periodic grinding is the best way to increase the life of roll cover

Hardness and other parameters of the roll should be checked after grinding



2) SCHEDULED GRINDING



CHECK SURFACE
ROUGHNESS R_a



CORRECT METHOD TO
CHECK RUBBER HARDNESS



CHECKING CAMBER ON ROLL
WITH TROLLEY

3) DYNAMIC BALANCING



Speeds of paper machines increasing every year

At high speeds, an unbalanced roll creates a great deal of vibration in the system

Vibrations are harmful because

- More wear and tear in the connected parts
- More noise
- Chances of breakage of journals and bearings
- High electricity costs

Balancing is recommended with every grinding, but it is a must with each recoating



4) BEARING SIZE

At the time of change of bearings, bearing seat size should also be checked

Improper bearing size leads to:

- Ovality in running of roll
- Vibration during operation
- Jamming of bearings, resulting in breakage of bearings during removal
- Seizing of bearings, causing rubber damage
- May cause Unplanned downtime and accidents

Advisable to check bearing size at roller company using actual bearings and blue matching

4) BEARING SIZE



PERFECT BLUE MATCHING OF BEARING



5) EDGE RELIEVING/TAPER/DUBBING

Portions of roll outside of deckle should be tapered off

Helps in saving the edges of roll, as they are most vulnerable to cracks



TAPER ON EDGES

CHAMFERING TO
PROTECT CORNERS



6) STORAGE AND HANDLING OF ROLLS

Rolls handling plays vital role in increasing the life

Following points should always be followed:

- During transportation, the rolls should be in frames.
- Rolls should not be kept directly on top of each other
- Rolls should not be kept on floor directly, and should be on stands. Roll coating should not touch the floor
- Rubber should not be cleaned with petroleum products, as it can cause swelling
- Roll should be kept away from direct sunlight/heat
- If keeping rolls for long time, they should be rotated after every 2-3 months to avoid sagging of rubber
- Roll should be grinded before use if kept for more than 6-7 months



STORAGE AND HANDLING

ROLL COVER WRAPPED WITH TAPE



ROLL SURFACE NOT TOUCHING FLOOR



STANDS ON BOTH SIDES



7) MAINTAIN ROLL REGISTER

Complete history and maintenance data of the roll should be recorded

Helps in diagnosing the issues, by checking the history and previous cycle time

Following data should be present:

- Date of receiving, date of mounting, position of roll, unique identification number of roll, date of removal of roll, reason of removal of roll, running life in days
- Inspection report provided from roll supplier can also be attached

SUMMARY



With proper care and safety procedures, life and performance of rolls can be greatly improved, helping in improving the overall machine efficiency and productivity.

