# MANAGING RAZOR-THIN MARGINS IN THE PULP & PAPER INDUSTRY

Keeping conveyor systems moving in an industry that relies on alternative fuel sources is key to protecting slim margins.

By Andrew Parker, President, CDM Systems, Inc.

**In this white paper, we will:**

- Provide metrics supporting the growth of the pulp & paper industry, and the importance of alternative fuel sources in this industry
- Examine the challenges of downtime and its effect on an operation's margins
- Explain how reliable conveyors can fuel your operation while increasing your profit margin and reducing your natural gas bill

## INTRODUCTION

The internet changed everything. Technology altered the way we live, how we act, and how we spend. The world, it seems, is becoming "paper-free." On the surface, the general public may assume the pulp and paper industry is slowly becoming a dinosaur. Of course, that doesn't tell the whole story.

It's true that graphic paper, such as newsprint, is trending downward. People are moving away from newspapers and magazines. While the public may be getting its news and entertainment from digital sources, the pulp and paper industry has adapted. The industry has been growing as a whole – ironically, because of the internet. Technology has given as much as it's taken from the paper industry, in large part because of online shopping.

Two decades ago, online sales were $5 million in the United States.[1] In 2018, it's estimated that consumers spent as much as $517 billion online from US merchants.[2] That trend isn't showing any signs of stopping. It's estimated that by 2021, global e-commerce sales could reach nearly $5 trillion.[3] That's a lot of packaging paper.

According to Moody's, global production will remain stable with earnings continuing to expand in 2019. World production of paper and paperboard is forecasted to reach 490 million tons by 2020.[4] European and US productions will remain steady, even with China and Japan becoming major paper producers. Change in demand and production methods mean the paper industry will serve more niche markets. Cardboard and packaging paper products will have continued global demand as e-commerce sales continue to set new records with each passing year.

However, low cost of operation remains critical for plants to not only stay profitable but to keep their doors open. There are paper plants around the world that have closed down in recent years. According to a study by RISI, there were 2.46 million tons of retired assets in North American paper and board plants alone in 2017.[5] Operations are often faced with unpredictable supply of raw materials, wild swings in pricing, increased customer expectations, and continued pressure to be more environmentally friendly. Because of this, plants often operate on razor-thin margins.

These challenges can be overcome. It's more important than ever for plants to stay self-sufficient. A well-run plant with reliable equipment can harness its own energy to power the plant. That keeps costs down and maximizes profits. However, substandard equipment can be costly to repair or replace and result in an unnecessary reliance on outside energy sources, such as natural gas.

It's smarter, both economically and environmentally, to generate energy from hog fuel, which is wood waste used as an energy source. By burning this otherwise useless material in the hog fuel boiler, plants can generate steam to garner electricity to run the plant. This creates the ability for high production with minimal energy costs.

## THE CHALLENGE

While the pulp and paper industry has undergone structural change in the past two decades, it remains a commodity-driven, price-sensitive effort. There is little wiggle room with operating costs to stay profitable. With the price of paper remaining inexpensive, each facility must pump out massive volumes to make a profit – or even keep its doors open.

The plant must have efficient and reliable equipment to maximize production. An operation may not have the luxury for unplanned downtime because, for example, there was a problem with the boiler. If the boiler goes down and the plant must resort to getting its energy via natural gas, it will be eating into potential profits by the second.

## THIS POTENTIAL DOWNTIME CAN DIRECTLY DAMAGE A BUSINESS IN SEVERAL WAYS:

**Lost Production:** In an industry reliant on high volumes, loss of any production can be detrimental.

**Wasted Labor:** Waiting on faulty equipment to be fixed means wasted time for employees, who may be inactive until the equipment is repaired.

**Wasted Attention:** Downed equipment divides attention from needs elsewhere in the plant.

**Lack of Innovation:** When a company must fix equipment and deal with recurring problems, that takes away resources from potential large-scale innovations at the plant.

One reason it's important for pulp and paper plants to remain self-sufficient and not rely on outside energy sources has been the long-term instability of natural gas. While the price has dipped in previous years, the natural gas industry has shown massive price increases following periods of decline.

The Henry Hub natural gas price went from closing 2011 at $2.98 per million BTU to ending 2013 at $4.31. More drastic, it went from $2.28 in 2015 to $3.71 a year later – a price hike of nearly 63%. Furthermore, natural gas is non-sustainable, can release harmful greenhouse gasses into the environment, and its flammability has the potential to cause significant damage if there were to be an accident.

The average cost of natural gas was more than $3.05 per million BTU over the past 12 months. Why unnecessarily rely on a potentially unstable outside energy source like natural gas?

## THE SOLUTION

While unreliable equipment can have catastrophic consequences, a dependable conveyor system has several benefits, including:

Efficient use of inexpensive hog fuel as energy source

Lower natural gas costs

Reduced production shutdown time

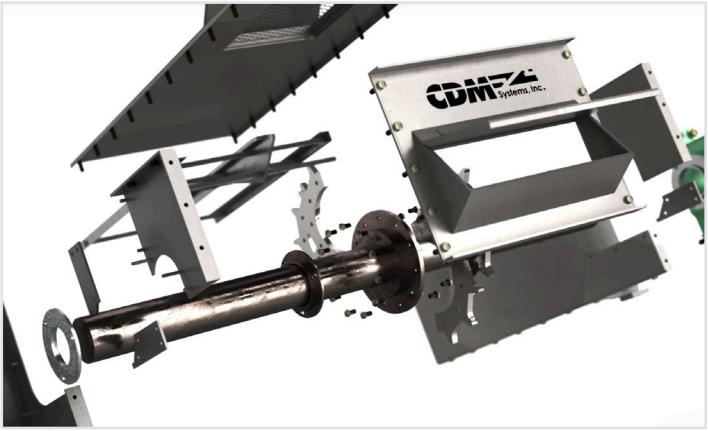
Protected razor-thin margins

Using hog fuel to provide energy makes a plant self-sufficient and helps minimize operating costs. Instead of spending money on outside fuel sources, plants are able to create their own power. Reducing the time of halted production can ensure output is maximized and attention is properly paid elsewhere in the plant. All of this, of course, means the facility's thin margins are protected and leaves room for profits and growth.

Profits also provide the capital necessary to explore more in research and development, investing in modern equipment and digital marketing techniques. In order to thrive and become a leader in the market, it's vital that a plant have the modern infrastructure needed to adapt. This is where technology can either help or hurt a pulp and paper plant, depending on its available resources – making those thin-profit margins all the more important to protect.

For a plant's hog fuel boiler, one-size-fits-all conveyor systems may seem enticing. It appears to be an easy and budget-conscious way to expand capacity and profitability. However, the potential for unexpected downtime and profit loss make an up-front investment on a reliable conveyor an easy solution.

It's important to find a conveyor manufacturer that works hand-in-hand with a business to understand a plant's unique needs. With this kind of intimate relationship, the conveyor manufacturer can accurately spec out the correct equipment for the specific plant – not just any cookie-cutter plant. Having a custom-engineered conveying system is more cost-effective overall and gives a plant peace of mind that production will have minimal interruption.




Custom conveying systems can ensure things are done correctly from the start. A truly quality conveying system should have:

- Flexible chain formulas crafted from high-quality materials and with meticulous workmanship.
- Durability and performance an operation can rely on.
- Available for any size operation or material, ensuring a plant gets what it truly needs.[9]

Selecting the proper conveyor begins with understanding the characteristics of different types of conveyors and the distinct features offered:

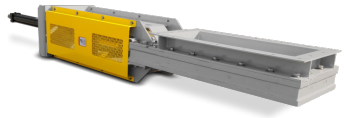
## Drag Chain Conveyors

The most effective way to move or elevate bulk material and transfer it from point to point. There are two types of this bulk material handling equipment:

- ***Standard drag chain conveyors*** or moderate duty applications
- ***En-masse drag chain conveyors*** for severe duty applications

## Screw Conveyors/Feeders

Applicable for almost every industry, this equipment offers an efficient, cost-effective way to move a variety of materials from one process to another, typically as part of a larger system.



## Gates, Valves & Diverters

Pulp and paper operations require maximum versatility from their conveying systems. Gates, valves, and diverters create the option to stop material flow or to move it to several discharge points on the fly.

## Bucket Elevators

This equipment specializes in vertical conveying of large amounts of material ranging from heavy iron ore pellets to sand, fly ash and other dusty, powdery, dry material.

Selecting the proper choice of components (and their material composition) for the job at hand is equally important. Selecting the right equipment should take into account the space available in the facility, the hourly/daily volume goals for the equipment, and the unique characteristics of the materials being handled.

## Critical conveyor design elements:

- **Durability** – Wear resistance against harsh temperatures of the boiler
- **Reliability** – Components must match design criteria to ensure long service life
- **Ultimate Strength** – This applies to the chain itself and relies on accurate consideration of:
  - *Impact Resistance* – Proven core and case hardness
  - *Fatigue* – Wear related to cycling and workloads
  - *Wear Resistance* – Product abrasion, speed and articulation vs. high acceptable core and case hardness

Balancing all of the demands with the appropriate conveyor components and features is important to achieve optimal operating efficiency and maximum return on investment.

## CONCLUSION

The pulp and paper industry will remain stable provided that overall operating costs are limited. This can be done by eliminating the guessing game of whether or not the plant's equipment is reliable to keep the process moving. A plant often feels the importance of conveyors only when it's too late – after they are proven to be defective or substandard.

While it has been a rough stretch for some plants that were forced to shut down, technology has opened the door for growth for facilities willing and able to adapt to a new marketplace. With the globalization from the rise of technology, a plant has more markets to grow. Online sales have created a drastic demand for packaging paper, and that need will only continue to grow as the world chooses to use the internet to shop. New technology has also opened up a way for plants to have modern equipment to run smarter and maximize its efficiency.

However, these positives depend on reliable conveyor systems to keep the process moving efficiently and cost-effectively. With properly functioning conveyor systems pumping life into the plant, attention can be paid to other aspects of the facility. This ensures everything is running smoothly. A plant's equipment shouldn't be unpredictable. There's already enough instability in the pulp and paper industry.

The challenge for these operations is to increase the longevity and reliability of equipment, thereby increasing production and extending lifecycles. For these customers, such solutions as reliability-focused maintenance and predictive maintenance can literally determine whether or not the operation will enjoy profits or potentially close its doors for good.

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## ABOUT THE AUTHOR

Andrew Parker is President for CDM Systems, Inc. He has more than 20 years of experience in the bulk material handling industry. He oversees operations including  conveyor design and development.

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