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WINDING BEST PRACTICES 6

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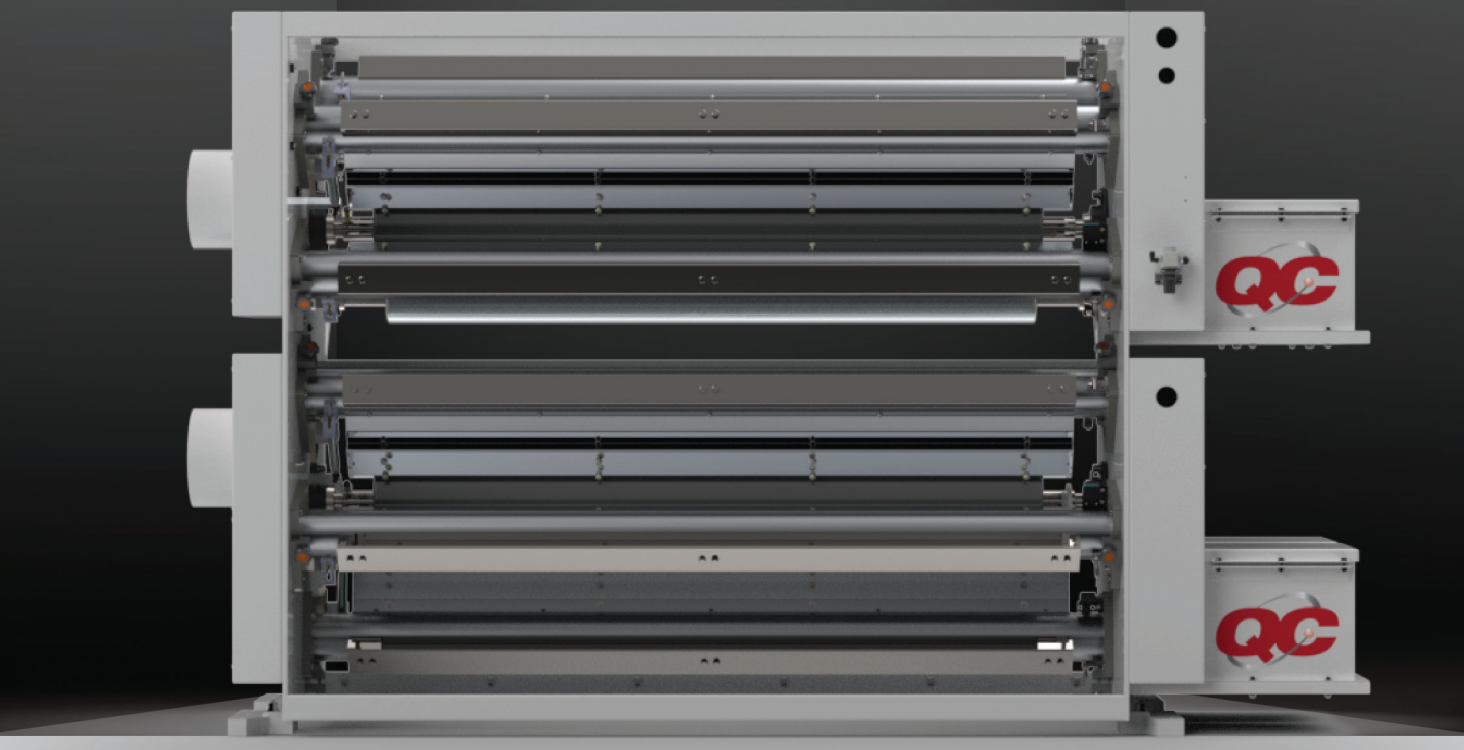

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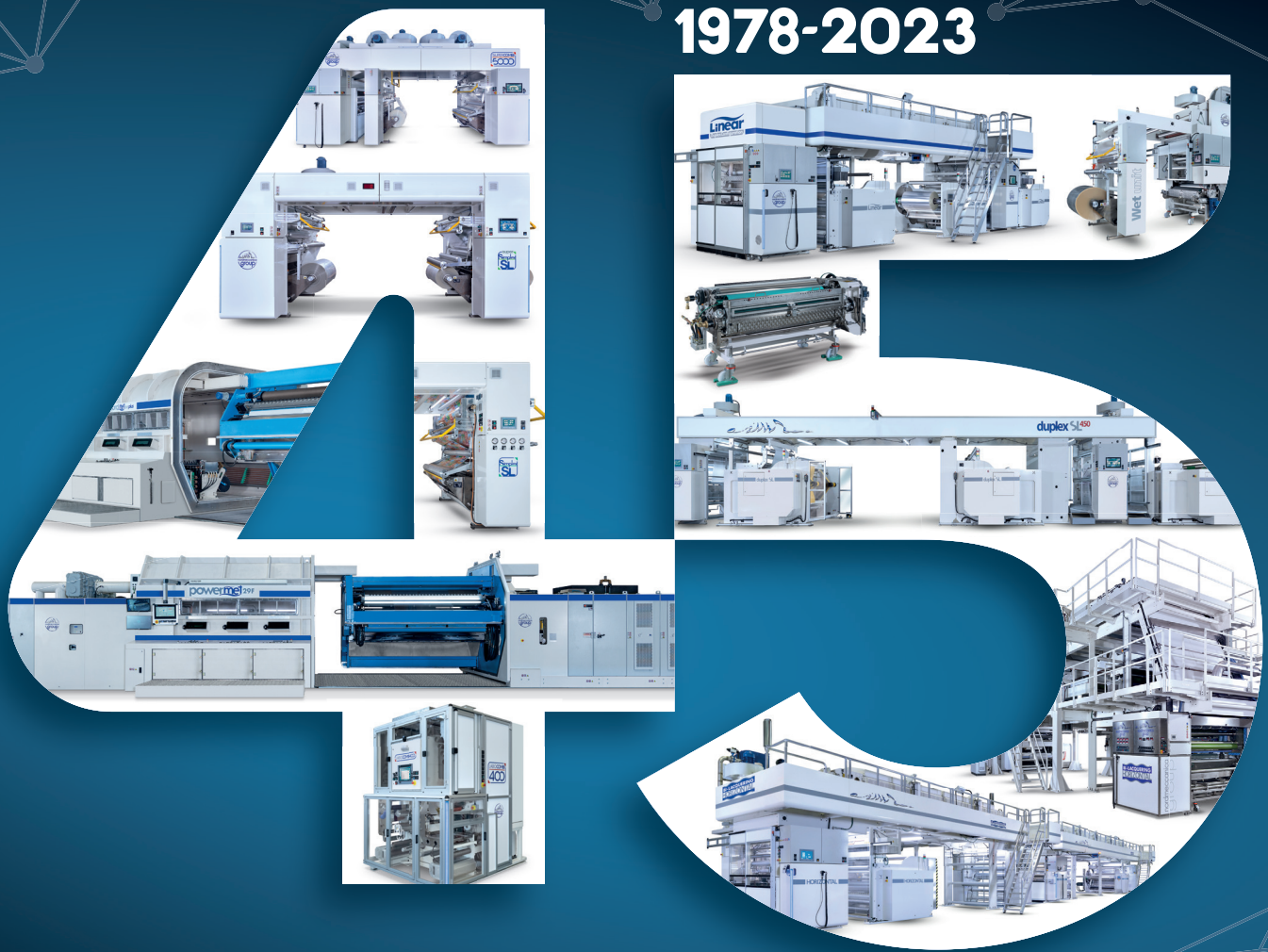

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Angel Morris
Editor

It's the time of year when thoughts turn to warmer weather and daydreams involve days off, whether or not you actually get to book a spring break vacation. While I can enjoy traveling, I'm a homebody at heart. In fact, I'm writing this while parked in my favorite armchair, where you'll often find me when more pressing matters aren't at hand.

Sometimes, I feel guilty that I'm not taking advantage of the great wide world, but given a choice, home is where I'd rather be. On the rare occasion I do travel, I enjoy myself. I like to experience the sights and sounds of new places, but I'm always, always glad to be home at trip's end. Like the American Eagle, I'm happy to return to my oh-so-cozy nest. For me, familiarity does not breed contempt, but rather contentment.

If you are a traveler, a wanderer, an adventurer, I applaud you! But if you prefer home fires over frequent fliers, you are my people. Akin to being comfortable in your own skin, what a blessing to believe there really is no place like home. Give me my comfy corner chair and a good book, in fact, and I can travel anywhere I desire without packing a suitcase … simply by turning the page.

This month, our contributors travel back to the basics with a look at the fundamentals of successful converting companies and how they prepare for shifts in the industry. In the continued conversation about winding best practices, safety, delivered quality, process health cleaning and process controls are addressed, with technical team advice shared as well. Plus, an in-depth explanation of dyne decay is given, with discussion of why this is so important to understand. Lastly, we take a look at coatings futures for medical and wound management, along with a forecast for the contract converting industry — spoiler alert: the future looks bright.

So, whether you're putting on your shades for spring travel or settling in at your desk for another ordinary day, may you enjoy something you read this month. In the words of author and aviator Anne Morrow Lindbergh: Travel Far, Pay no Fare … a book can take you anywhere!

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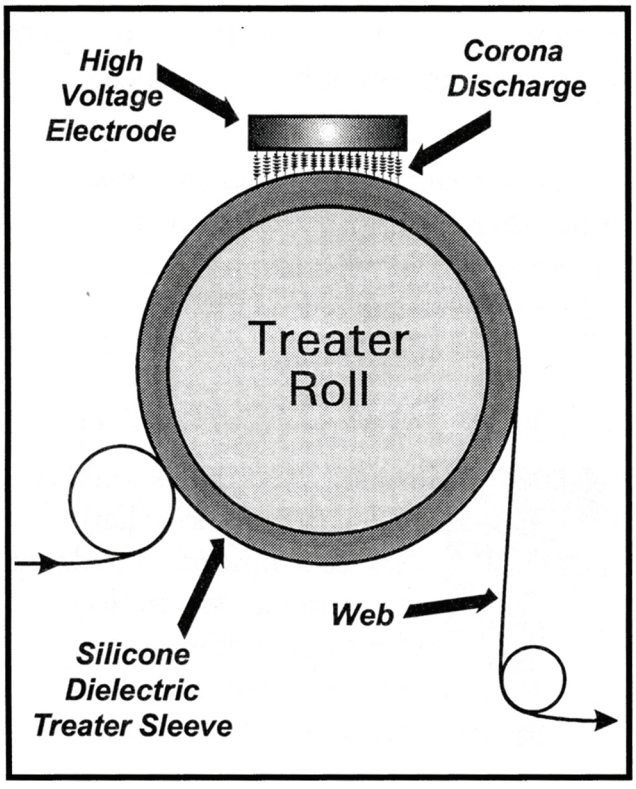

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Winding: Part 4

Winding Best Practices

By **Neal Michal**, Principal, Converting Expert, LLC

Previously we have discussed wound roll mechanics, how to document your roll structure, and the importance of tension, nip and torque. This month we will discuss best practices for winding — addressing safety, delivered quality, process health cleaning and process controls — and will close with information for your technical team.

Safety

OSHA's general duty clause [Section 5(a)(1)] requires employers to provide a safe working environment. OSHA reports that total workplace injuries have leveled off since 1992, but fatalities have increased 18 percent over the last decade. The winder is the business end of the machine and there are dozens of interactions every shift between the winding process and your operators and maintenance personnel.

Hoists, thread up and access to running nips are known hazards with any winder. Read and understand the original OEM documentation. Never modify a safety system designed by the OEM. If an improvement can be made, consult with your OEM before proceeding.

Insure all guards are in place. If new guards are required, insure they are robust and follow OSHA and/or EU requirements.

Inspect hoist straps, cables and below the hook devices each shift for signs of wear. Below-the-hook devices include spreader bars and J hooks used to carry the coreshaft or finished roll. All below-the-hook devices should be fabricated with traceable materials as per a PE stamped drawing. Hoists should be inspected annually by an outside firm. File all PE stamped drawings and hoist inspection reports for retrieval in the future.

Audit hoist practices. Never stand under a suspended load. Establish a safety zone around the perimeter where a coreshaft or finished roll will travel (Figure 1). Highlight this area with guards and visual alerts such as painted floors.

Establish and follow safe work practices. Provide training to new operators. Provide refresher training for experienced operators. Develop a formal documentation system to insure required checks are being done each shift. Use proper PPE when cleaning or handling slitter blades, anvils and cutoff knives.

Figure 1 Hoist Failure

Audit how operators thread up the winder. Carefully consider the use of driven rope thread up systems. The safest thread up is done with the machine locked out.

Conduct formal risk assessments for new equipment, modified equipment and after a significant change in operation. Pursue interlocked guards when required to manage risk.

Delivered Quality

Quality is a management function. When quality is right, your customers will feel it. When quality is bad, your organization will feel it. Consider the look and feel of quality from your customer's eyes. Work with your customer to document what is important. Read and understand the specification for each grade.

Mill work requirements include core ID and wall thickness, web width, length and roll diameter. They may also include requirements for roll straightness, absence of debris, slit edge quality,

Figure 2 Visual Defect Examples

max roll weight and dimensions for an offset core.

There are several methods to establish roll structure: roll hardness, roll density, average in roll caliper, average in roll strain and roll length to diameter. Refer to the previous articles that describe wound roll mechanics and how to document interlayer pressure and through roll strain.

Any visual defect can become a quality concern. Establish visual standards for all potential defects. These standards should include a picture of the defect, name, potential cause and action steps to correct (Figure 2).

Download and print a copy of the good run settings with limits for the current grade. Operators should check each process input and initial them. Make note of any process setting that is beyond the limits. Escalate any discrepancy to management.

Process Health Cleaning

Routine cleaning of your process is a best practice to improve delivered quality and productivity.

Establish minimum expectations for routine process health cleaning. Identify items to do during short downs, at shift change, weekly, monthly and during PMs. Clean idlers, bow rolls, nips, drums, kitchen rails and linear bearings. Spin each roller by hand, note bearings that should be replaced. Clean debris away from coreshaft bearing journals. Clean up any debris around the winder. Make note of any obvious leaks or metal shavings. Write work orders for repairs. Work with maintenance and engineering to correct persistent issues.

Process Controls

It is amazing how many winders have inadequate process controls. Winder OEM's may not provide the required information to determine web tension, nip load and torque.

Start with your field devices. Calibrate load cells, pneumatic controllers and position feedback sensors annually or anytime they have been replaced. Establish good run settings for draw, tension, nip and torque by grade (Figure 3). Set up trend charts to monitor winder settings, roll density, hardness or other required metrics. Use them to document when shifts occur.

Train lead operators and maintenance on how to interpret the trend charts. Conduct capability studies to document upper and

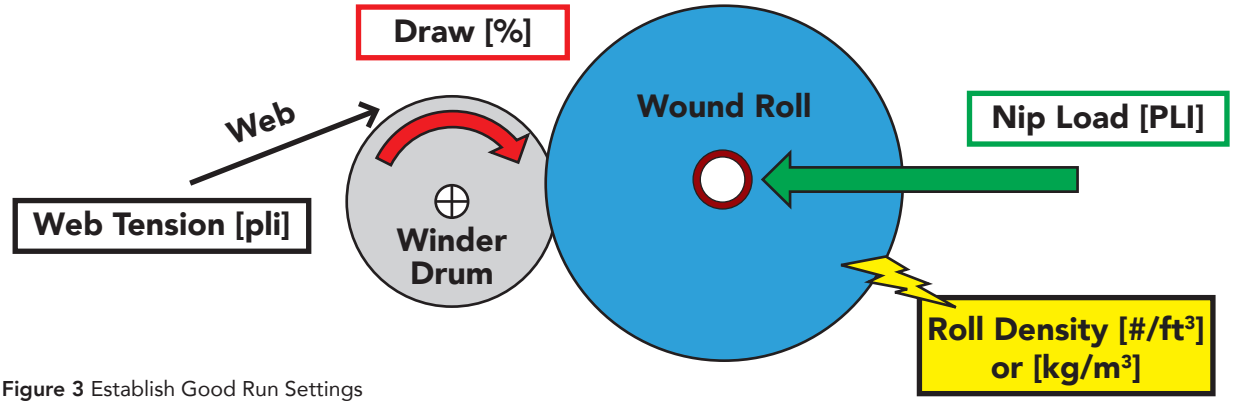

Figure 3 Establish Good Run Settings

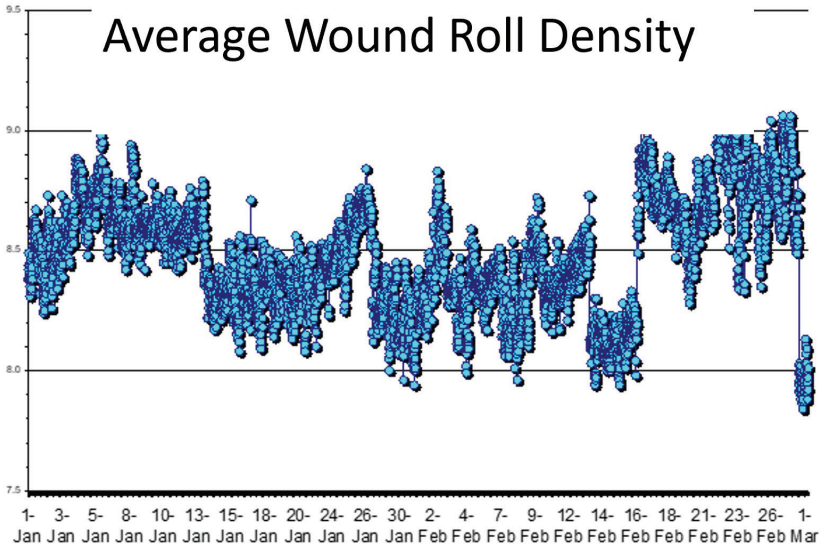

Figure 3 Set Up Trend Charts

lower control limits for process settings. Correlate these inputs to the outputs that are important to your customer. Evaluate each SKU and grade against actual process capability. Escalate any discrepancy to management.

Technical Team: Engineering and Maintenance

Read and understand the original OEM documentation. Develop process and instrumentation drawings that highlight all field devices with a clear understanding how the winder is controlled. Include important PLC tags for process variables. Use trend charts to document shifts in process capability (Figure 4).

Establish required preventative activities for weekly, monthly and annual checks. Check cylinders for leaks, worn bushings, misalignment couplings and damaged supply lines. Replace any worn out bearings in the idlers and power train components. Watch several winder sequences. Look for any odd or unexpected movements at each pivot or sliding member. Inspect gear boxes and couplings for excessive clearance. Check sprockets, chains, pulleys and belts for proper tensioning. Re-check alignment after any critical component has been replaced.

Track unexpected failures to determine if additional investigation is required. Investigate any situation when the operators were required to operate outside of established upper or lower control limits.

Up next, we will conclude our winding study with a focus on common roll defects, discussing what causes them and how to correct them. ■

ABOUT THE AUTHOR

Neal Michal of Converting Expert is a well-known authority in web handling, process design and optimization. He worked with the Web Handling Research Center for 20 years. Currently serving as a technical advisor with AIMCAL, he can be reached at neal@convertingexpert.com or through www.convertingexpert.com.

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Dyne Decay

What is it and Why is it Important to Understand?

By **Jan Eisby**, CSO at Vetaphone A/S, Denmark

To those involved in extruding, printing, laminating and converting filmic substrates, knowing and understanding the importance of dyne levels is an everyday occurrence — or it should be. But market research indicates that while surface treatment is universally accepted as an essential process, the science behind it is less well understood. In today's competitive marketplace, where production errors can be costly, knowledge is a powerful commercial tool.

If you want to stay one step ahead, understanding the process and importance of dyne decay can be the difference between profit and loss, as this article explains.

Surface Treatment and Dyne Levels

The need for surface treatments stems from the fact that a liquid, whether ink, lacquer or adhesive, cannot be absorbed by plastic substrates. Unlike natural fiber-based materials such as paper, carton and corrugated board, plastic is non-absorbent so the liquid beads up on the surface and never adheres securely. This is caused by a mismatch of surface energy (or tension) between the liquid and the solid. Because the surface energy of the liquid is higher, the surface energy of the substrate needs to be increased by a treatment process, and this is known as corona.

The process itself is relatively simple. It requires a finely controlled electrical discharge to be applied at close range to the substrate, altering the molecular structure of the surface layer. The low surface energy of the substrate is caused by long molecular chains that repel the liquid and resist adhesion (Figure 1).

The electrical discharge breaks up those long chains and in doing so allows more points at which the oxygen molecules attach (Figure 2). The result is secure adhesion of the liquid onto the substrate and a resistance to the smudging by abrasion.

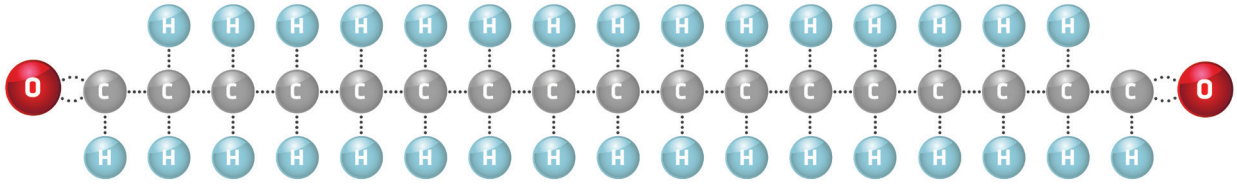

Figure 1

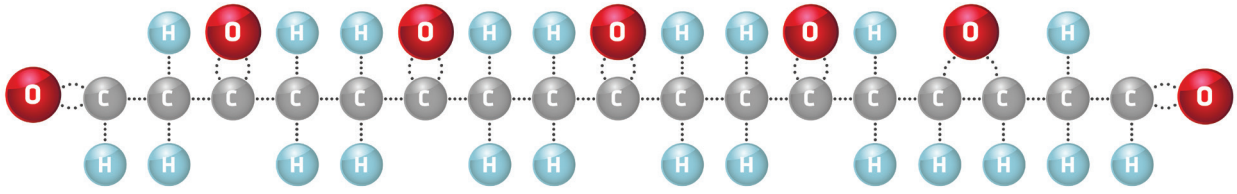

Figure 2

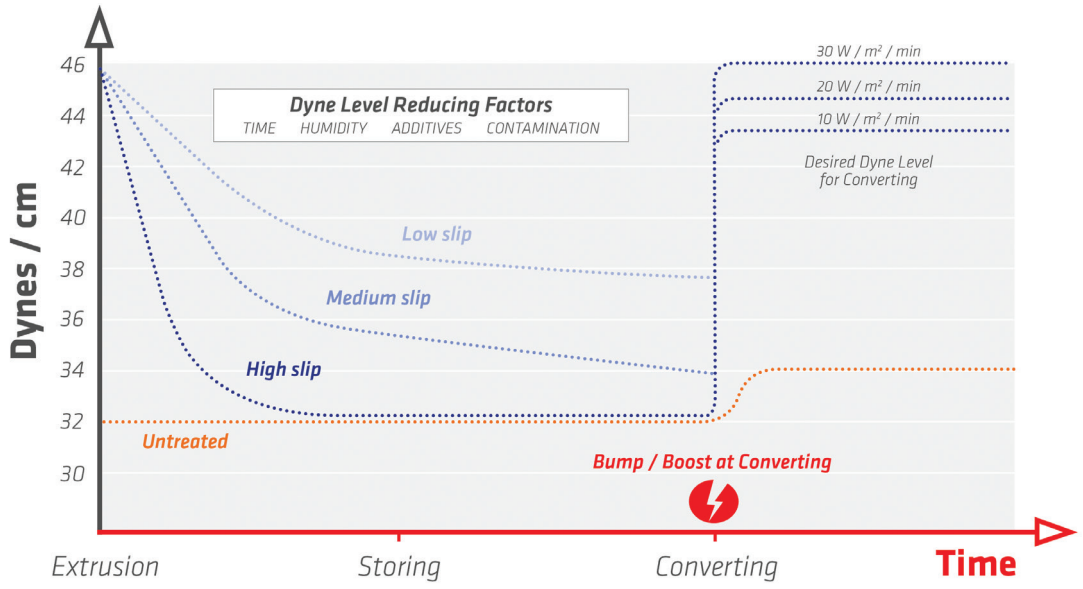

Figure 3

As with all scientific processes, there was a need to quantify the result and measure the effect. The term chosen to express this was "dyne," and it relates to watts of energy applied per square meter per minute. The term itself dates back to the 1870s but has become accepted in recent times as an expression of surface tension, with the higher the dyne number equating to the level of surface tension or energy of the liquid or solid.

The Problem with Film Materials

For anyone who has ever tried to write on plastic with a ballpoint pen, the problem of ink adherence is obvious. That is why all plastic film intended for further processing such as printing, laminating or converting, needs to be corona treated during the extrusion process. The extruded film has little native surface energy and if it is not surface treated during production, may prove incapable of subsequent processing because minimum dyne levels or values will be required for each process.

The physical action of corona treatment modifies only the surface structure of the substrate. It affects neither the character nor the capability of the film and its intended use in packaging, for example, as a protective later. The amount of power required to achieve the desired dyne level will vary from one material to another, with the amount and type of additives playing a significant part in its behavior. Because the dyne level can be measured and the required levels for different processes are well established, corona treating the film at extrusion might be considered as "job done!"

But little in life is that simple, and surface treatment of non-absorbent substrates is no exception. Different films behave differently, and the same film can vary from roll to roll, or even from side to side and from one end of the roll to the other. Price will also have a part to play with that; in general, the lower the price the lower the performance. And, since each process — whether it's printing, laminating or converting — requires a specific dyne level, knowledge and control of the dyne level of the film being used is essential.

Other variations include the increasingly common use of multi-layer films. These are designed to perform different functions in packaging, including hygiene for medical products and contamination protection for packaged food items. These require barrier layers that might, for example, require adhesive application for the lamination of a metallised layer. There are so many variables in today's complex packaging market that detailed knowledge is required to ensure maximum efficiency.

Figure 4

Understanding Dyne Decay

This knowledge includes an understanding of dyne decay. As mentioned earlier, surface treatment at the extrusion stage merely imbues the film with a basic surface energy (dyne level) that allows a certain degree of processing. However, there are two major factors that need to be considered: 1) dyne readings continue to fall away after treatment, and 2) different processes require different dyne levels to work successfully.

Taking the first point, time plays a significant part in the decaying process, along with humidity, additives and contamination. The ability of a particular film to retain a dyne level will depend on several factors: quality of manufacture, quality of surface treatment at extrusion, how and where it has been stored, and the conditions under which it was transported.

Dyne decay is not linear and each is different, as is the storage capability of each customer … and this assumes correct surface treatment at extrusion — all of which will have a significant effect on the substrate's ability to be boost-treated. If you add in the time delay before printing, laminating or converting, you can appreciate the number of variables at play. What you need to know is the dyne decay profile of every substrate you are using.

To illustrate these points, see Figure 3, which shows that extruded film has a base dyne level of 32 that can be increased to 46 dyne by corona treating.

However, these higher figures begin to fall as time passes and decline faster with high slip substrates that have a greater concentration of additives. So, by the time the film arrives at the converting stage, its dyne value may have fallen as low as 34, or at best 38. The result is that it will require boost treatment to restore it to a dyne value commensurate with the process being undertaken, and the chart indicates the likely power required to achieve this.

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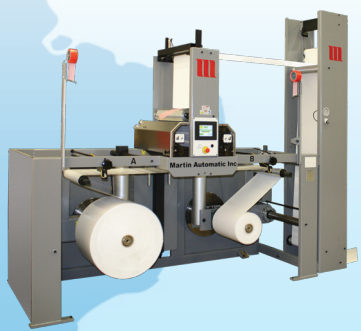

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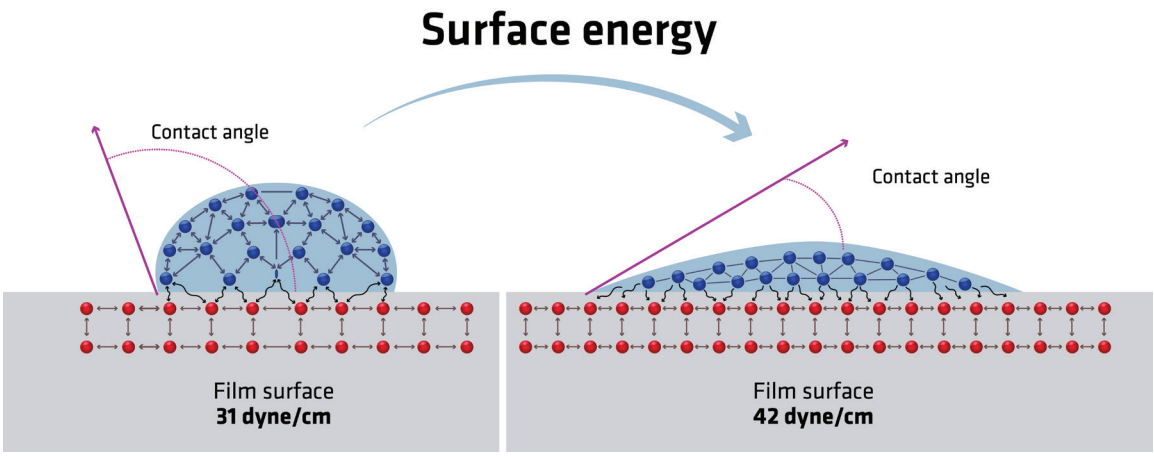

Figure 5

Regarding the second point, there are established dyne values for different processes. For example, applying adhesive needs a dyne reading of 42, so establishing the level to which your film has decayed will indicate the boost treatment required. Simply put, time is no friend to dyne. The longer the material is in storage, the more likely the drop in dyne level. A low slip film, for example, might drop to a 38 dyne and need boosting by 4, whereas a high slip film might have decayed to 32

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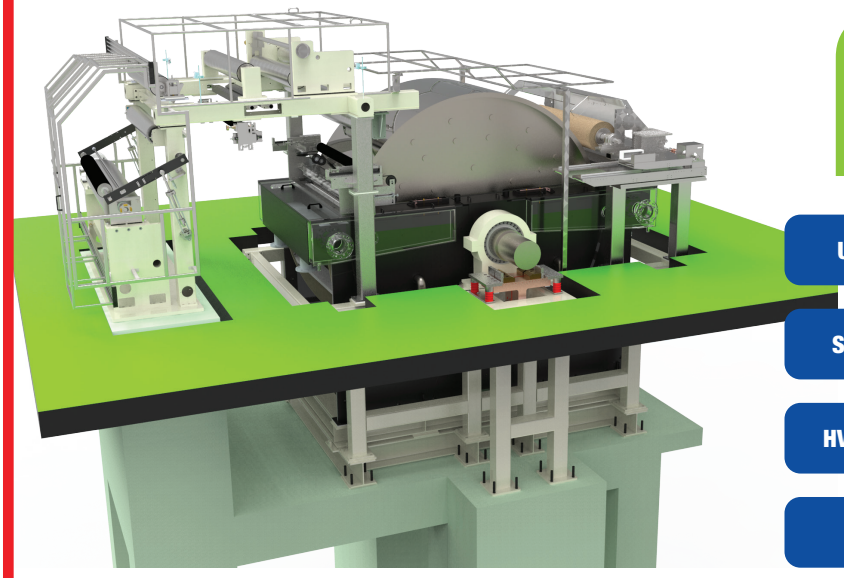

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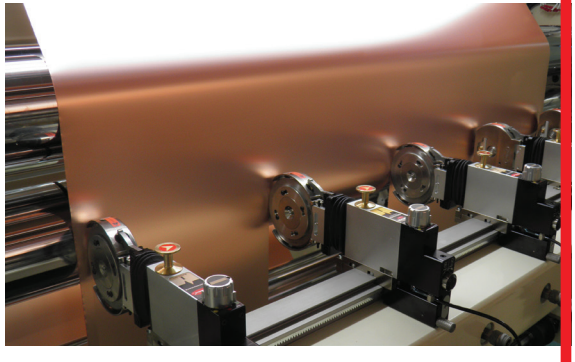

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dyne and need a boost of 10.

It's not a straightforward process to get right. Different adhesives require different dyne levels across different films. And while few of those who work in packaging print production can expect to have all this knowledge at their fingertips, an appreciation of the number of variables and their respective consequences is important.

This is where expertise from surface treatment specialists becomes vital to securing viable commercial production on a consistent basis, because nobody can afford rejected work that needs re-printing or processing. There is no magic formula — it's more the application of science to known procedures and circumstances that delivers the best end-result. While new substrates are being developed all the time and packaging is having to deliver performance, much of its production relies on well-established principles and processes.

All this information is available for the improvement of production efficiency, but if you don't know why it's important, you won't know the need to ask. What this data does, is predict the dyne decay of a specified film material, advise the dyne level at which it can be processed at a certain line speed and advise how much power is needed to boost the substrate to the dyne level required at each stage of production.

One simple example highlights this point: Two seemingly identical films were tested under the same conditions and found to perform differently. One was significantly cheaper to buy but would allow a production speed of only 25 percent of the other. Presented with this information, the customer was able to choose between spending money on a better product, or incurring the cost of boost treating; or, running the production line much slower. This type of detailed knowledge forms the basis of sound business practice.

Using Knowledge to Your Advantage

Underlying all the above is the importance of carrying out accurate tests on the material prior to each process. Typically, the longest gap

between corona treatment and processing is between extrusion and printing, which can often be calculated in months. During this time the dyne level of the film will have decayed, and in some cases decayed significantly. This will adversely affect its performance capability and will likely produce inconsistent results.

That is why it's important to test at each stage of production. Using a dyne pen (Figure 4) will ascertain the current level and knowing this and the level required for the upcoming process will enable the film to be boost-treated to the correct dyne level to ensure consistent performance, as can be seen in Figure 5 where the ink wets-out far better.

This is especially important when processes are offline and not necessarily performed consecutively. Each period between processes allows further dyne decay, and even in the narrow web sector, where production is usually single pass, the new digital inks can pose problems. So, testing is vital here, too. With so much at stake, accuracy and predictability have become paramount in today's commercial production environment.

In Conclusion

The message that emerges is that surface treatment is a complex subject, and the better you understand it the more efficient your processing of filmic substrates will be. As new materials are developed and processes become more complex, knowing the importance of dyne levels and their respective decay profiles becomes more critical.

If you accept this principle and understand the role dyne levels play at various stages of production, you are in a better position to optimize efficiency. Knowledge is power and power provides the opportunity to succeed in a competitive marketplace. ■

ABOUT THE AUTHOR

CSO at Vetaphone A/S, Denmark, Jan Eisby helps Vetaphone offer a unique knowledge of corona and plasma technology toward the perfect surface adhesion in the film and foil packaging industry. Learn more at www.vetaphone.com.

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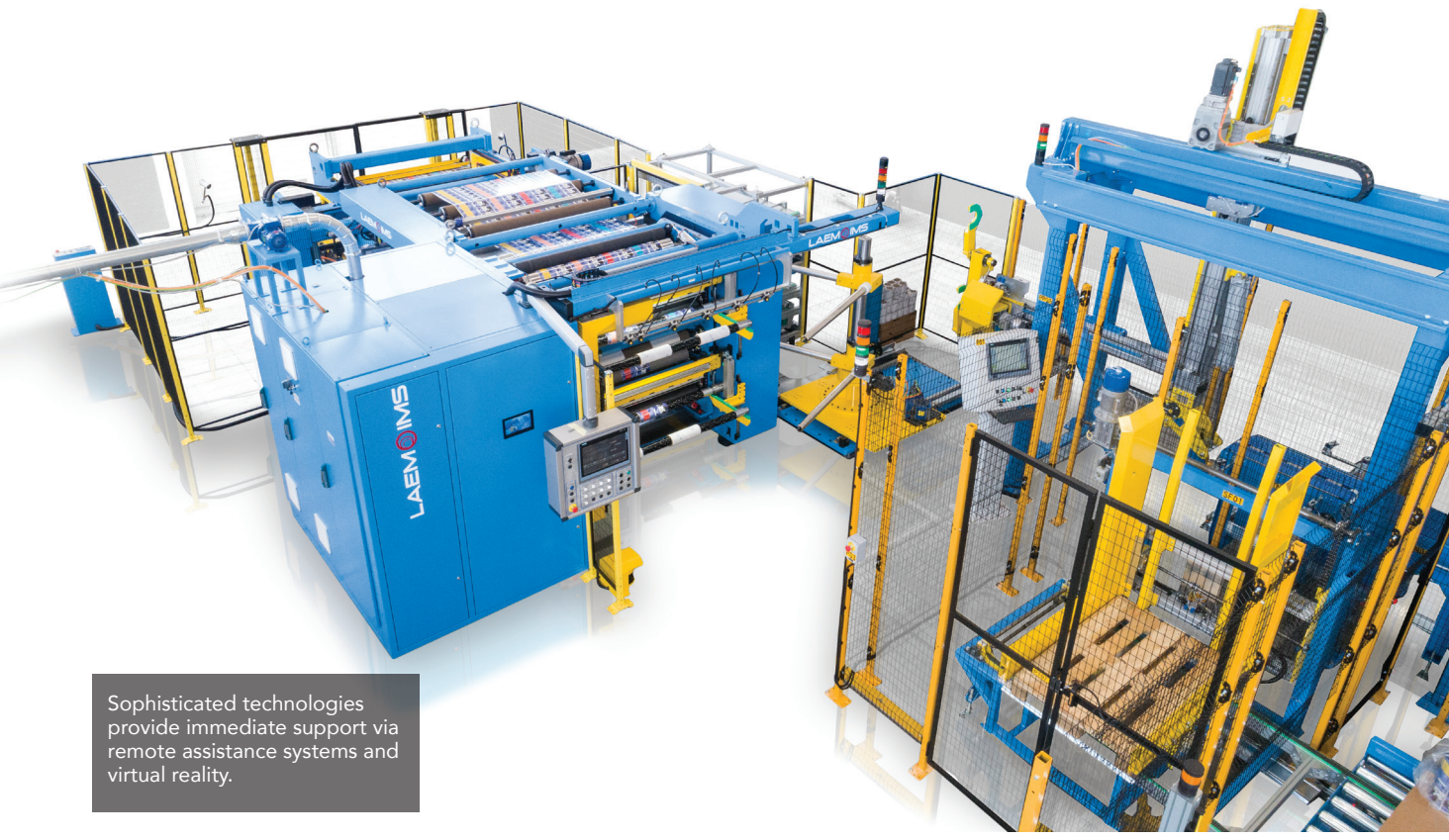

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Back to Basics: Fundamentals of Successful Converting Companies

By **Zeno Zonato**, Sales Manager Flexible Packaging

Companies that are most seen as leaders in designing and manufacturing converting machinery are known for high-quality excellence, an innovative spirit and state-of-the-art technologies. An awareness of where the industry came from and where it's going are essential to remaining on the forefront of converting.

In the last five-10 years, the slitting and rewinding sector has increasingly moved toward automatic devices for rolls finishing, as handling and palletization became (and will continue to be) more and more available and requested. Increasing automation, complete integration of slitters with ERP systems of the customer and efforts toward process cost reduction are on trend in slitting and rewinding processes.

In order to prepare for these industry shifts, businesses must analyze their own process and be aware of the kind of production they have — short or long runs, few or many "across"— finishing processes will have to be standardized, and rolls must be diligently cleaned from print or other process defects before slitting.

When it comes to machine life cycles and service requirements, customers will look to experts who can anticipate service and maintenance needs rather than just react to them. Through the use of new, sophisticated technologies, customers ought to be able to expect immediate worldwide support via remote assistance systems and virtual reality. Technical support should include comprehensive post-sales services including spare parts, field service, inspections, a real-time help desk,

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Rolls must be diligently cleaned from print or other process defects before slitting.

training, retrofits and upgrades, as well as relocation and preventive maintenance.

While meeting these expectations is a challenge, reducing wastes and environmental impact and, at the same time, maintaining high performances of the packaging (shelf life, coefficient of friction, etc.) while changing materials or processes, is the biggest challenge facing the industry today.

To best overcome these issues, companies must get back to a couple of basics: 1) Focus on creating a positive work environment; and, 2) Training and awareness of their employees is a must: networking activities with industry associations, training on machines, understanding of suppliers' and

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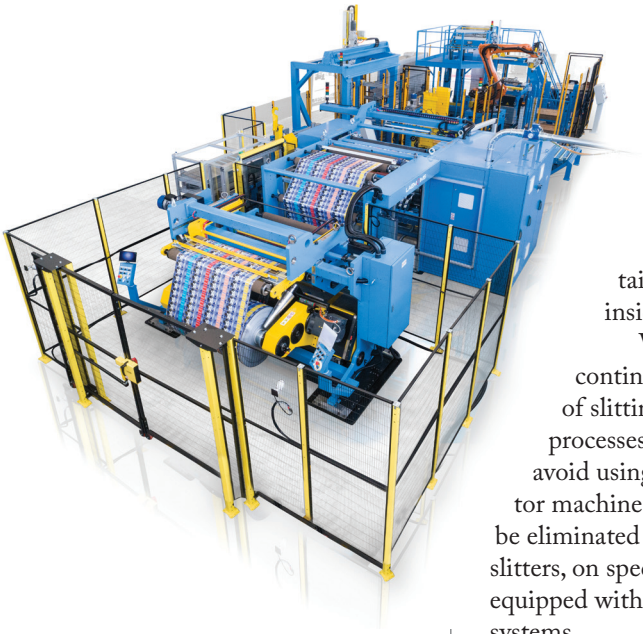

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customers' requirements. Allowing employees to increase their knowledge of the converting process will add value to customers by maintaining specific skills inside their companies. When seeking continued improvement of slitting and rewinding processes, companies must avoid using slitters as doctor machines. Defects should be eliminated from rolls before slitters, on specific machines equipped with defect detection systems.

Ultimately, converters should look at slitting rewinding as a profit center, not a cost one. Knowledge and expertise in extrusion, printing and lamination will always arrive to the slitters, all together on the same roll. That roll has to be given the best attention and the best care. ■

ABOUT THE AUTHOR

As Sales Manager Flexible Packaging, Zeno Zonato represents IMS TECHNOLOGIES in its design and manufacturing of slitter-rewinders for converting a wide range of materials. Through its brands, IMS provides the global market solutions for slitting and rewinding plastic film, paper, aluminum, nonwovens, flexible packaging and other applications. All are defined by the highest standards of productivity, quality and precision.

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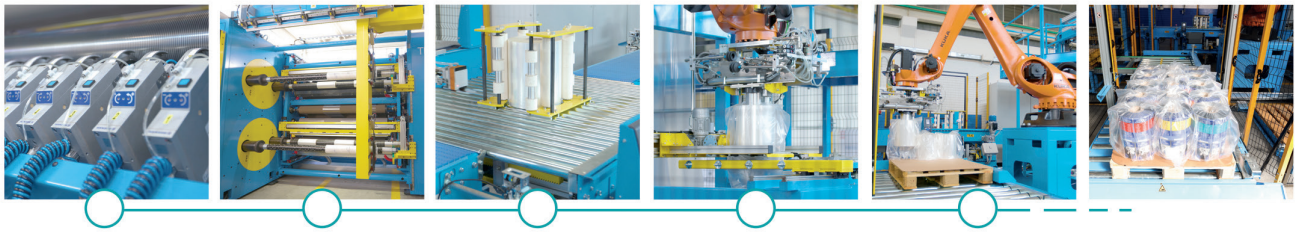

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A VCML standard configuration coater with slot die unit.

Coating Futures in Medical and Wound Management

By **Tom Kerchiss**, Chairman, RK Print Coat Instruments Ltd. United Kingdom

Though packaging may be the mainstay for many converters, converting is much more. Complex plastics, planar films, non-woven goods, synthetic papers, foils and other materials are manufactured and are subject to a variety of processes prior to delivery to customers. It is fair to say that the majority of the converter's customer's base will certainly need their products packed; many however, have other requirements.

Converting processes such as coating, laminating, slitting, rewinding, embossing and printing are used to improve functionality, provide protection, add value and, where necessary, make consumer goods and many industrial items look more inviting and saleable.

Coatings and coated products are everywhere – From the paint we put on the inside and outside of our houses to the batteries and conductive coatings used with smartphones and tablets and for other high-tech items that power our lives.

The formulation of coating materials and technologies such as thermosetting emulsions, colloidal dispersions, water soluble, energy curable systems and other technologies have assisted the coating provider in meeting as far as possible, the requirements of the packaging/print buyer, the brand owner and others. However, needs change. Environmental concerns, the need where possible to manufacture from sustainable resources and reduce our carbon footprint guides us all.

There are so many product areas that are relevant that this article would cover many pages. For reasons of clarity let us pri-

marily consider medical and items associated with wound management. It must be said that many of these innovative products are distinctively packaged – but that's a subject for another day.

Bringing a product such as wound dressings, or a medical diagnostic or drug delivery device, whether as a woven or non-woven structure to market is a lengthy, complex and multi-step process involving research and development, design, prototyping, product verification, validation, regulatory compliance and market placement.

Products must be manufactured to tight tolerances and to exact specifications, particularly when ISO, Six Sigma and other accredited standards are in place. Coaters and coating systems using

The standard VCML LabPilot Coater - available with a working width of up to 300m - can be used to print, coat and laminate on all types of flexible substrates.

the appropriate coating applicator are important processing tools. Adhesive coated medical foams, PS-fixing devices, diagnostic strips, grounding pads and breathable films rely upon coating systems and coatings that will deliver the performance that is expected from them.

Pilot coating systems can monitor the process, enabling quality control checks to be made or to trial materials and processes prior to a full-scale production run. Coating systems, which increasingly are bespoke manufactured, assist in bringing a concept to realization, to the satisfaction of those on the converting shop floor and the regulatory agencies, plus health and safety executives.

Coating requirements can be demanding; advances both in equipment, adhesives and support technology have bought us transparent dressings, film dressings consisting of a polymer membrane of varying thicknesses coated on one side with an adhesive. Filmic dressings are impermeable to water and other liquids and to bacteria but are permeable to moisture vapour and gases.

"Care needs to be exercised when selecting coater applicator technology and decisions made as to whether a pre-metered or post-metered coating method is appropriate."

Other options for dressings include the composites. These are essentially presented as a single product that is made up of multi-functional layers incorporating a semi- or non-adherent pad that covers a wound. Composite dressings often have as part of their make up an adhesive border of a non-woven fabric tape or an adhesive-coated transparent film.

The properties that make materials such as films, foils, adhesives, non-wovens, silicone gel sheets and composite materials, the laminates and the additive agents so indispensible for perfor-

mance-critical applications make them potentially problematic when coating. For instance, materials may be inclined toward being dimensionally unstable. Some structures are prone to tear; they are thin, even ultra-thin. Generally they require the careful deposition of coatings and require adhesives optimized for the specific requirements of the application.

Care needs to be exercised when selecting coater applicator technology and decisions made as to whether a pre-metered or post-metered coating method is appropriate. Commercial and product viability over time depends very much on the suitability of the coating technology chosen. Sometimes the choice is clear cut, often it is not and the converter is obliged to trial different applicator technologies in order that the coating material, the substrate and other performance-related issues are all in agreement.

What of the coating technologies themselves? Slot die is one of many selectable technologies. It is ideal where thin coatings or optically thin coating need to be applied. It is sometimes used to apply fluids or polymer onto continuous web materials employed in areas such as battery production, medical patches and electronic displays. It can be used, of course, for specific packaging purposes.

Another coating possibility is direct gravure. Gravure coating can be used over a wide viscosity range. It is often regarded as a good choice for the placement of thin film coatings of low viscosity. Apart from direct gravure other variants are available; for example, reverse gravure and offset gravure. Reverse gravure is advocated in many instances for thin coatings with zero reticulation. ■

ABOUT THE AUTHOR

As Chairman, RK Print Coat Instruments Ltd., Tom Kerchiss continues the legacy of his father, who founded the company in 1962. RK surface coating equipment and supplies are exported worldwide to printing ink manufacturers, printers, converters and other businesses with color communication devices for all major print disciplines.

The Powerhouse of Contract Converting

By **Susan Stansbury**, Industry Consultant

Contracted manufacturers occupy much of the U.S. production landscape. With overall strong growth, there are still variations by product and market category, from healthcare to industrial and branded merchandise. While the national media still claims we do not make much in America anymore, contract converters know better. Perhaps part of the misconception is due to the fact that the Midwest "fly over" country is at the heart of manufacturing.

According to the Association for Contract Packaging and Manufacturing, "The Midwest continues to dominate … with the majority of headquarters locations as well as overall facility and volume density." With the Midwest at 41 percent overall in contract manufacturing, the next closest region is the Northeast at a distant 19 percent. The Contract Packaging Association also estimates CAGR at a healthy 10.2 percent.

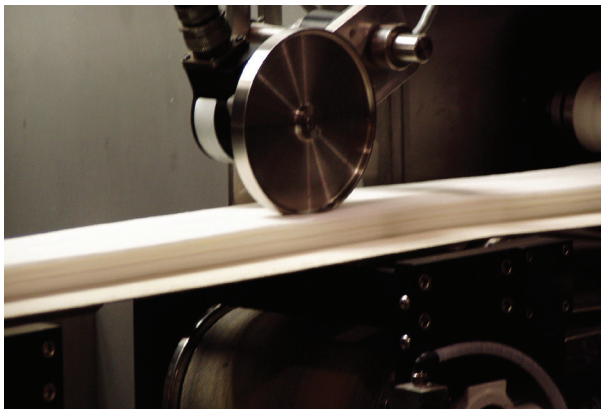
The Association's summary (contractpackagingreport.com) further shows that more than half of contracted firms do more than $25 million in business. The range is mere millions to billions of dollars. Not that many years ago, there were worries that automation would deprive workers of

Converters partner with customers to maximize opportunities in the coreless roll/canister wipes business.

opportunity; now automation has allowed manufacturers to grow in an atmosphere of hard-to-get workers.

A discussion with American Custom Converting of Green Bay, WI, shows the range, markets and growth exemplary of many contract converters in 2023. Peter Bekx, a managing member, tells of recent business highlights:

- ACC has recently removed five major production assets and brought on four by the first quarter 2023. These include two wide web slitters. One of the new slitters handles small diameter rolls where they do contract converting for "blanket curing concrete." They helped their contract customer develop the converted laminate.
- In another case, ACC supplies a major healthcare partner where ACC makes laminated patient gown materials, and the customer completes the product.
- Further automation throughout the business has led to more efficiency and increased streamlining of their processes. New roll handling and improved packaging systems are part of proficient processing and seamless manufacturing.
- More investment with fewer employees is a hallmark of ACC's approach to its growing business. In fact, sales growth has exceeded 25 percent in each of the last two years, all while decreasing labor costs.



New roll handling and improved packaging systems are part of proficient processing and seamless manufacturing.

"The new growth revenue has been plowed back into business assets to support new customer initiatives," said Bekx.

- ACC's contract manufacturing often includes problem solving based on customers' wish lists. New equipment as well as redesigned and repurposed lines show its special contracted value.

Other industry insiders note that while growth is strong in many sectors, there are also challenges. According to Michael Kryshak, CEO of Rebel Converting, "Some of the converting industry is becoming 'congested' in terms of new capacity and competition." With the ability to convert 2.1 billion square yards annually into wipes, Rebel Converting is a force in the coreless roll/canister wipes business. As a contract manufacturer, Rebel is partnering with its customers across retail, healthcare and business-to-business segments — to maximize the opportunities that exist in today's marketplace.

With the advancements in innovative products being developed, contracted manufacturers also play an outsize supportive role in delivering results for their partners. From substrates to converting and packaging, they are demonstrating value with their latest capabilities. Barring the potential effects of a recession, forecasts are bright for the industry. ■

ABOUT THE AUTHOR

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

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Top Packaging Producer is One of the First to Deploy Pioneering Tension-measurement Roller

In its quest to maintain the highest quality standards, a leading film and packaging manufacturer has turned to the world's first segmented tension-measurement roller.

When you're making packaging for major global brands, quality is critical. It secures your revenue and reputation while maximizing productivity. That's why one of Europe's top suppliers of flexible plastic and plastic laminate packaging and technical films, has recently installed ground-breaking technology from a Swiss engineering firm on laminating lines at its main plant in north-western Germany.

Transformative Technology

The decision was made to deploy the new measuring roller first on one of the triplex laminators. To start with, the dimensions of the laminator and the relevant process data were recorded on site. This input was used to produce a customized measuring roller consisting of 32 segments. The new segmented roller was installed on the line in a short maintenance window of just a few hours.

As a result, the producer can now monitor the tension across the entire width of the web and spot even small, sporadic deviations.

The special adhesive coating on the surface of the roller segments increases the friction between the roller and the material so individual segments rotate easily even with low web tension. This is important because the triplex laminator operates at a tension of just 40 to 100 newtons N (9 to 22 pound-force lbf). To keep the breakaway torque of the segments as low as possible, the supplier uses special, smooth-running roller bearings.

Decisive Data

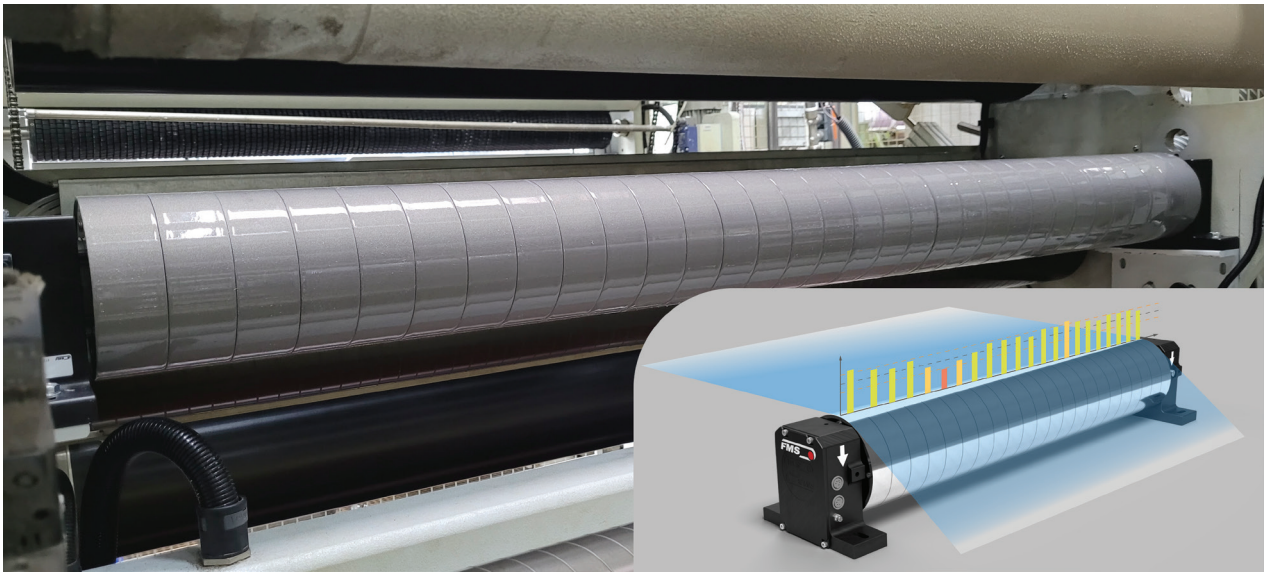
The responsible engineer for the laminating line says: "The segmented measuring roller helps us definitively assess the properties of our material webs. The measurement and display of a tension profile over the entire web width gives us information about the tension distribution within the web.

With the data from the innovative measuring roller, we can identify disturbance factors and eliminate their causes. The clear display enables us to exclude faulty material from further processing. In this way, we ensure consistently high product quality and save valuable machine capacity at the same time."

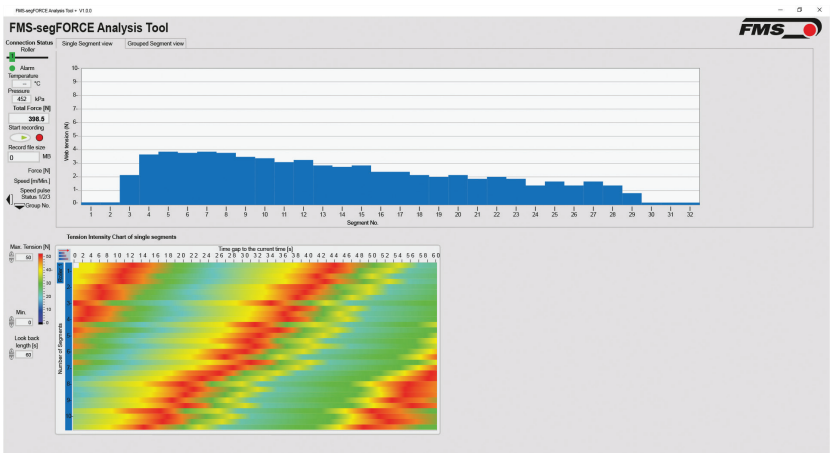
How Does it Work?

The unique design of the segmented measuring roller.

The measuring roller features a rigid axis on which individual, movable segments are arranged. The segments are locked pneumatically via a central connection.



The FMS-segFORCE features up to 50 independent force sensors that measure the smallest tension deviations between the segments. It is particularly suitable for processing elastic and sensitive materials.



FMS-segFORCE software. Top: Individual measured values of the segments. Bottom: Tension profile with repeating fault pattern. Conventional tension measurement technology cannot detect this type of fault pattern, or can only do so with difficulty.

Each segment consists of a force sensor, an integrated measuring amplifier and a roller bearing with the rotating shell.

Segments are supplied with power and signals via the axis. The roller is connected to the machine frame on both sides via functional side brackets that also contain all the electronics, fully protected from dirt and other environmental influences.

Ethernet connectivity (PROFINET or other) enables data transmission to a PC or the machine's master controller.

An own software provides a clear read-out of the measured tension values, which are recorded for analysis and optimization. The intuitive user interface allows easy configuration of the roller.

Learn More About the FMS-segFORCE

www.fms-technology.com/en/our-solutions/web-tension/segmented-tension-roller

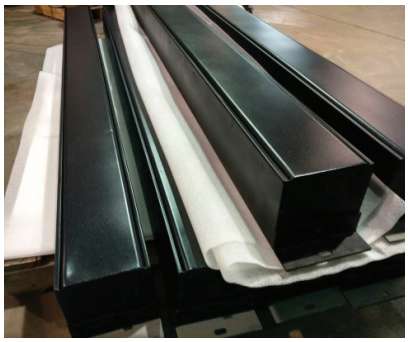
Release Coatings for Curing Oven Components

By **William R. Bradley Jr.**, Vice President, Business Development, American Roller Company

With the demand of speed and efficiency in manufacturing, any interruption creates major frustration. Web defects, inconsistent tensions, and sheet breaks are often at the top of the list. Most web substrates today are treated or cured in some way to have a unique performance factor for the end user. Curing or prepping the substrate can be achieved in a variety ways.

As an example, during adhesive coating/curing in ovens, air bars and air turns are commonly used to transport the web without contacting machine components while the adhesive is still wet/tacky. However, any interruption in compressed air can cause incidental contact of the adhesive, rapidly leading to buildup on large surfaces. If the buildup is too great the web can become riddled with defects, or even break. The loss in product and production downtime can be extremely costly.

Before



After

Operators address build-up issues on bare components by cleaning routinely, usually with strong solvents. This can be dangerous and environmentally hazardous. Teflon coatings can be applied and are often used to speed up the cleaning process. However, Teflon systems are not "non-stick" meaning tear outs and web breaks can still occur.

New Dual Layer Plasma Coating systems offer a truly non-stick surface providing release for incidental or direct contact conditions. When there is an interruption in air, the adhesive releases from the air bar, or turn vs. building up. In the most severe situations, the parts can be cleaned without the use of solvents, speeding up the process. These coatings can be applied on-site, at your facility, in most oven configurations during a scheduled shutdown.

The science of release, increased durability, and corrosion resistance with Plasma Coating systems continues to advance. Consult with your American Roller Plasma Coating representative and ask, what is new today? ■

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