

# IMPLEMENTING LEAN MANUFACTURING PRINCIPLES



## Minimize Costs with Moisture & Coat Weight Control

Producers focus on minimizing waste, reducing costs, increasing product quality, and maximizing plant efficiency. Wasted efforts are certainly a drain on resources in addition to wasted product, creating the need to evaluate and implement lean manufacturing principles. Identifying the key areas in which the manufacturing process is not operating at its peak efficiency provides the framework for improvement.

Minimizing costs is a top priority for producers and thoroughly evaluating methods of reducing waste can reduce wasted efforts, wasted product, and wasted energy. Often converting process efficiency is affected by variations in coat weight, inefficient moisture control, thickness and/or temperature issues. Moisture and thickness can play a large role in the final product quality and use.

## Measurement & Control

Precise moisture levels in paper, pulp, tissue, corrugated liner, and other converting products are a crucial component to the manufacturing process. Out of tolerance moisture levels create wasted product, increased energy usage, downtime and more. Processing lines can see improved product quality and increased productivity with proper moisture monitoring, creating substantial cost savings. Maintaining the ideal thickness and coat weight in the production line can mean the difference between a quality product to provide your customers or wasted effort and material. Many basic properties of paper are greatly affected by its moisture content. Paper dimensions, flatness, conductivity, strength, and fold are among the more significant properties influenced by its moisture content.

These properties can be very critical to the proper performance of paper, providing effective control of paper moisture levels and moisture uniformity is essential for efficient printing and converting operations. Moisture & coating technology provides a proactive path to avoid quality control issues. Do you have the ability to consistently and accurately measure 100% of the product being produced?

Installing measurement sensors throughout the process makes this easily achieved with proactive, immediate adjustments to the line. Immediate results are recorded and displayed every second to operating personnel via PLC, giving full control of the line. The IR3000 NIR sensors ensure feedback loops have predictable and repeatable results, even at high operating speeds.

With implemented moisture monitoring, processing, and manufacturing, plants can produce large savings in little time. If there is no current method of moisture measurement in the production process, a large opportunity for increased efficiencies is being missed.



## Near-Infrared

Various components are vital in the converting process and should be evaluated for optimal performance. MoistTech's IR3000 sensor utilizes Near-Infrared (NIR) technology, achieving the highest quality in product through its state-of-the-art process that allows for numerous material variations. NIR provides an efficient, non-contact measurement of multiple constituents, immediately improving product quality and plant competence. The IR3000 series provides continuous, reliable readings and is a one-time calibration, maintenance free, no-drift optical design allowing for immediate process adjustments based on real-time data.

Multiple detection methods are on the market for the converting process but not all technology is created equal. Various methods can leave you with more of an educated guess than an actual reliable measurement. NIR Technology differs from all the others as it does not have to be in contact with the product, is non-destructive and is insensitive to most material variations. NIR provides fast analysis of the chemical and physical information in the product by using a near-infrared light. Reflected into the product and back to the sensor, NIR light gives an accurate, repeatable measurement that is relied upon for quality control.

Designed for effectiveness, the NIR moisture and coat weight sensor produces instant, non-contact readings of materials anywhere in the production process, reducing start up and down times. Final product quality is critical, by measuring moisture, coat weight or thickness, the producer can ensure the quality of the product and sell it for maximum profit.

With the ability for installation in the most extreme production locations, including along webs, winders/unwinders, systems, dryer entrance/exit, pipeline, pneumatic conveying or in fluid-bed dryers, plant operators can take full advantage of implementing lean operating principles on measurement and control.

Adjustments are made on the fly, producing instant measurements, improving performance, reliability, and consistency. Avoiding costly downtime and excessive waste by catching any out of tolerance readings as soon as possible dramatically decreases the amount of wasted product being produced. Production efficiency improvements due to accurate real-time measurements provide the plant with energy savings and potential increased productivity with lower material losses.

Delivering the highest quality product by utilizing the diamond standard in NIR moisture detection systems ensures the highest quality of accuracy and repeatability. The sensors are insensitive to material variations such as particle size and material height/color, providing continuous reliable readings with zero maintenance, one-time calibration, non-contact, and a non-drift optical design.

NIR is useful in multiple converting applications including but not limited to:

- Hydrocarbon Coatings
- Temperature Readings
- Chemical Based Coating
- Chemical Composition
- Paper & Pulp
- Films
- Abrasives
- Corrugated Materials
- Pressure Sensitive Adhesives
- Plastic Film Thickness
- Resins
- Hot Melt
- Water Based Coatings

## Implement Lean Operations

Maximizing automation and increasing reliability by reducing costs is a major aspect for operation and easily achieved through proper moisture and coat weight monitoring. Moisture ranges outside of tolerance can unravel important facets of the production process. Each phase of manufacturing runs more efficiently with accurate moisture and coat weight measurements, providing increased profit margins. If moisture is not properly regulated during the production process, the end quality becomes inferior and product waste occurs. Identifying and using the best methods can lessen the common problems:

- Curl
- Warping
- Breakage
- Collapse
- Flute-exposure
- Reduced edge control & lay flat

Uneven moisture stratification can cause shrinkage or expansion of cellulose fibers. Curled stock is an issue for printing and packaging, and coatings can also get thinner or thicker at the edges. Different moisture levels on the top and bottom side of corrugated board causes warp issues. Therefore, only by a strict control of moisture, operators can produce high-quality boards and boxes.