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WEB GUIDES: THE EVOLUTION OF MONITORING AND THE NEED FOR KNOWLEDGE 4

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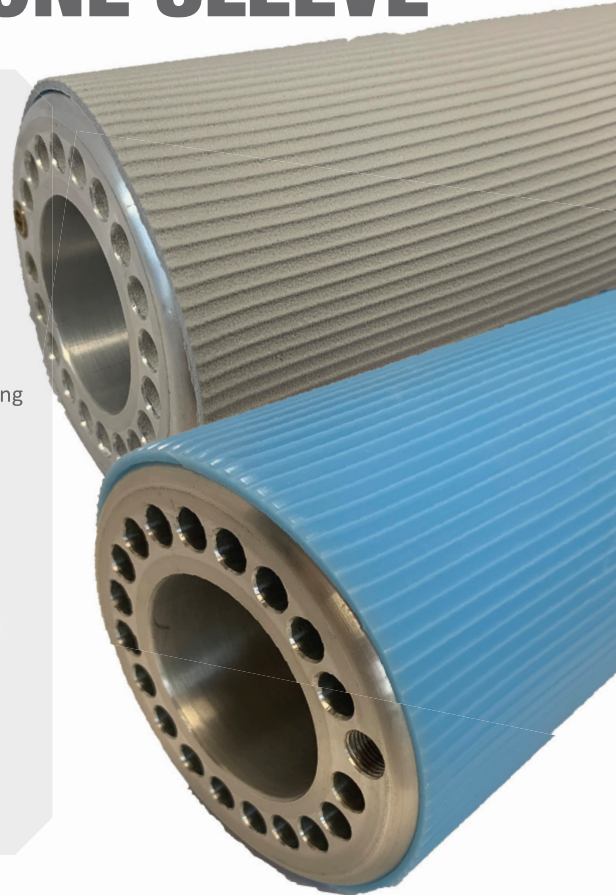
PROFITS AND OBJECTIVES FOR CONVERTERS 8
MEASURE STATIC IN WOUND ROLLS 12
AND MORE!

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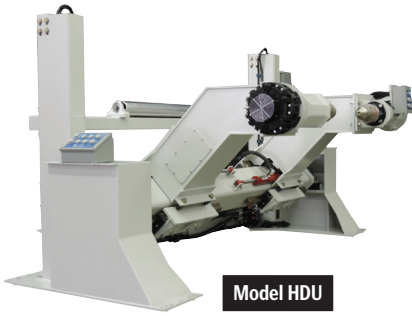
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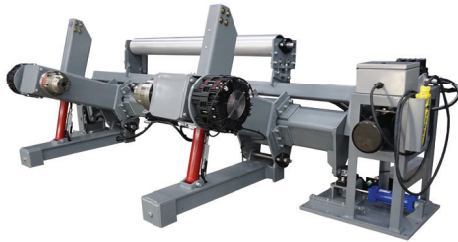
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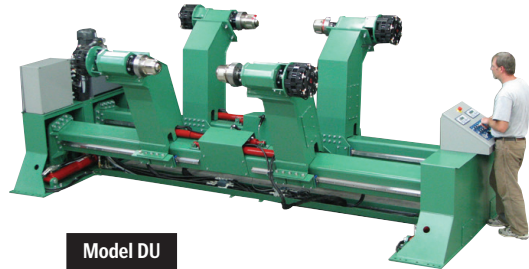
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A great majority of sensors use signal blocking as the sensing principle.

Web Guides:

The Evolution of Monitoring and The Need for Knowledge

By **Pedro P Velasco**, Chief Operating Officer at Roll-2-Roll Technologies LLC

When talking to people in the converting industry about web guiding, they will usually refer to web guides as “...we don’t think about them until they fail...”

Sadly, some people in the converting industry don’t think about them or even understand how they work. Much less, there is no real awareness of the advancements in the web guiding and monitoring technology and

where they are headed. The lack of knowledge in this area can lead to less-than-optimum solutions to their problems. Consider the tenant supporting the need for web guides : “materials, machines, and processes are not perfect.” Therefore, the behavior of webs in a converting line is going to be as predictable as the materials, machines, or processes.

That’s where the need for web

guides comes from. It’s important to look at the current evolution of its components and the need for knowledge of web guiding and monitoring.

Sensors

Sensors have had a major change in design and technology. A great majority of sensors use signal blocking as the sensing principle.

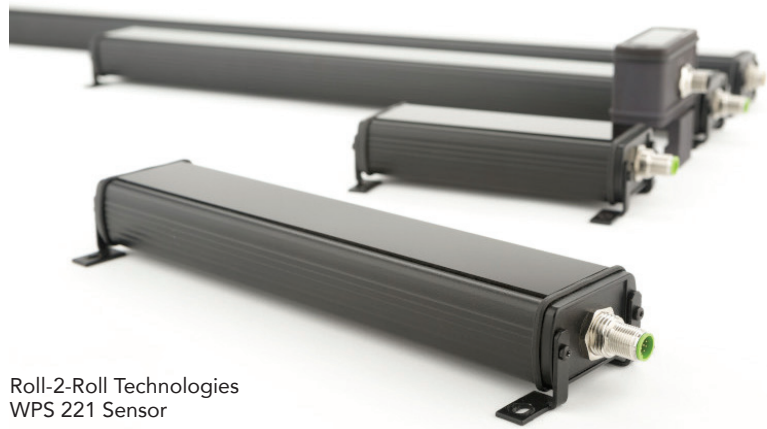
Signal blocking requires an emitter of the signal with a receiver in an opposite position. That is the reason for the fork style or u-style sensor design that has been around for several decades.

With the commercial introduction of the light scattering sensing principle in 2014, the design of sensors made a significant change that allows placement of the sensor in spaces that fork style sensors cannot be used. The emitter and receiver of the signal are in the same arm, therefore allowing for the sensor to become a single bar with a low profile.

One characteristic that separates light scattering from other sensor technologies is that it is more a single-dimension camera than a sensor. This provides converters with an inexpensive camera-based system for guiding and monitoring the web.

Other advantages of the light scattering type of technology include:

- Elimination of sensor calibrations, as they are able to detect edges of materials without need for calibration due to changes in material conditions (porosity, opacity) or environmental conditions;
- One sensor for multiple applications such as width measurement, edge guiding, line guiding
- Wider sensing or vision range with the same resolution across the entire range allowing for the elimination of mechanical reposition of sensors when dealing with products of different widths; and
- Use in vacuum environments, as they are not affected by the vacuum, can work with transparent films, do not outgas in the vacuum container, and can



Roll-2-Roll Technologies
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provide a sensor with a low volume profile for use within the vacuum chamber.

Controllers

Controllers have advanced greatly regarding what they are capable of doing. They have two main purposes: to receive and process the input signal from the sensor, and to process that input into an output to the actuator to make the corrections on the web position.

Initial controllers just had knobs and buttons to allow the operator to adjust the input and output. These were heavy units with a significant enclosure volume. This was intended for simple edge guiding applications. But, as the converting industry advanced into more technical products, controllers had to advance to handle these modern applications. Some modern applications included center guiding, line guiding, and multiple unit control. Today, some manufacturers offer user-friendly operator interfaces with touch screens and icons that can be used across multiple languages. The future is intelligent controls that learn from the web behavior, communication to central controls in the

converting machine through real-time industrial ethernet protocols, availability to store data, and remote operation and monitoring of control units through mobile devices. We are already seeing some of these advances, along with lighter and more compact units.

Actuators

Electromechanical actuators used to be relegated to smaller web guide applications. You can still see the pneumo-hydraulic systems that use a hydraulic cylinder as an actuator for applications that require higher amounts of thrust (wide web applications, terminal guides and some older narrow web guide systems).

The advances in electromechanical actuators have introduced new lines of high thrust actuators for larger loads, with good reliability and less demanding maintenance.

One of the disadvantages of pneumo-hydraulic systems is the use of hydraulic fluids. Users have to deal with pump noise and maintenance, system filtering and seals, and worst of all, leaks in the hydraulic circuit. Additionally, the hydraulic actuators do require balancing the flow of the hydraulic

fluid to assure that the speed of actuation is similar in either direction.

Web guide mechanisms

Web guiding mechanisms have mostly remained the same, with some changes in roller table slides, connectors for actuators, idler rollers, and other mechanical components. The designs for displacement guides, steering guides, and unwind and rewind guides are based on mechanical fundamentals that have been tried and tested through decades in the industry. The speed with which these can react to disturbances is limited by the mechanism itself. The real advances have occurred in actuators, controls, and sensors.

Knowledge

Knowledge is probably the most neglected aspect of web guiding and monitoring. An educated customer is a great customer - they understand what process parameters are needed to determine the most appropriate application.

There are so many interesting applications in the industry. Contrast sensing for guiding using the features of the print already existing on the web eliminating the need for a printed line, width monitoring and width measurement of the web or a feature on the web, and product length measurement are just some of the many applications available. Knowing the terminology, different types of web guides and

their use, or the basics of web guiding allows for a faster understanding of the need. A customer can pre-select what they need before contacting a supplier.

Knowledge of the fundamentals allows the customer or user to trouble shoot their web guiding system and determine what actions they can take. The customer needs to know these fundamentals. ■

ABOUT THE AUTHOR

Pedro P Velasco is the chief operating officer at Roll-2-Roll Technologies LLC. He can be reached at pedropvelasco@r2r.tech.

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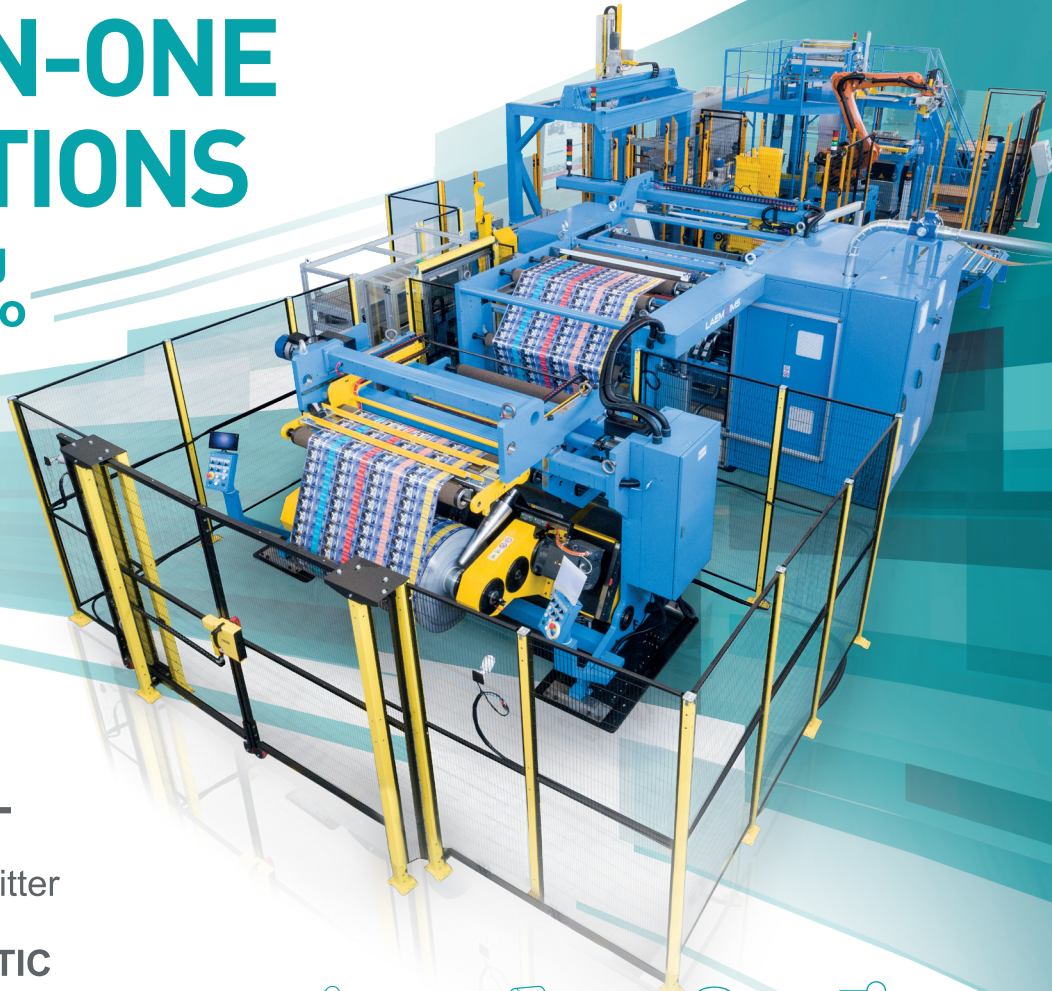
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Profits and Objectives for Converters

By **Susan Stansbury**, Contributing Writer

It begins with a plan. While many tightly staffed converters have little time to sit in meeting rooms and hammer out business plans, some attention saves time and disappointment later. Having a basic understanding of the factors that drive profitability, productivity, and growth is crucial.

Businesses still benefit from stating their reason for being. For example: Our vision is to grow

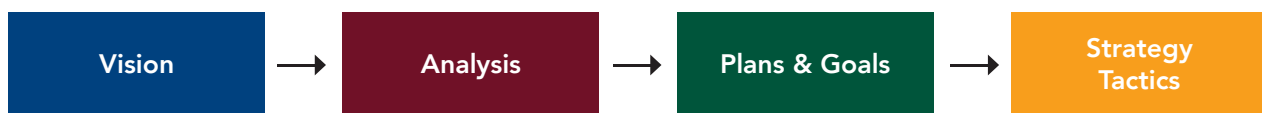
through a strong focus on partnering, with special attention to understanding each customer's unique needs.

A related mission example is: Providing superior converting products and services that meet our customer's requirements for quality, service, and value with every order.

One standard view of the process goes like this:

During the process, questions such as these arise:

- How do we define financial health? What working capital do we need? What are our profitability objectives for the next five years?
- Are we positioned for growth? What are we willing to invest in more equipment, assets, and marketing/sales efforts in order to grow?



- What is the best, most efficient use of our resources and capabilities? Of our raw materials?
- Are we maximizing our business strengths? Handling weaknesses?
- Are we well known in our areas of capabilities? What image do we project?

One former client, on first meeting, told me they could not understand why a competitor had so much attention in the industry. I advised, “You have the capability and quality, you need to become more well known for these capabilities and raise your visibility.” It’s the age-old substance plus style that delivers results.

Considerations for converters include assuring:

- Quality products and services that offer value, resulting in customer partnerships;
- An environment where all are committed to delivering customer satisfaction;
- Continued understanding of customer needs and improving throughout the company; and
- A safe, positive, and rewarding work environment.

A rewarding work environment includes sharing success with employees. For example, sales people often receive bonuses for their efforts. Considerations around the types of results upon which to base rewards are consequential for both employee and company. Some larger manufacturers reward based on volumes moved; this encourages commodity sales or a commodity focus.

“Our compensation is based on volume and margin,” said Patrick Kellogg of Savare Specialty



Relationships... the key to success.

Adhesives. “Profitability is a key factor which is also impacted by the significant cost of incoming goods and efficiency of manufacturing.”

One converter brainstorming session included these key business impacting factors:

- Financial health analysis;
- Growth strategies;
- Market strengths;
- Operating efficiencies;
- Quality and service; and
- Competitive environment.

Related details include: Reducing debt, and having the ability to plan new capital expenditures. Cash reserves, working capital, payables, debt-to-equity ratio targets, meeting return-on-investment targets and related analyses require regular review. They are guideposts to getting and staying profitable and sustaining growth.

Emphasizing strengths and shorting up weaknesses propels market positioning and customer value. Strengths could include the following :

- Strong relationships with a number of current customers;
- Smart approaches to sales, service, and a strong overall team;
- Good knowledge in most areas of capability and converting services;
- Being on top of new advances in targeted converting services; and
- Focus on meeting quality standards, with an opportunity to promote these.

Examples of weaknesses in one case:

- Lacking the latest equipment;
- Certain capabilities with limitations;
- Serving commodity markets where strong partnering is not seen as a customer benefit;
- Needing more market and opportunities knowledge. What is the size of the market? Are good opportunities available? ; and
- Commitment to sales resources, sales materials, and communications to the marketplace.

One particular converting team analyzed Good Manufacturing Practices (GMPs) standards as they moved further into hygiene products. While they did not provide the final, packaged product, they converted components that were cut, coated, and sent to large customers—they decided to analyze their strengths and weaknesses, from incoming materials, through production and packaging. Each aspect drew the team's evaluation. Were incoming items in compliance? What was the materials flow, waste segregation and quality standards as related to GMPs? Finally, could they boast their strengths while tackling weaknesses internally?

Later, the team created a summary of their quality status based on a template. It became very useful to send out, often when the customer could not immediately visit for a factory evaluation. It increased customer confidence and propelled movement into more profitable products.

In these challenging pandemic times, anything a converter can do to increase customer certainty in partnering without having to show up on site is a win for the converter.

Such a basic thing as communications seems simple, but in these days of internet distance, it's easy to miss the essentials.

Any analysis that offers new avenues for improved profits and growth is worthwhile.

Communication is still at the heart of success. Plus, suppliers are often the ones who bring extra value to converters. According to Kevin M. Lee, an enterprise software sales veteran, "Suppliers who continuously improve their relationships with their customers experience exponential growth.

Relationships represent the impact on the success of any business and serve as the foundation for mutual strong growth. Too often customers view their suppliers as vendors instead of strategic business partners."

Another view of the importance of communication is offered by Lisa Cruz, president and chief-executive-officer of Red Shoes Inc., communications experts, who echoes Lee, saying:

"Communication equals trust. Make sure there are communication goals and benchmarks in place to support the company's operational objectives."

Such a basic thing as communications seems simple, but in these days of internet distance, it's easy to miss the essentials. "Companies (suppliers) that invest the time to thoroughly understand why their customers acquire their solutions greatly influence their customers' success," said Lee.

Hardworking converters, often in small-to-midsized operations, too-often shortchange these basics. However, they are crucial to achieve the best outcomes. ■

ABOUT THE AUTHOR

Susan Stansbury is a converting advocate with extensive experience in the paper, converting, printing and related industries serving in roles including sales and marketing management.



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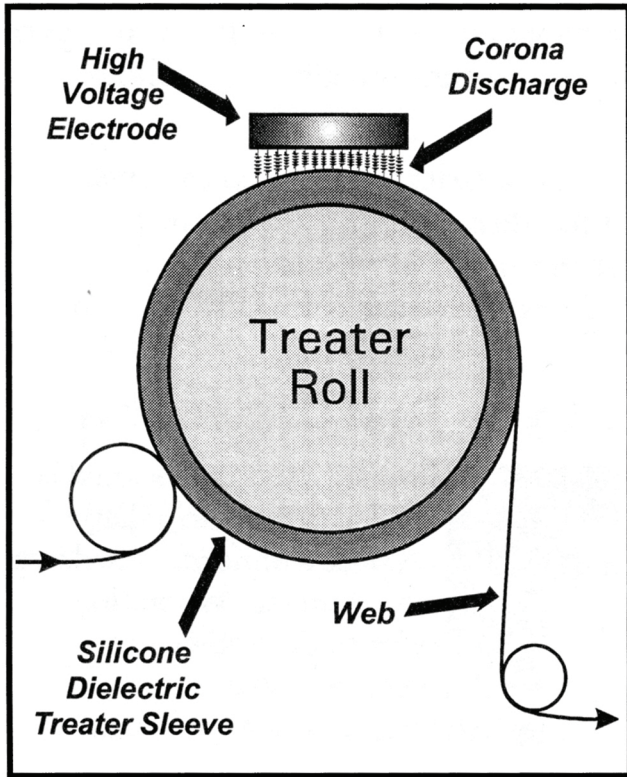


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96302	3.0"	76 mm	70 mm	Orange	.080" (2.0 mm)	\$1.85
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Measure Static in Wound Rolls

Audit static on finished rolls and on incoming materials to prevent problems.

By Kelly Robinson, PE, PhD, Electrostatic Answers

Controlling static is important for at least three reasons:

1. **Safety** – Low static prevents sparks that shock operators and ignite fires;
2. **Quality** – Low static also prevents product damage and dissatisfied customers; and
3. **Productivity** – High static causes production jams and downtime.

Hearing from a dissatisfied customer about a static prob-

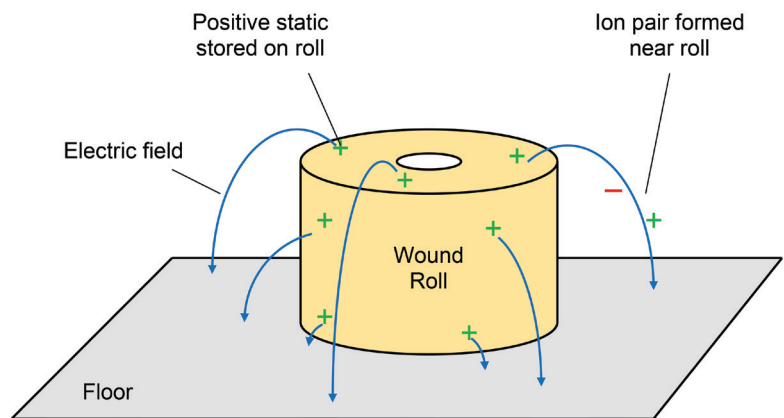
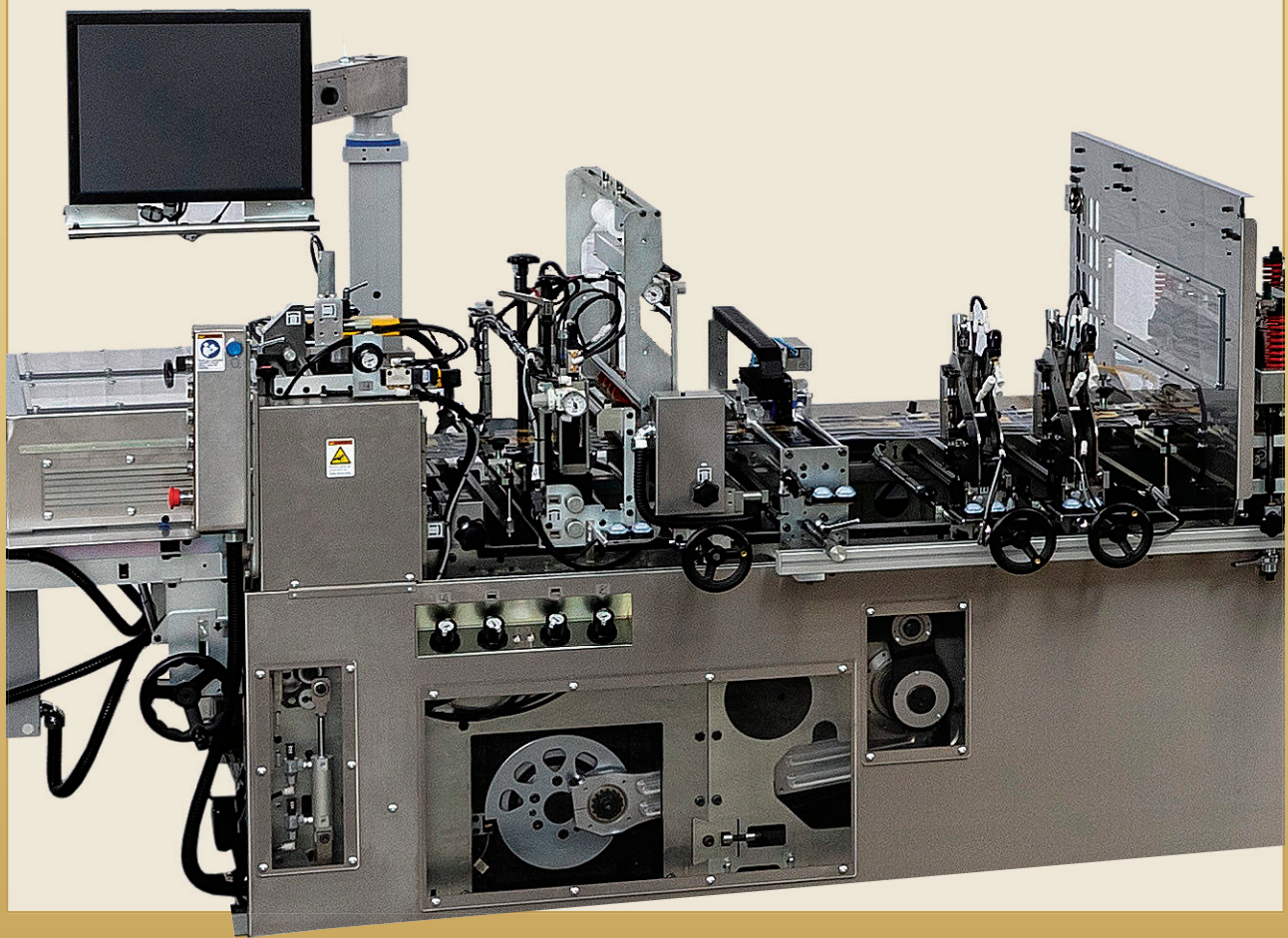


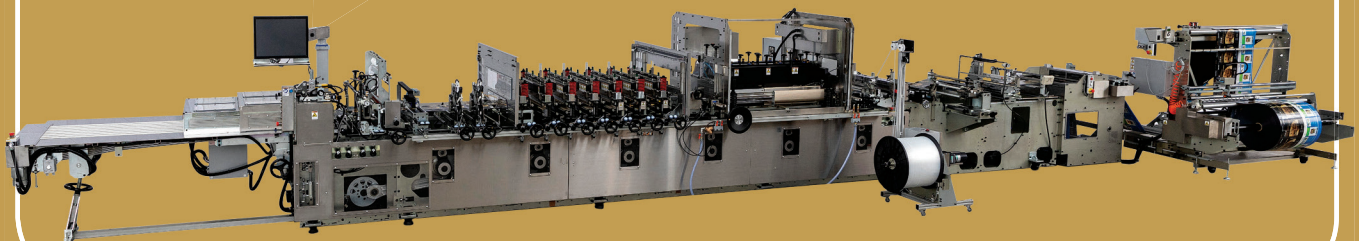
Figure 1: Electric fields extend from static on a wound roll to the floor.

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lem with your product is often a surprise because static seems to be under control in our operations. How can we make sure that static levels in our finished goods satisfies our customers?

Measure static on finished, wound rolls. While this sounds simple, we need to take an extra step to remove the out lap of web from the roll. This is how we can take static readings to learn about static stored in the roll.

The web wound into finished rolls can be many thousands of linear feet. Even if there is just a little bit of static per square foot on the web, the winding roll stores all of this static. Just a little bit of static on thousands of linear feet of web can be enough to cause problems.

We can use our handheld static meter to measure the electric fields near the surface of the wound roll.

How do we measure static stored in the wound roll? To see why we need to remove the outer lap of web, look at the wound roll in Figure 1 sitting on the floor. The static stored in the wound roll cause electric field that extend to the floor. Even though the floor surface may be insulating,

the concrete subfloor is typically conducting.

We can use our handheld static meter to measure the electric fields near the surface of the wound roll. I find that these fields decrease with time, sometimes in just a few minutes. It is easy to think that static is dissipating from the wound roll. However, the static charges stored in the wound roll persist.

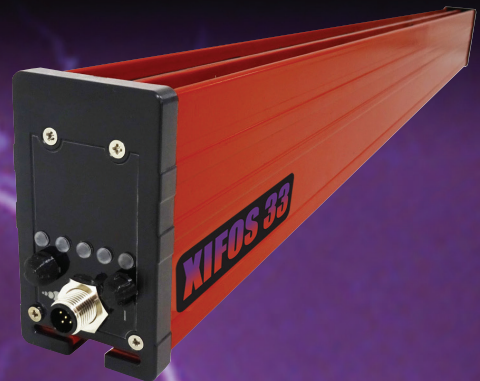
When we measure the fields near the surface of the wound roll, we measure the static charges stored inside the roll and static charges that accumulate on the outer surface of the roll. The ion pair in Figure 1 is formed by cosmic rays and by background radiation, such as radon gas. In fact, the air in the factory and in our

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homes always has a small number of ions formed by these naturally occurring ionizing sources. And, the number of ions varies widely. At higher altitudes where there is also high air exchange from outside the building, ion pairs formed by cosmic rays are higher. In regions where background radiation is higher, more ion pairs are formed inside buildings.

Ion pairs formed near the wound roll causes the measured fields to decrease with time. The positive static stored on the wound roll in Figure 1 attracts the negative ion in the air. This ion moves through the air and deposits on the outside surface of the roll. And, the positive static stored in the roll repels the positive ion in the air, which moves

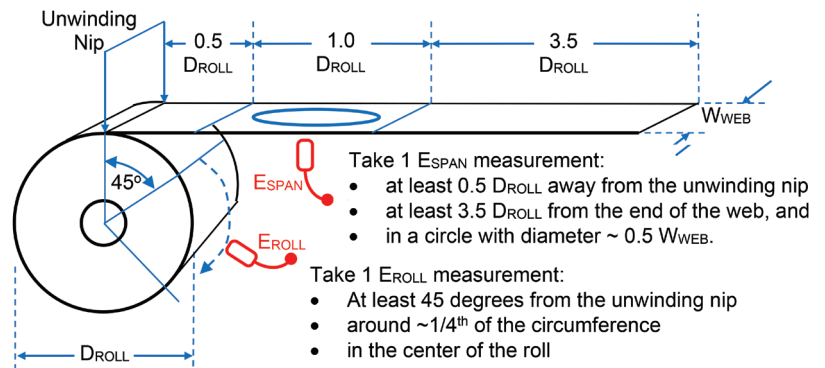


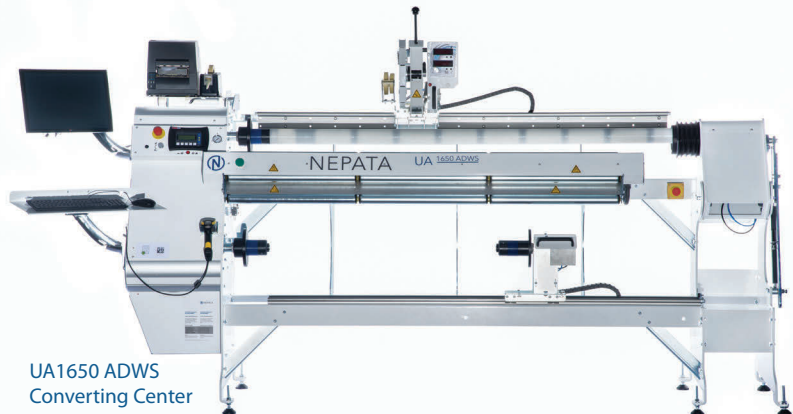
Figure 2: Remove the outside lap to measure static in the roll.

through the air and deposits harmlessly on the floor.

The result is that opposite polarity ions from the air accumulate on the outside surfaces of the wound roll, which causes the

electric fields measured near the roll to decrease with time. The static charges stored inside the roll will remain inside the roll for week and months when the web is electrically insulating. So,

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even when we measure decreasing field on the wound roll, the static stored inside the roll will be delivered to our customer.

To measure the charge stored in the wound roll in Figure 2, we must first remove the static charges that have accumulated on the outside surfaces of the wound roll. Use a 4-step procedure to measure static on wound rolls.

1. Remove outside lap.

We must first remove the static charges that have accumulated on the outside surface of the roll. If you take end samples of finished rolls, one common procedure is to cut a slab of material from the roll and remove the first few laps. Measure static just after removing the slab.

To avoid waste, unwind one

Use a 4-step procedure to measure static on wound rolls.

lap of material shown in Figure 2 that is about 3.5 times longer than the roll diameter DRoll, which is the circumference of the roll.

2. Unwind some web.

Unwind another length of web about 1.5 times longer than the roll diameter to expose fresh, stored web.

In total, we need to unwind a length of web that is about 5 times larger than the roll diameter, which can be pretty long. For a 3-foot diameter roll, we would need to unwind about 15 feet of web. Have someone hold the unwound web in Figure 2 taught so that it extends from the roll.

3. Measure static. Take two static readings. First, measure ESPAN in Figure 2 on the web that was unwound from the roll. Move the static meter over the web in a circle centered on the web with a diameter of about half the web width WWEB. Take the reading far enough from the roll so that you won't see the static on the roll. When taking this reading, the static meter should always be at least half a roll di-



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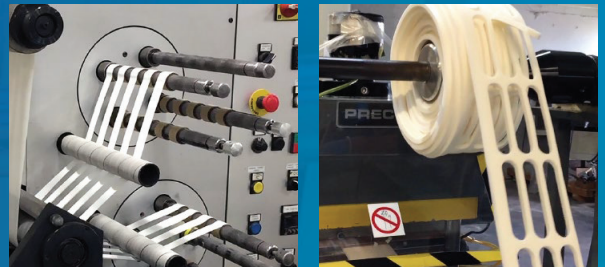
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ameter away from the unwinding nip. Watch the meter display and record the average reading.

Next, measure EROLL in Figure 2 on the wound roll. Move the static meter over the center of the wound roll at least 45 degrees away from the unwinding nip.

I find that readings taken too close to the unwinding nip can be highly variable making them unreliable. Move the static meter at least a quarter of the way around the roll. Watch the meter display and record the average reading.

4. Plot the measurements in a control chart. Plot the average $0.5 \times (\text{EROLL} + \text{ESPAN})$ and the range ($\text{EROLL} - \text{ESPAN}$) in an X Bar R Control Chart. After auditing static on finished rolls from several runs, we will see

Track the static performance of your operations by auditing static on finished goods.

normal process variations in the X Bar R Control Chart. And, more importantly, we will see when static is unusually high. We can use the same procedure to audit static on incoming rolls to check for hot rolls from our supplier.

Track the static performance of your operations by auditing static on finished goods. This will

verify that problem-free rolls are delivered to your customers. And, this enables you to detect static problems in your operations before static causes customer dissatisfaction. ■

ABOUT THE AUTHOR

Kelly Robinson, PE, Ph.D., is the owner of Electrostatic Answer, an engineering consulting company dedicated to eliminating injury and waste from static electricity. You can reach Kelly directly at Kelly.Robinson@ElectrostaticAnswers.com.



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Advantages and Disadvantages of Coating Methods

AIMCAL R2R Presentation Preview

In an era when battery technology is advancing at record pace it is important to be sure that battery manufacturing is capable of keeping up. In many cases the accuracy and precision of the coated electrode is what can make or break a new technology. For example, it may be imperative to control the mass of anode or cathode loading to within +/-2 percent or better. Also, with the introduction of new, exotic, and expensive raw materials, it will be important to minimize waste from excess coating or exposure to contaminants. Different type of current collectors used as substrates for electrodes may present difficulties in the coating process. All coating methods are not alike. The electrode coating method should be evaluated to determine whether it can produce electrodes that conform to these high standards.

For instance, can your current coating method produce an electrode with a cross web loading uniformity of better than +/- 2 percent? It may be possible at 100mg/cm² loading but can it produce that accuracy at 25mg/cm².

Is the electrode slurry exposed to environmental contaminants during the coating process? This



Scott Zwierlein, coating process engineer at Frontier, a Delta ModTech Company

In many cases the accuracy and precision of the coated electrode is what can make or break a new technology.

can prevent the leftover fluid from being recycled or reused.

Is solvent allowed to evaporate from the slurry vessel during the coating process? This can cause variation in the slurry make-up which will influence the downstream quality of the coated electrode.

At the AIMCAL R2R Conference, Scott Zwierlein, coating process engineer at Frontier, a Delta ModTech company will be presenting further on this topic.

His presentation will address the advantages and disadvantages of a number of coating methods to give you the tools to evaluate which process will best suit your technology.

For more information, stop by Delta ModTech/Frontier LLC at Stand 811, or visit www.frontiercoating.com / www.deltamodtech.com.

Presenter Bio

Scott Zwierlein is the coating process engineer at Frontier, a Delta ModTech Company. He works directly with customers to develop solution-based coating and drying equipment. Solutions span a variety of industries, including batteries and capacitors, fuel cells and medical parts. Zwierlein has extensive problem solving experience in the coating industry, he has been with Frontier for the past 20 years, having a background that includes both engineering and R&D. Zwierlein attended the University of Pittsburgh and currently resides in rural western New York with his wife and children.

He can be reached at 507-265-2500 or szwierlein@frontiercoating.com ■



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Slot Die Coated Electrodes:
How to get the highest quality anode and cathode coatings
Presented by Scott Zwierlein,
Coating Process Engineer, Frontier
Wednesday, Oct 20th at 9:00 am



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Rust to Tech: Part I

By **Susan Stansbury**, Contributing Writer

This begins a five-part series, “Rust to Tech”. While some still think of the manufacturing engine of the U.S. as the old “rust belt,” those in the industry know it’s often a new technologically-driven behemoth. Traditionally, it is concentrated in the Midwest, but that’s changing, too.

Beginning with a look at the rust belt image, and concentrating on mills making substrates and related converting – is Part I. Parts II-IV will provide commentary on some of the latest converting capabilities and associated markets. Part V will concentrate on emerging and disruptive technologies impacting industry.

The Rust Belt

Some “industrial archeologists” commenting on the Rust Belt from the 1960s onward count states from western New York to the Midwest, and industries from coal, to steel, automotive, paper-making, converting, and manufacturing in general. Access to raw materials from paper mills along rivers, plus shipping lanes along canals and the Great Lakes, made the Midwest a hub. Other substrates including films and the development of nonwovens also came into play for converters.

When factories in various industries went down due to overseas competition, the Rust Belt label took off during the 1970s. In ensuing years, the lack of factory upgrades was also a factor. In addition, a transition away from the levels of unionization previously



seen was occurring and wages stagnated. Still, certain manufacturing sectors remained relatively vibrant, such as the paper industry.

Paper and converting, primarily in the Midwest, stayed strong, particularly under Midwest ownership. When I served on the Wisconsin Paper Council decades ago, there were about 60 members; today, there are less than a third of that. Consolidation, outside owners of local mills, and shutdowns have comprised the papermaking scene. Through all this time, however, Wisconsin has been the number one papermaking state, and change is occurring in terms of capabilities, sustainability, and technology.

The image of Midwest manufacturing and converting as Rust Belt remnants has persisted, though it is changing, especially in the converting sector. The overlap of papermaking and converting has also been a factor with many mills that coat, cut, calender, and do more with jumbo rolls.

In recent years, mills have

often outsourced the “converting” aspects to manufacturers who specialize in converting. One example was the outsourcing of rewinding-slitting by Georgia-Pacific in Green Bay to companies who are skilled at fast turnaround of precision cuts. In fact, many mills now turn to contract converting partners who have specialty operations.

More than ten years ago, I originated the tag “The Converting Corridor.” It’s the stretch from Green Bay to Milwaukee. If you drive that stretch along Hwy 41, it’s readily apparent that a string of factories lines the roadway attesting to this powerhouse of manufacturing. Wisconsin and Indiana constantly vie for the Number One position in U.S. manufacturing, and currently Wisconsin has the title. Yet, converting is always king in Wisconsin. In addition, the abundance of small-to-midsized converters means there is low likelihood of moving operations out of

state or overseas. Their niche and specialty nature are another factor.

Converting by its definition means that these manufacturers add value to mill rolls of substrates. In many ways, it's a newer, and more profitable, type of manufacturing as capabilities to convert through cutting, coating, laminating, printing, special finishes, and packaging offer marketers advanced potential to attract consumers. Accompanying the actual converter-manufacturing are the equipment and other suppliers, from adhesives and pressure-sensitives, to testing, controls and so much more.

Converting expertise is not only affected by the latest equipment, but a variety of other factors also have largely kept the "rust" away. These include:

- The ability to adapt and upgrade current equipment to develop niche markets;
- Improved process controls that result in more seamless production and productivity;
- Increased expertise delivered both internally and assisted by external consultants; and
- Fast response and increased converting offerings that result in trendy products.

Coincidentally, a new television series (based on the book) American Rust is coming this fall. It's set in the heart of the East Coast Rust Belt, Pennsylvania, and illustrates the continued interest in this era of American manufacturing. Too often we hear, "Our country doesn't make things anymore." In converting, we say

that is a misnomer in terms of this industry and the quiet success it continues to earn.

Stay tuned for Part II, where the types of converting capabilities are examined along with associated technologies that keep this industry vibrant. ■

ABOUT THE AUTHOR

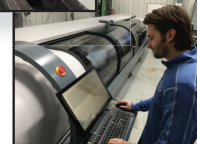
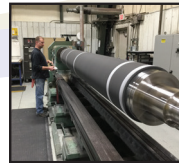
Susan Stansbury is a converting advocate with extensive experience in the paper, converting, printing and related industries serving in roles including sales and marketing management.



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New Era is a global enterprise focused on providing custom designed equipment solutions for the web handling industry. With decades of industry experience on staff, New Era can apply its engineered solutions to provide you with web handling equipment tailored to your converting needs. The company has a great deal of experience with coating, laminating, calendering and drying systems for a wide variety of environments, with a customer base spanning most industries which handle materials in a roll-to-roll fashion.

Paul Lembo, executive vice president at New Era Converting Machinery, Inc. recently took some time to discuss the company's latest equipment and highlights for the upcoming ICEC show with *PFFC*. Here is what he had to say:

What plans has New Era made for the ICEC show coming up in October and how do you plan to navigate the challenges of the current travel climate?

Lembo: I think it is safe to say that ICEC this October will be very different from past shows. Covid restrictions and changes in social norms since March of 2020 will result in a different trade show experience. Our hope is that we can navigate these challenges by finding innovative ways to promote our company. While we have the show's largest booth, and plan to bring converting equipment to the show floor, we hope to incorporate some virtual and visual experiences where people can learn more about our company while



Paul Lembo, executive vice president at New Era Converting Machinery, Inc.

staying socially distant should they choose to. Additionally, our President Bob Pasquale plans to present two papers during the conference and our hope is that this educational setting will attract more visitors to the show.

What equipment will you be bringing to the ICEC show this October?

Lembo: Our current plan is to bring three large machine sections to the show, including one complete pilot coating line. The

pilot coating line (PCL) has been developed to allow a tremendous amount of flexibility for product development. After years of engineering and market research, we were able to develop an affordable, easy to operate pilot coating line that offers clients the ability to run up to eleven different coating methods. Bringing this coating line to the show will be a great opportunity for potential clients to see this innovative new machine for the first time.

Your recently patented LLS Butt Splice Unwind has received quite a bit of industry attention. What are its main advantages and features, particularly regarding coating?

Lembo: Many coating applications cannot tolerate a traditional "lap" splice in that the thickness of the two layers of substrate requires the splice be jumped at the coater. This off-coat condition results in scrap material at every unwind splice in volumes that are typically far greater than just the splice itself. In many cases, "butt"



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splicing can drastically reduce or even eliminate this scrap in that the material is not overlapped and can pass through the coating head without having to go off-coat. The historical drawback to butt splicing is that they needed to be made at zero speed, which necessitates the use of large accumulators in higher speed processes. Additionally, the formation of the butt splice was typically a manual process. The result is a labor-intensive operation which requires a great deal of floor space. Our patented LLS unwind can create a functional butt splice automatically at full line speed, without the use of an accumulator. This innovation brings the best of both splicing methods, reduced floor space requirements, minimal operator intervention and reduced scrap in the coating operation.

You touched earlier on utilizing virtual experiences to educate and inform customers, can you talk a little about your YouTube channel on coating methods and how you use that to educate industry professionals?

Lembo: A few years ago our President, Bob Pasquale, wrote a paper which we turned into a blog series on coating methods and their design applications. In the time since we began sharing it online, we have noticed that it is one of the most popular educational papers on coating methods that we have ever posted. The YouTube series on coating methods is intended to be a visual expansion of those posts, to provide a 3D animated representation to help viewers understand how various coating methods work. In addition, we have taken much of the valuable content from the original coating papers in an



LLS Unwind System

attempt to help viewers who know their substrates and coatings focus in on the best coating method or methods for their process. We have seen a lot of activity on our YouTube channel and the viewership continues to grow.

Helping customers in finding the right coating method for their production is only one aspect of a successful service portfolio. What can New Era offer in terms of after sales service and customer support?

Lembo: At New Era, we have built our company around our customers having access to all levels of our organization, including ownership. What this means to the customer is that they are always going to get to the right person, and quickly. After-sales service and support has always been a primary focus for New Era in how we operate our business. There are many facets to supporting a customer

in the converting industry, but we see the primary areas of need from our clients being mechanical, electrical and process related. We have large departments of experienced personnel in all of these disciplines, which means we have the right people available to help when something is required on our equipment in the field. Remote support capability has become increasingly valuable in our current climate, and while we have offered remote support on our equipment installations for years, we are now expanding those platforms for audio and video communication such that we can see what the customer sees in real time. We are told that our responsiveness to the needs of our customers is one of the primary reasons converters continue to come back to us. ■

Learn more about New Era's capabilities on our website <http://www.neweraconverting.com> or follow us on twitter @webconverting.



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NORDMECCANICA

Solutions Raising the Bar

Nordmeccanica is a global manufacturer specializing in coating, laminating, and metalizing machinery. The company has more than 3300 installations worldwide and a network of representatives in 87 countries, including China, Italy, India, and the U.S.. Services include an extensive number of technologies from the very compact family of Simplex laminators to the top range of full automatic/high performance coaters-laminators. Product range serves every need in coating, lamination and metallization of paper, films and foil for flexible packing; industrial products; labels; pharmaceutical and more.

The company recently offered solutions and insight into the coating and laminating industry, as well as spoke to Nordmeccanica's own progressions. Here's what they had to say:

What are some of the biggest challenges companies face with developing custom coating and laminating equipment in converting lines? What are possible solutions?

Nordmeccanica: We have been providing custom designed lines to the industry since the very beginning once the company was incorporated in 1978. The unique approach was to create an innovation that allowed us to manufacture custom design production lines while featuring a total reliability of the product. In fact, custom design brings with it the risk of prototyping, a risk that converters have been used to deal with. Long lead times, long start-ups, project costs out of control.



The innovation proposed by Nordmeccanica since the beginning was to turn a prototype into a standard design. In other words, by implementing a comprehensive list of subcomponents and playing with those components in a sort of Lego approach allowing to integrate most of the configurations required by a constantly evolving industry. In Italy, we say “inventing warm water” while referring to apparently “easy” inventions. No matter how simple it seems, this innovation is not. The vast majority of the OEMs still start custom projects from scratch, delivering products that are difficult to start up and to set in production.

Our approach is, instead, providing turnkey solutions that are reliable since day one, allowing for the shortest lead times and start up time in the industry. This approach proved right during these past hard months of the pandemics. The number of orders for complex, high performance custom designed lines grew significantly as the industry faced a demand out of control for more packaging and higher hygiene standards both in the food and the pharma sectors. Despite the odds, our production lines in the past year and a half recorded minimal to no delays in production, and all lines have been started up successfully.

Therefore, the reply to the question comes quite easy: challenges in custom developed products are connected to the design of a custom line and problems can be taken care by appropriate design.

What are some recent innovations and future advancements Nordmeccanica is focusing on that will improve the converting process?

Nordmeccanica: A general trend in our industry, in compliance with regulations implemented in the direction of recycling and decomposing wastes, is to reduce the number of layers involved in the design of a pouch. To reduce the number of layers implies, consequently, to substitute the function of a given layer with some other solution. And the solution has been identified by almost all players involved: more coatings. Therefore, the hardware side of this evolution, the one we are involved in, requires providing our customers with more coating lines. Coating lines informed to the current state of evolution of the coating technology.

Thanks to our relationship with all global providers of coatings, we are up-to-date to the state of the research. All our products, as a standard, being laminators or coaters, are currently respecting this requirement. But what happens with customers investing today in conversion lines is that need to comply with traditional multi-layers structures, while likely requiring to take care of more coatings and less laminating in the

near future. The challenge has been to design integrated custom lines that are able to provide flexibility: laminators ready to convert efficiently the traditional products while being able to evolve into more complex laminating-coating lines as the demand for such structures will grow.

A great help into that evolution is given by our open-design approach. Virtually every product we have delivered in the past 15 years is open to some sort of integration into a multi-functional conversion line. It is, therefore, consequential that all products we are delivering currently are even better open to future evolutions. It is all about integration and modularity. A format we keep implementing and evolving. The

next new thing in our industry, as it has happened for all innovations in our segment presented in the past 25 years, will bring our signature. It is fundamental to our politics to have our customers well-informed that their next investment will carry all that is needed to remain state-of-the-art for decades after the start up.

How important is sustainability to your customers, and what solutions can you provide and plan to provide in the future?

Nordmeccanica: There are three sides of sustainability we are dealing with as OEM.

The first is our approach as a company to internal production processes. All of our plants are

state-of-the-art in terms of energy consumption reduction, use of renewable energy sources, and emissions.

The second involves our machine design. All of our products are, in fact, top of the industry in terms of energy consumption, process emissions, and scrap reduction. This target is achieved by design and by the use of state-of-the-art technologies and components. We were pioneering technologies such as solvent less lamination at times when most of the industry did not even know about it. We pioneered the use of regenerative motors and drives as a standard more than a decade ago. We select all our partners within those that are able to comply with our demanding approach.

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The third and last aspect of our involvement in sustainability is about process innovation. Nordmeccanica partners with all major players in the value chain. The entire industry is working to that target, and we are the OEM of reference. We take a direct involvement in new processes evolution, being firmly convinced that the current technology requires the involvement of all players to achieve serious results. We partner with film manufacturers and with chemical companies. Our involvement is not to provide hardware to demonstrate their products. Our involvement is at project development stage. We take active part in their product development during the most difficult stage of a project: evolving from a good idea to “market ready” products. Milestones in the technology such as: puplex one shot; triplex one shot; laser die-cutting; digitally printed substrate conversion; just to name a few.

What factors should converters and package printers consider when choosing coating, laminating, and metallizing equipment?

Nordmeccanica: The evolution of our industry, the OEM side of it, is becoming a more integrated one. Years ago, converters had to contact a number of potential providers, compare offerings, evaluate, take the risk of a decision.

Today, we are convinced the OEM industry is evolving into some sort of “automotive” format. Once a consumer buys a car, he does not ask the dealer questions such as: “Who is the maker of the motor that powers the car windows?” The brand is the guarantee. So, while choosing, the brand name has to play the primary factor. A company that runs by far the largest portion of the market, the company that records high customer satisfaction, the company that brings to the industry innovations and new solution should be an easy choice. Once the brand has been selected, then there are the technical aspects, as previously discussed.

A good product needs to comply as a standard with state-of-the-art performances in sustainability. A good product needs to be flexible to future development making an investment safe for a long time. A good product needs to provide operator safety and ease of use at the same time. A good product needs to provide performances in compliance with high quality standards. We, as a manufacturer of all three products in our market segment – coating machines, laminating machines, vacuum metallizers – impose on ourselves complying with all those targets and setting the standard while continually raising the bar. ■



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VETAPHONE

Know your films!

With the growth in demand for flexible packaging predicted to continue at a rapid rate for the foreseeable future, Jan Eisby, CSO at surface treatment pioneer Vetaphone A/S, explained why it is so important that printers and converters know exactly what they are dealing with to ensure optimum productivity.

What's the basic principle behind what you're doing at Vetaphone?

Eisby: Our company philosophy is based on sharing knowledge, because we believe it empowers people to do a better job. And because we invented Corona treatment 70 years ago, we have an unrivalled archive of data and expertise that we can use to assist our customers.

Why is it so important to understand the process of Corona treatment?

Eisby: Because it's all about adhesion and the issues associated with non-absorbent materials, where matching the surface energy of the ink or lacquer to the substrate is essential. If they don't match, there will be problems with adhesion, so Corona treatment is the way we change the surface structure of the substrate to ensure good adhesion. We measure this surface energy in dynes, which is a function of watts of energy applied per square metre per minute.

So really, you need to know your dynes too?



Jan Eisby is CSO of Vetaphone A/S, the pioneers of Corona treatment

Eisby: Yes, because all plastic film intended for packaging is surface treated at extrusion, but films change over a period of time, and under different storage or transport conditions, and even from roll to roll of the same substrate because of the action of additives or contamination. That's why it's essential to test it before you use it, and if necessary, re-treat

it, because different films are used for different applications and behave differently – it's a bit of a moving target!

What are the features of packaging films?

Eisby: Most of them are multi-layer because they have specific functions – like preventing contamination in food packaging or guaranteed hygiene for medical applications. Take a typical coffee pack for example, which is often a multi-layer material. Corona treatment will be required on the PP surface to allow it to be printed and subsequently have an adhesive applied before laminating it to a metallised film – in every case, we need to know the dyne level and requirement of each layer before we can recommend the power required and operational production speed.



It's important to know if the surface energy of the substrate is higher or lower than the ink or lacquer being applied so the correct level of corona treatment can be applied

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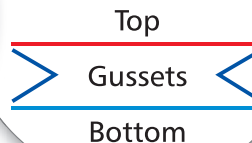
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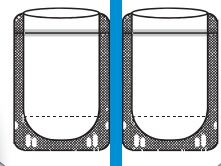
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As well as varying from one material to another, do all rolls of the same film behave the same?

Eisby: No, they don't! Different rolls from the same supplier can behave differently, while supposedly the same material from a different supplier can pose even bigger problems. Typically, rolls of a particular film that vary significantly in price will do the same in terms of performance. Lower purchase price normally indicates the need for more power to reach the correct dyne value and a lower running speed, or both. As with much in life, you get what you pay for! But, of course, you need to know this information in advance, and that's why testing is so important because it can be the difference between being able to run at 160m/min or 40m/min with the effect that has on the profitability of the job.

I can see why knowledge is so essential - is that why you established the Vetaphone Academy?

Eisby: We felt it was the best way to disseminate information and share our unique experience of surface treatment. We have 70 years of data going back to the original patent, so it's likely that we have tested and analysed most combinations of ink, lacquer, and substrate that the packaging sector has ever used – and this information is an invaluable reference point for customers who are experiencing problems or are looking to experiment and develop new products and applications.

I know you are very proud of your testing capabilities at



The Vetaphone Test lab is a unique global facility that allows converters and manufacturers of substrates and inks/lacquers to fully test products prior to committing to commercial production.

Vetaphone – can you tell us more?

Eisby: We opened our fully functioning Test Lab facility here in Denmark in Summer 2020 – not the best timing with the Covid pandemic maybe but it has proved to be an invaluable resource for the industry. It allows us to test the performance of any type of packaging film, either in sheet form or on the roll and simulate a real-life production environment. What it effectively does is take all the guesswork out of the equation and minimise the cost implications for printers and converters in their everyday production scenarios.

What does the new Test Lab add to your capabilities?

Eisby: For a start it allows us to test on the roll, and secondly it has Plasma as well as Corona capability. We can switch the type of electrodes and rollers to test differing requirements for

customers and closely match their own in-house production capability. The Test line can be programmed to apply a specified level of Corona treatment to the roll. The roll can then be tested to see what dyne level has been achieved. We have now automated this process by adding a label dispenser so that different sections of the roll can be treated using differing power levels and each can be clearly identified by its label and measured for the dyne level achieved.

Does this all have to take place at the Test Lab?

Eisby: Not necessarily. A good way of using the Lab facility is to send us a roll of the film intended for production so that we can apply varying levels of treatment to assess its potential for the concept in mind. The customer can then test the differently treated sections of the roll in-house to determine which is

right for them to use for the job in question in their own commercial environment. The amount of time and money invested at this stage is insignificant compared with getting it wrong in production – that’s what our unique Test Lab facility brings to the market and why we’re so proud of it.

Are there other tests you can do?

Eisby: We can carry out an Advanced Contact Angle Test that analyses the droplets and gives a highly accurate measurement of the surface energy of the film. This produces a “wetting envelope” that tells you if you have chosen the correct ink or adhesive for the material being used for the job. The other capability we have is an

The key element is to know exactly what you’re dealing with, so you don’t make expensive mistakes in commercial production.

Advanced Peel Test that assesses whether the laminate bonding is good or bad. It measures the force required to tear the product apart and details any issues involved.

How would you summarise your message to printers and converters?

Eisby: The key element is to know exactly what you’re dealing with, so you don’t make expensive mistakes in commercial production. The

best way to do this is to tap into the vast knowledge and expertise that is available from us here at Vetaphone. We invented Corona surface treatment and have continued to develop the technology – so there’s a lot of useful knowledge that we make available. Whether it’s testing new ideas or looking to improve efficiency on existing work, we can assist you with our Test Lab capabilities, and at the same time enrol your employees in our Academy Programme, which provides hands-on skills that are directly transferrable to the production floor. We’ve always believed that ‘knowledge is power’, and in today’s complex and competitive marketplace, the better informed you are, the greater your chance of success! ■

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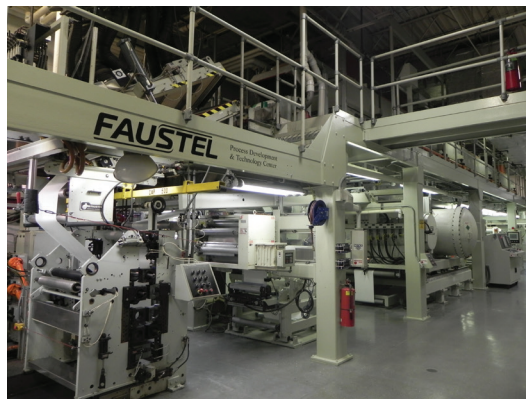
Successful package designers balance complex performance needs with cost and sustainability targets. New pouch formats often require combining several different resin grades to achieve desired barrier properties, toughness, sealing characteristics and clarity. Multi-layer film extrusion capabilities should not limit the designer's toolbox. Brampton Engineering's SCD® (Streamlined Coextrusion Die) technology is the industry's most versatile blown film coextrusion die for more than five layers, according to the company. Technologies include CD® in AeroFrost® and AquaFrost®.



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Faustel's in-house Technology Center is a customer resource available for product and process development work, in addition to short-run toll coating. The company's process experts can help innovate both new and existing web products, from initial laboratory trials through full-scale manufacturing. The facility includes three pilot coater/laminators, in web widths from 150 mm to 600 mm, capable of more than 40 aqueous and solvent-based coating methods which provide a limitless range of application possibilities and process configurations. Convection drying, UV and ebeam curing equipment is available, contact Faustel for additional information or to schedule a trial.



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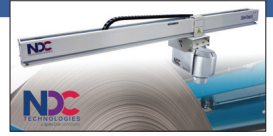
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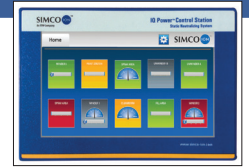
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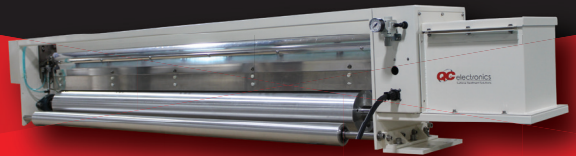
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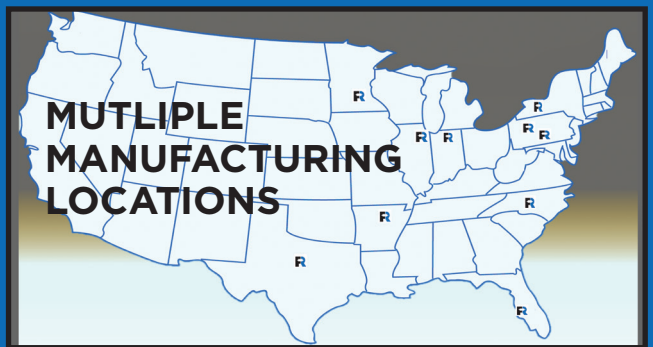
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