

# How Taking a Proactive Approach to Corrugator Alignment Helps Reduce Costly Issues in a Less than Perfect World

## SuperCorr

October 20, 2016

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# Introduction

**A corrugating line is a lot like a car**

**. . .and should be treated like one**

**With proper maintenance, your car can stay looking and running like this**



**Without proper maintenance, it could end up like this**

# What is Alignment?

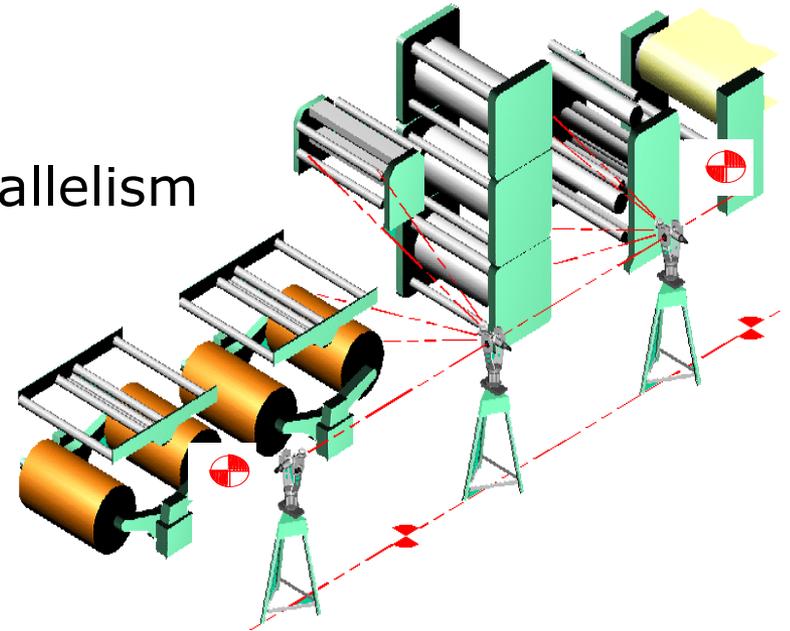
Alignment (n): The act of aligning or state of being aligned; especially: *the proper positioning or state of adjustment of parts in relation to each other.*

## Alignment Methods

- Machine centerline
- Perpendicularity/Horizontal parallelism
- Level-to-Earth

## Alignment Tooling

- Optical instrumentation
- 3D metrology tools
- Gyroscopic tooling
- Mechanical means (pi-tapes, machinist levels)



# Issues Associated with Misalignment

## Product quality

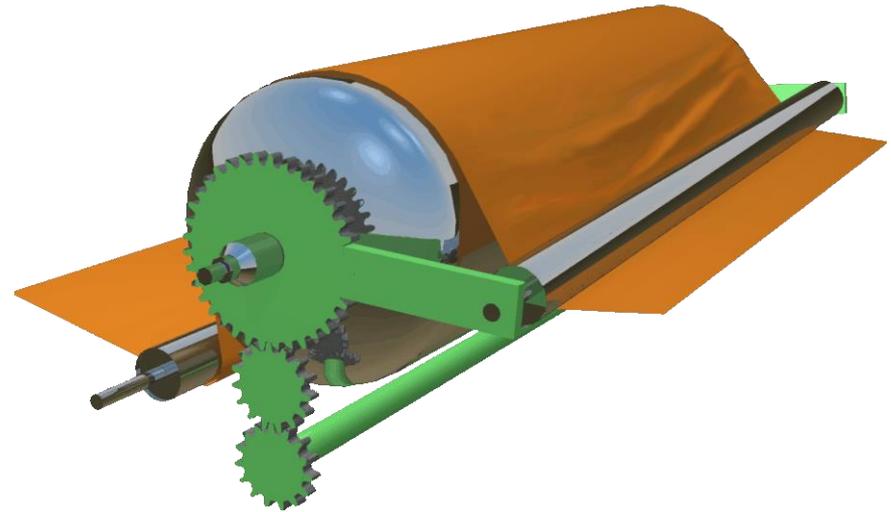
- Warp
- Delamination
- Crushing
- Baggy edges & wrinkling

## Machine Performance

- Web Breaks
- Inconsistent glue application
- Increased waste or scrap
- Decreased operating speeds

## Equipment

- Increased bearing wear
- Drive and/or coupling failures



*Note that not all board quality problems are related to misalignment. Other contributing factors to these issues also include inconsistent moisture content of the purchased paper, variations in glue or starch. . . .*

# Causes For Misalignment

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- Normal everyday operation over a period of time
- Loose fasteners
- Accidental damage (forklift or clamp truck strikes)
- Improper loading/unloading of spools onto roll stands
- Foundation and building settlement
- Worn Hardware/aged equipment
- Sudden belt breaks

# Take a Proactive Approach!

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**Start with a Tune-up** - a process in which small changes are made to something (such as an engine) in order to make it work better

**What does the corrugator alignment tune-up consist of?**

- Quick survey of the alignment of each unit
- A more in-depth inspection of problem areas
- Inspect areas that are more subject to alignment changes or deviations after initial alignment efforts (wrap arms, roll stands)
- Develop a prioritized list of components to be aligned, and attack accordingly.

# Take a Proactive Approach!

## Develop a standard maintenance program

Your in-house maintenance team should regularly inspect:

- Fastener tightness
- Bearing play in the rollers
- Broken or cracked grout
- Loose shim
- Oil Leaks
- Check that limit switches are operating properly
- Grease fittings

Routine inspections are key to identifying potential issues!

# Take a Proactive Approach!

## Develop and maintain concise historical records by documenting:

- All rolls & units within your corrugator
- Last bearing changes
- Component upgrades
- Most recent roll changes
- Alignment tune-up reports
- Belt life duration records



# Real World Example

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Established a need for a meeting to discuss alignment

No historical alignment data

Performed initial inspection survey

Developed action items based on alignment findings

Completed alignment of high and medium priority items

Customer realized immediate improvements

# Takeaways

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- Check your alignment records! Do you even have any?
- Determine when your last full alignment or alignment tune-up was completed. Is there a need at this time?
- Walk the line. Are there symptoms of misalignment?
- Talk with production about line performance and board quality. Are things being done to the process to mask the potential real issue of misalignment?

# Takeaways

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- Meet with the appropriate maintenance personnel to ensure precise, accurate, and easily attainable records are being kept on the rolls and equipment within the corrugator
- Develop a standard maintenance program where components and fasteners are routinely checked for optimum performance
- Purchase pi-tapes, machinist levels, or even a gyroscopic system to check for roll parallelism for those emergency instances

# Questions?

**Thank you for attending!**

**Be sure to visit us in booth 2650**

