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JUNE 2021

**PROPERLY SELECT A WEB GUIDE FOR YOUR OPERATION** 6

**ALSO IN THIS ISSUE**

DEFINING RELIABILITY IN POUCH EQUIPMENT 18

A SURGE IN DEMAND FOR ANTIMICROBIAL PROTECTION 22

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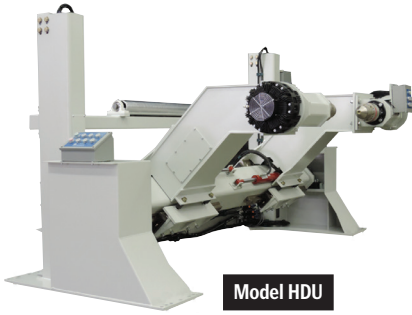
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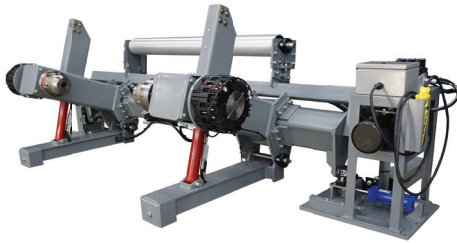
Model HDU



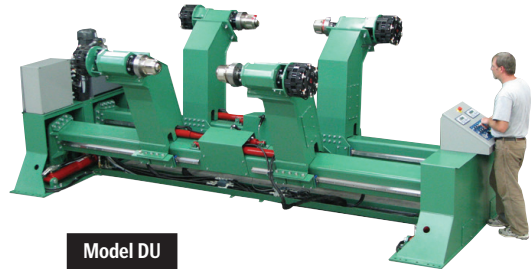
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## Films of the Future



**Joan Mantini**  
Editor

Polyvinylidene chloride Films Polyvinylidene chloride or PVDC, the clear and flexible synthetic thermoplastic produced by the polymerization of vinylidene chloride, was featured in a recent report by Research and Markets. This film is optically clear with a high degree of gloss, has outstanding oxygen and moisture barrier properties comparable to metallized films, and is a fast growing application when it comes to food and beverage packaging.

According to the recent report, packaging is the fastest-growing application segment of PVDC coated films and acrylic coated films, in terms of value. The packaging application accounts for the major share in the PVDC coated films market. This could be in due to the coated films in PVDC which offer a remarkable barrier to oxygen, aroma, and gas. These properties make them useful in the packaging of multiple product types within the industry. This acrylic coated film is also available in a transparent form and is suitable for see-through packaging, which is great for foods such as meats and cheeses.

The report also states that the food and beverage segment is the fastest-growing end-use industry of PVDC coated films and acrylic coated films, in terms of value. These films possess good printability, which allows them to be used in see-through packaging and labelling in the food and beverage industry.

Looking further into films, amongst the articles in this issue, we take a look at why antimicrobial polycarbonate films have successfully been developed in the article titled "A Surge in Demand for Antimicrobial Protection." Steering a bit away from films used in food and beverage packaging, the developments in antimicrobial polycarbonate films may be popping up in this market segment can indeed have benefits as well.

Another trend we continue to see is the development of pouches, as more and more products are making the switch into pouch packaging. The innovative packaging solution designed for Ocean Spray Craisins® dried cranberries, is one example that just passed thru my inbox. This new packaging will be available in both roll stock and pre-made stand-up-pouch formats, utilizing Bryce Corporation's BryceCyclable™ high-performance polyethylene. This pouch showcases Bryce Corporation's high-definition flexographic printing, high-opacity inks, and registered matte coatings.

Finding reliability in pouch equipment as this trend continues its rise should be considered. Which is why amongst the articles in this issue, you will find how to define reliability in pouch equipment – reliability not only in the sturdiness of the equipment, but in the process overall.

Enjoy,

*Joan Mantini*  
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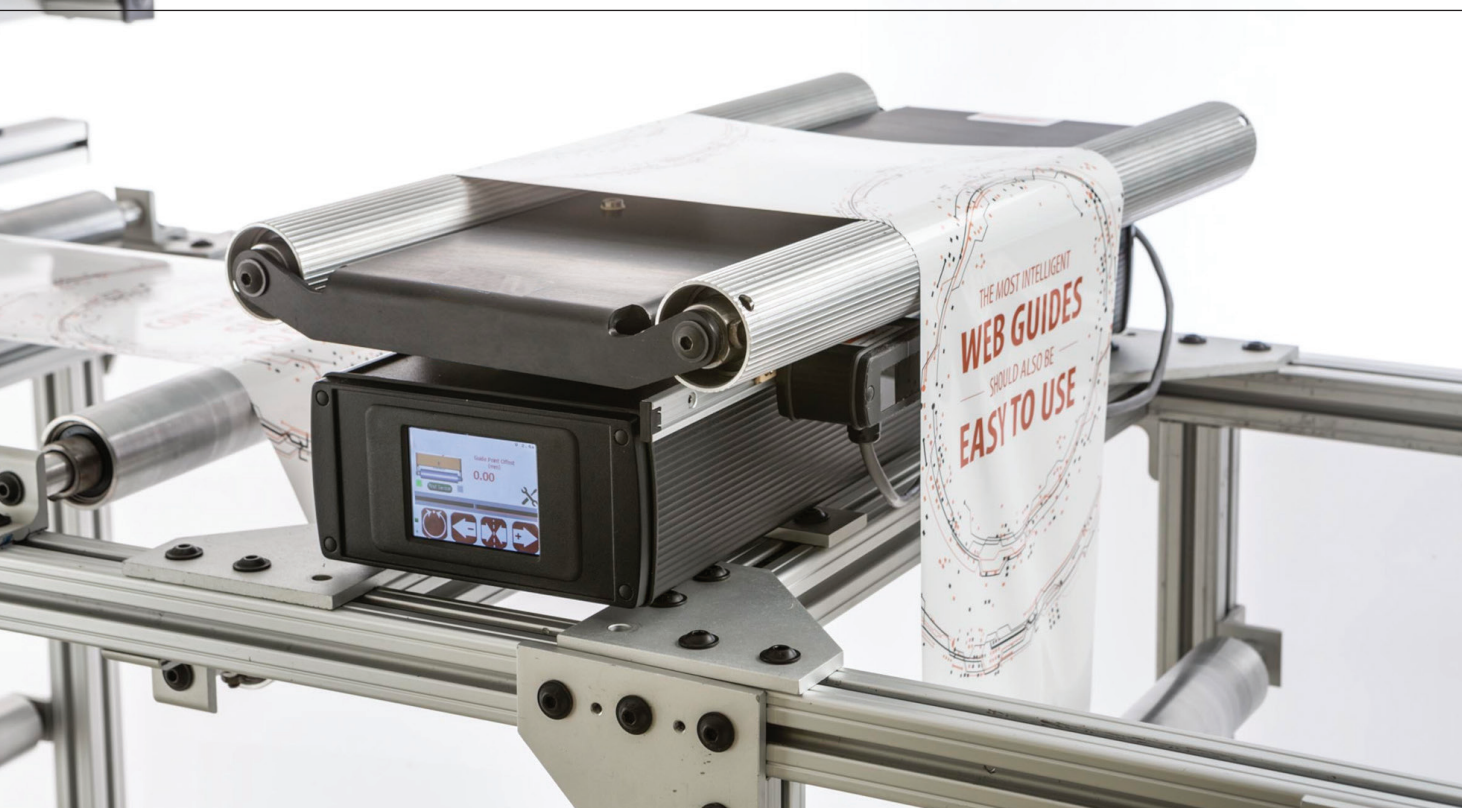


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# Properly Select a Web Guide for Your Operation

## Web guide selection and installation tips

By Aravind Seshadri, President Roll-2-Roll Technologies LLC

### Correct selection and installation of web guides is important and shouldn't be overlooked

Web guides are typically worry free once they are up and running. However, selection and proper installation of a web is critical to ensure that the web guides are worry free. With a variety of web guides available in the market it is necessary to understand a few fundamentals to make the correct selection. In this article a few handy tips and rules of thumb are

shared to make your installation easier.

### Importance of proper roller selection

#### Roller Diameter

The diameter of the roller is dependent on the web speed and the type of material.

- Larger diameters are necessary for high web transport speed. The larger diameter reduces the rotation speed or revolutions/minute (rpm) of

the rollers. Lower revolutions/minute reduces: the bearing wear, issues with eccentricity, issues with balancing, etc.

- Thicker webs or composite webs may require larger diameters to increase the radius of curvature necessary to wrap the web around the rollers.
- Thin and light materials (low modulus webs) on the other hand may require low inertia (aluminum or carbon fiber rollers) with low friction bearings to reduce any drag from the roller.



## Surface Roughness and Smoothness

The smoothness or the surface roughness of the rollers also play a critical part in web guiding.

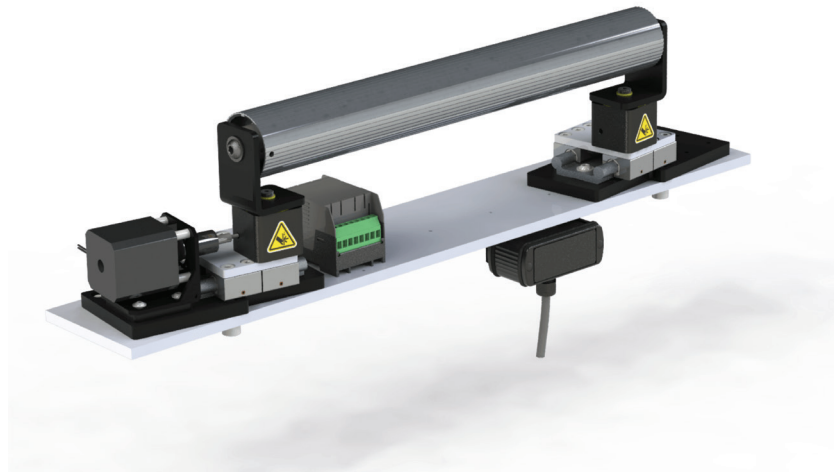
- Grooved rollers help eliminate air entrainment. Especially with non-porous webs such as plastics, grooved rollers help with better traction on the web.
- Smooth rollers on the other hand may be needed for delicate webs such as thin foils. Grooved surfaces may create a permanent impression on the foils because

## Type of Web Guides

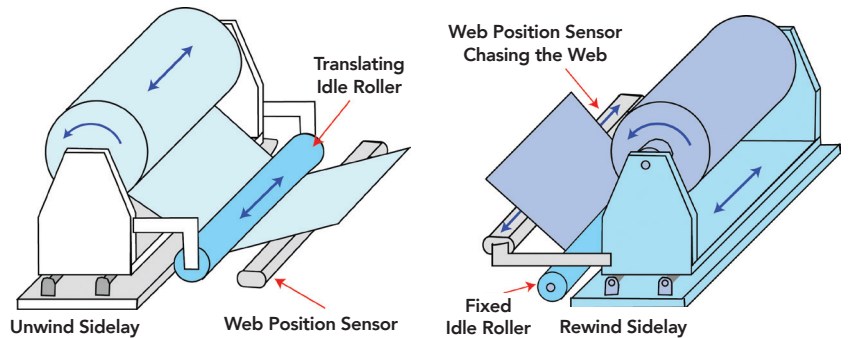
Depending on the location where the guiding is required, there are four different types of web guides available. Displacement guides, steering guides, unwind guides and rewind guides.

### Displacement Web Guides

Displacement guides, also known as Off-Set Pivot guides, should be chosen as the first option wherever possible. If properly installed, the displacement guides impart the least amount of stress on the web. These web guides position the web by directly displacing the web rather than bending the web. Hence they are the best choice for guiding. Situations where



Steering guides are ideal for situations where guiding after a long span is desired.



Unwind and Rewind Guides

displacement guides cannot be used include: correction after a long span, locations with web wrap constraints, and locations with space and installation constraints.

### Steering Guides

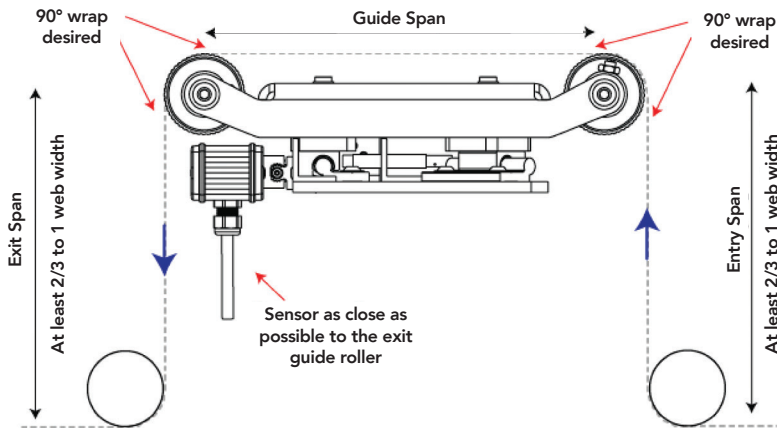
Steering guides are ideal for situations where guiding after a long span is desired. These guides bend the web that enters the steering roller(s). The magnitude of steering depends on many factors including: web speed, web stiffness, guide installation (raceway angle), entry span length, etc. Since the steering

action imparts stresses on the web, it is very critical to properly install the web guide to prevent web breakage.

### Terminal Guides

Unwind and rewind guides are used at the entry and exit of the machine. Typically the roll stand, that supports the raw material roll, is mounted on precision linear raceways. to minimize the friction necessary to move the guides. These terminal guides are simple, however the dynamic response is limited because of the force required to move the roll inertia.





Displacement or offset-pivot guide installation guidelines

**Proper Installation:  
Displacement Guides**

**Entry and Exit Spans**  
Displacement web guides can have

short entry and exit spans which may be of different lengths. A minimum of 1 web width is necessary for most applications. However, long spans lengths are needed for

stiffer materials such as metals.

**Web wrap**

A 90° wrap at the entry and exit of the guide roller is ideal. This 90° wrap enables pure twisting in the entry and exit spans, thereby imparting the least amount of stresses in the web. A small deviation from the ideal 90° wrap is acceptable. Apart from bending and stressing the web, the deviation from normal condition also affects the lateral correction speed.

**Entry and exist span lengths: Steering Guides**

**Entry and Exit Spans**  
Steering guides require long entry spans. Depending on the stiffness of the web, the entry span length

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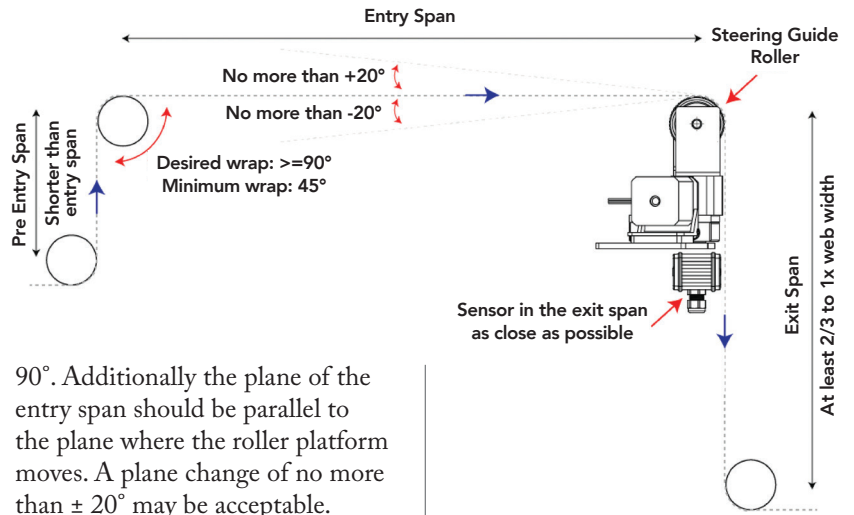
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required may be from 3x to 10x the web width. Too short of a span may result in slack and tight edges or web wrinkles.

Since the steering guide bends the web, the moment transfer from the steering action can travel both upstream and downstream of the web guide. Hence the pre-entry, entry and exit span lengths are important design parameters. A rule of thumb is to have a pre-entry span shorter than the entry span. And the exit span is at least 1x web width.

**Web Wrap**

At least 90° wrap at the exit of the steering guide roller is ideal. Because of the upstream moment transfer, the pre-entry roller may also require a wrap of no less than 45° and an ideal wrap of



90°. Additionally the plane of the entry span should be parallel to the plane where the roller platform moves. A plane change of no more than ± 20° may be acceptable.

**Types of Guiding**

**Web Edge Guiding**

Web guiding is usually referred to as guiding on a single edge of

the web material. This is the most common type of web guiding. This method is suitable when the web width does not change during and between runs. Either the operator

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side or the drive side edge can be guided to the desired location based on the sensor position.

**Center Guiding**

Center guiding is a preferred method of guiding when the edges of the web are uneven or if the width of the web changes during or between production runs. Instead of positioning the web based on one edge, the centerline of the web is guided. The center position is determined by using two sensors, one on each edge of the web.

**Line Guiding**

In certain applications, such as slitting of printed webs, the web may be guided based on the position of a printed line. The line

is a fixed reference for the position of the print on the web. Since the position of the print on the web with respect to the web edge may vary between runs, the printed line acts as the fixed reference for guiding the web. Most often a camera based solution is used to guide the web based on the printed line.

**Contrast Guiding**

Similar to line guiding, the web may be guided based on a contrasting feature on the web. A printed contrast or a contrast due to a coating process can be used as the reference for web guiding.

**Web Guide Oscillations**

Finally, in some applications the web is deliberately made to oscillate back and forth. Most often

the oscillations are necessary to prevent any gauge band buildup while rewinding a non-homogeneous web or a composite web or a web with gauge variations along the width. An ideal way to create this oscillation is to guide the web to an oscillation reference. Primitive systems would oscillate the web edge sensor while the web guide moves the web to track the oscillation sensor position. Modern systems can create an oscillating reference digitally.

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from myriad options based on technical data and specs. Through these data, measurements of accuracy, precision, linearity and resolution, manufacturers are trying to present the benefits of their products based on the device's performance profile. However, sometimes what appears to be the best offer, based on what looks to be the best technical data, might not really be the best. The technical data can even be irrelevant information when considering performance.

The question that must be asked is, does my operation require a high-performance web sensor and guiding capacity? For operations running at lower speeds and with wider tolerances in their web positioning, the answer is probably no. These operations can

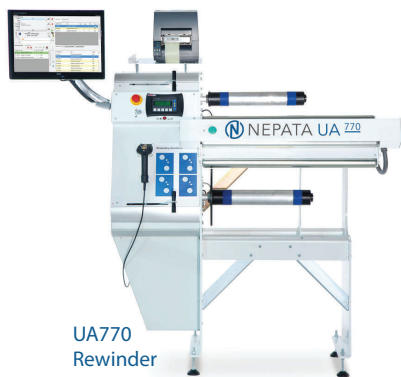
get by with not having to worry about calibration of their sensors when running different materials. However, operations that run at faster speeds requiring precise placement of the material, calibration will be a must if they are using sensors that operate under a blocking principle. Of course the trade off is lost production time in calibrating sensors, but it is the only way that an adequate accuracy and precision can be achieved. Certainly, misplacement at higher speed will turn into greater amounts of wasted materials, and important losses in uptime. There is definitely a need for systems that are not only accurate and precise, but also that eliminate the need for calibration of the web guiding systems to reduce downtime. ■

ABOUT THE AUTHOR

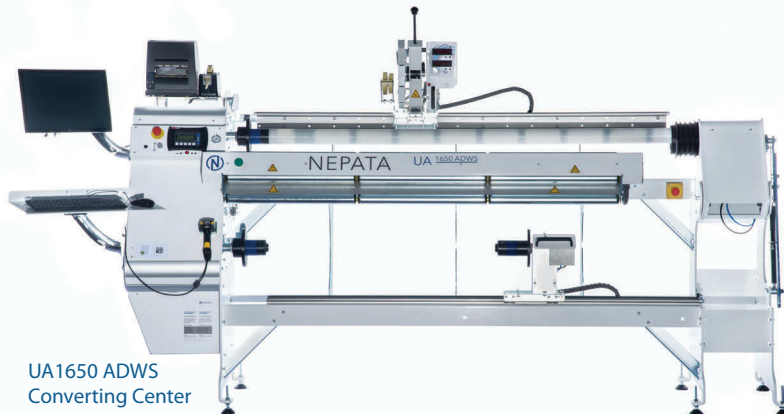
Aravind Seshadri is president and co-founded Roll-2-Roll Technologies LLC in 2013. Aravind is the co-inventor of the intellectual properties used by Roll-2-Roll Technologies LLC and was the principal project associate involved in the design, development, testing, and validation of the technologies used in our lateral guides. He earned an MS degree (2007), and a Ph.D. (2013) in Mechanical and Aerospace Engineering from OSU, and was awarded the Graduate Research Excellence award for both degrees.



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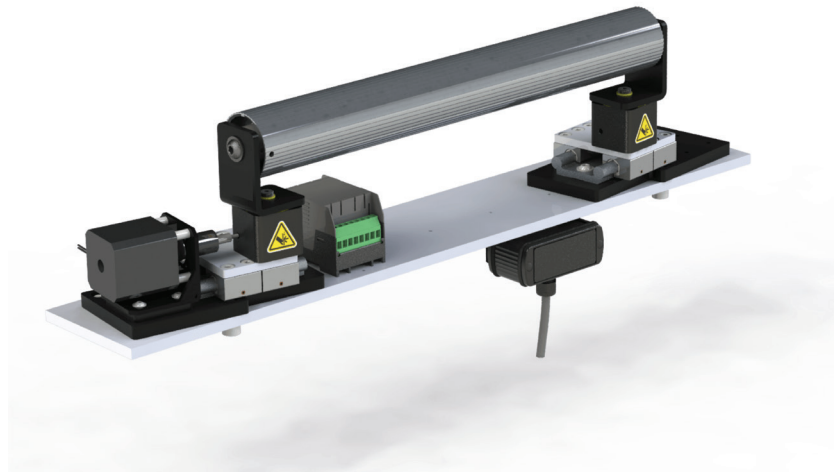
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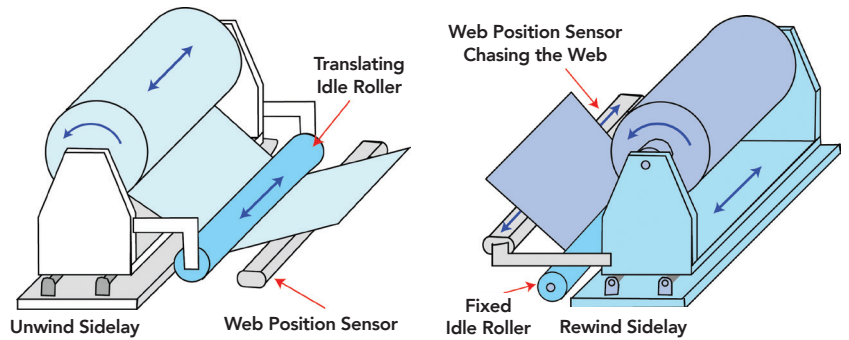
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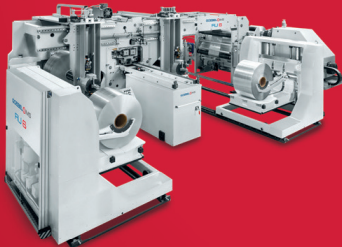
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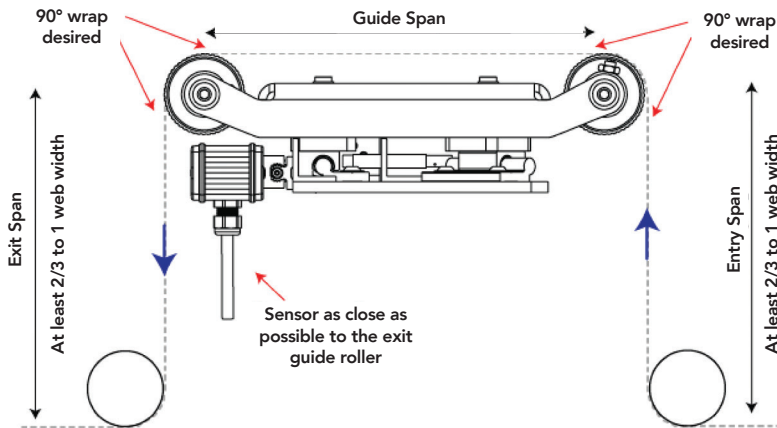
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Displacement or offset-pivot guide installation guidelines

**Proper Installation:  
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**Entry and Exit Spans**  
Displacement web guides can have

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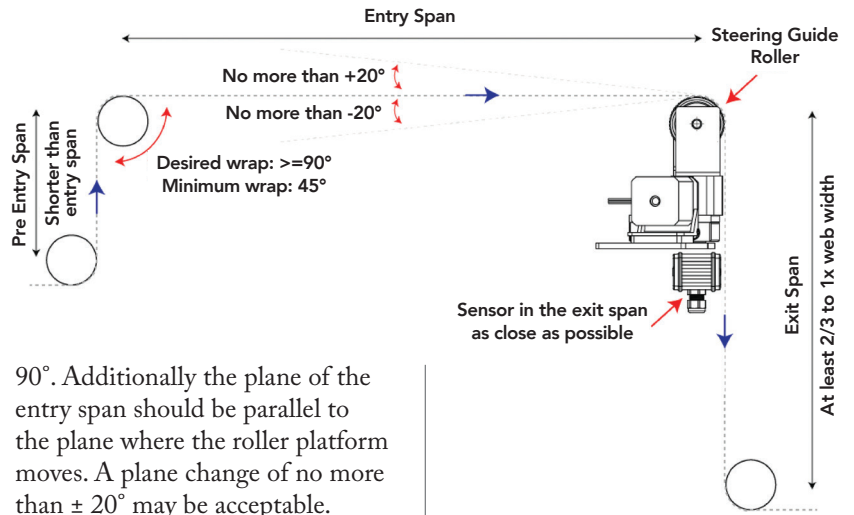
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90°. Additionally the plane of the entry span should be parallel to the plane where the roller platform moves. A plane change of no more than  $\pm 20^\circ$  may be acceptable.

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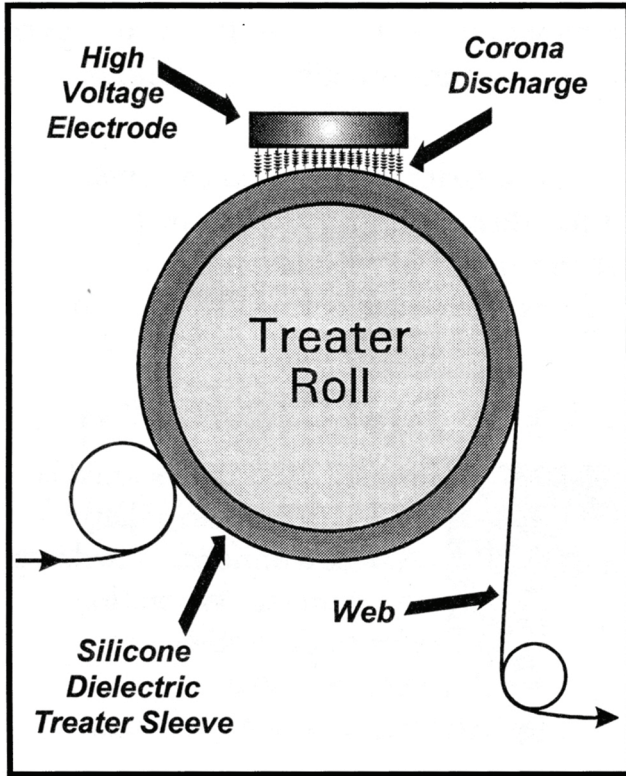
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Product Code	Fits Roll OD*		Actual ID	Color	Wall Thickness	Price per Linear Inch
	English	Metric				
96152	1.5"	38 mm	35 mm	Orange	.080" (2.0 mm)	\$1.15
96202	2.0"	51 mm	46 mm	Orange	.080" (2.0 mm)	\$1.35
96252	2.5"	64 mm	59 mm	Orange	.118" (3.0 mm)	\$1.85
96302	3.0"	76 mm	70 mm	Orange	.080" (2.0 mm)	\$1.85
96402	4.0"	102 mm	95 mm	Orange	.080" (2.0 mm)	\$2.25
96602	6.0"	152 mm	141 mm	Orange	.095" (2.4 mm)	\$3.15
96802	8.0"	203 mm	190 mm	Orange	.102" (2.6 mm)	\$4.55

\*These sleeves will fit any treater roll OD within +/- 0.125" (3 mm) of listed size.

Wall thickness variance: +/- .006"  
Hardness (Shore A): 70-80

Dielectric Constant: 4-5  
Dielectric Strength: 250 v/mil

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side or the drive side edge can be guided to the desired location based on the sensor position.

## Center Guiding

Center guiding is a preferred method of guiding when the edges of the web are uneven or if the width of the web changes during or between production runs. Instead of positioning the web based on one edge, the centerline of the web is guided. The center position is determined by using two sensors, one on each edge of the web.

## Line Guiding

In certain applications, such as slitting of printed webs, the web may be guided based on the position of a printed line. The line

is a fixed reference for the position of the print on the web. Since the position of the print on the web with respect to the web edge may vary between runs, the printed line acts as the fixed reference for guiding the web. Most often a camera based solution is used to guide the web based on the printed line.

## Contrast Guiding

Similar to line guiding, the web may be guided based on a contrasting feature on the web. A printed contrast or a contrast due to a coating process can be used as the reference for web guiding.

## Web Guide Oscillations

Finally, in some applications the web is deliberately made to oscillate back and forth. Most often

the oscillations are necessary to prevent any gauge band buildup while rewinding a non-homogeneous web or a composite web or a web with gauge variations along the width. An ideal way to create this oscillation is to guide the web to an oscillation reference. Primitive systems would oscillate the web edge sensor while the web guide moves the web to track the oscillation sensor position. Modern systems can create an oscillating reference digitally.

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from myriad options based on technical data and specs. Through these data, measurements of accuracy, precision, linearity and resolution, manufacturers are trying to present the benefits of their products based on the device's performance profile. However, sometimes what appears to be the best offer, based on what looks to be the best technical data, might not really be the best. The technical data can even be irrelevant information when considering performance.

The question that must be asked is, does my operation require a high-performance web sensor and guiding capacity? For operations running at lower speeds and with wider tolerances in their web positioning, the answer is probably no. These operations can

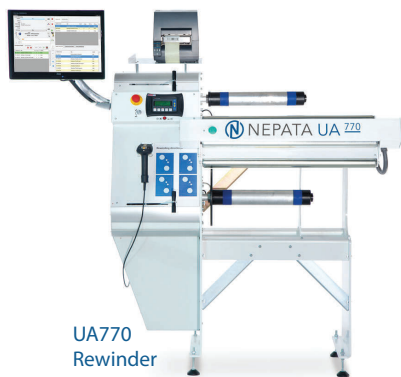
get by with not having to worry about calibration of their sensors when running different materials. However, operations that run at faster speeds requiring precise placement of the material, calibration will be a must if they are using sensors that operate under a blocking principle. Of course the trade off is lost production time in calibrating sensors, but it is the only way that an adequate accuracy and precision can be achieved. Certainly, misplacement at higher speed will turn into greater amounts of wasted materials, and important losses in uptime. There is definitely a need for systems that are not only accurate and precise, but also that eliminate the need for calibration of the web guiding systems to reduce downtime. ■

ABOUT THE AUTHOR

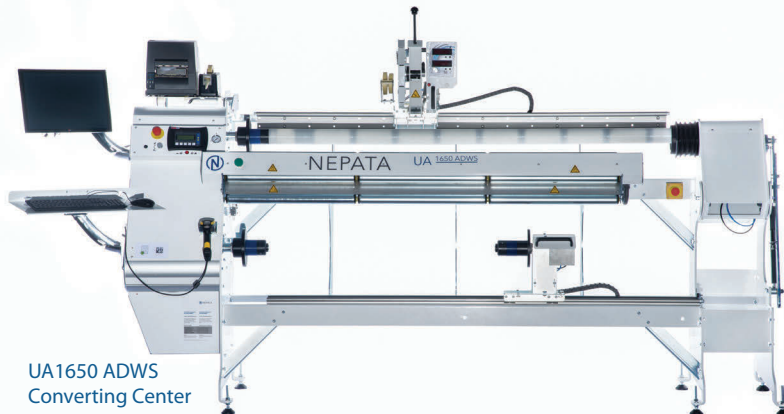
Aravind Seshadri is president and co-founded Roll-2-Roll Technologies LLC in 2013. Aravind is the co-inventor of the intellectual properties used by Roll-2-Roll Technologies LLC and was the principal project associate involved in the design, development, testing, and validation of the technologies used in our lateral guides. He earned an MS degree (2007), and a Ph.D. (2013) in Mechanical and Aerospace Engineering from OSU, and was awarded the Graduate Research Excellence award for both degrees.



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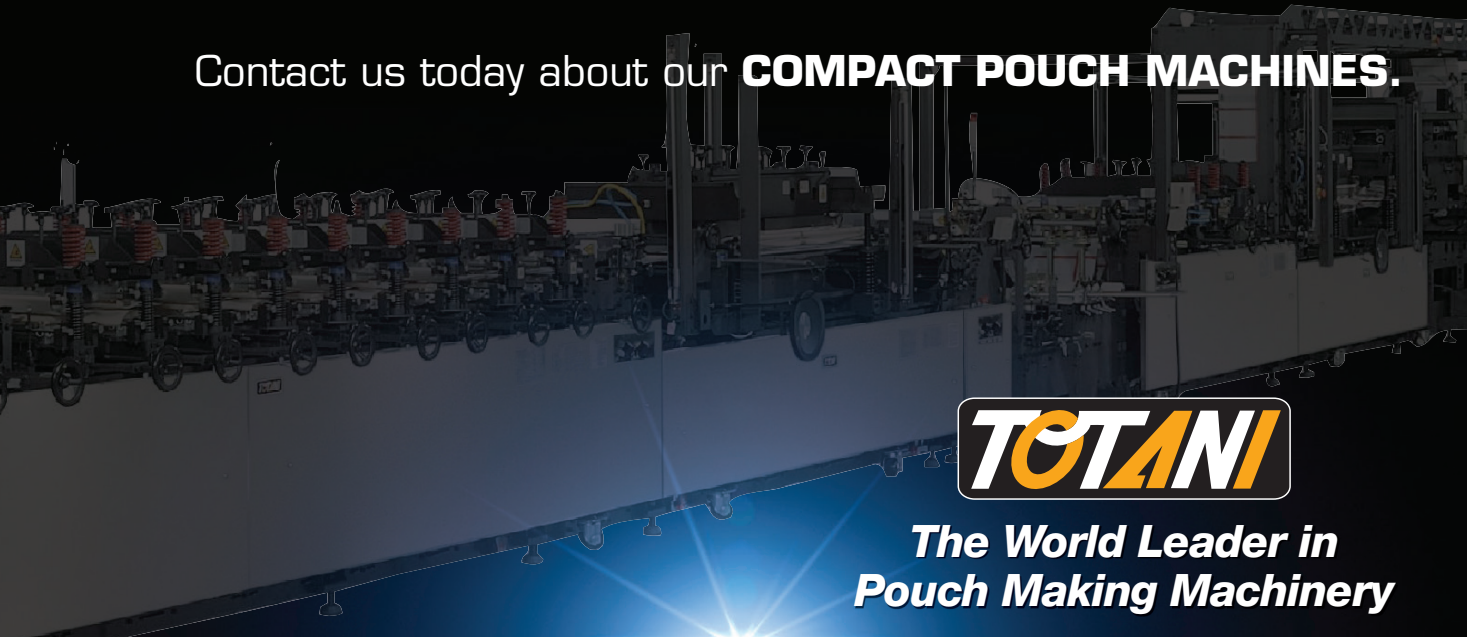
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# Defining Reliability in Pouch Equipment

When it comes to total cost of ownership and profitability, all pouch equipment is not created equal.

By **Scott Fuller**, Product Line Manager, Pouch and Intermittent-Motion Equipment at CMD Corporation

Reliability is the number one desired machine attribute for pouch converters, but this deceptively simple statement can sometimes be misunderstood.

Reliability isn't only about the sturdiness of the machine. It means that production will be reliable; that pouches will be of consistent quality; that downtime, especially unexpected stoppages, are minimized. It's about product going out the door, on time, at the expected cost.

Similar to how we expect our automobiles to be reliable; to consistently run and give us as little grief as possible, converters expect reliability in their equipment.

What are some gauges for reliability?

**1. The machine should be well-made – designed to provide process stability for many years – and to do so without frequent operator intervention.**

Obviously, to achieve optimal pay-back the equipment should last for years, even decades. But, in that time, the stability of the process should not degrade. Some of this comes from the overall



The CMD 760-SUP Stand-Up Pouch system sports a new, compact, space-saving design.

build quality of the machine, the raw materials and the workmanship. Some of this comes from the design of the machine.

Some converters have the good fortune of having in-house experts that keep lesser quality machinery running. They fix and tinker, adjusting springs and settings, sometimes even rebuilding sections of machines to get them to operate to the converter's needs and expectations. This is a vanishing skill set, and more often than not, converters are faced with a shrinking labor pool of skilled workers. Entry-level operators and frequent turnover require a reliable machine that runs efficiently and

effectively, day in and day out, without the need for frequent maintenance or monitoring.

The long-term stability and sustained operation of the machine needs to be considered at the design stage.

- Simplified mechanical design with fewer moving parts results in fewer opportunities for wear:
- Fewer maintenance touch-points mean that you spend less time with preventive maintenance tasks. Maintenance touch points should be designed for rapid corrections and changeovers.

**2. The machine should offer low total cost of ownership**



CMD's unwind web clamp is one of many features that save waste and ensure precise web handling.



Quick seal die changes – most often in under 2 minutes – are one of CMD's fast-changeover design features.

A reliable pouch machine benefits your bottom line by offering truly shorter changeovers and a meaningful reduction in downtime associated with both preventive maintenance tasks, as well as unplanned downtime. The end result is that your machine will be producing sellable product for more of the time, resulting in a quicker payback and lower cost of ownership.

**3. The machine performs to expectations, which includes keeping scrap rates to a specified threshold while while reliably producing consistently high-quality pouches**

The machine is an asset, a tool, that needs to deliver a specific amount of product in a specified amount of time (throughput.) It must have speed capabilities that will maximize productivity. Speed is important as long as quality is assured, and waste is minimized (efficiency.) It is expected to make a quality pouch, and is relied upon to play its part in getting orders out the door on time.

Pouch machines need to be designed with one goal in mind; to provide the most stable process available in the market today, requiring fewer operator interventions during a production run. This results in less scrap during the run.

**4. The machine is reliably simple to operate and maintain**

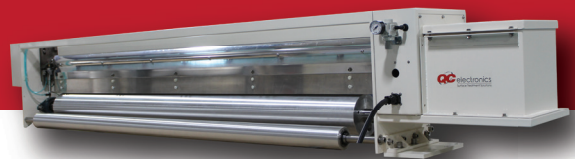
Keeping operation and maintenance simple is a sure way to cut costs and save money.

Easy to operate touch screen controls and machine adjustments contribute to product quality, minimize downtime and support a reliable process control. Pouch equipment has come a long way, and quick-change features significantly reduce start-up and changeover time.

Challenges with recruiting and retaining operators makes simple set-up and operation imperative. Machinery that is straightforward to operate, with recipes and adjustments that are easily repeated, help mitigate the challenges converters face with operator turnover.

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## POUCH EQUIPMENT

Affordable/accessible spare parts and reliable, responsive service are also an important component to simplified, reliable operation. Converters look for low cost and accessibility for common wear parts. The OEM that provides reliable, consultative service, including providing the tools for preventive maintenance to avoid unscheduled downtime, is a valuable partner. ■

### ABOUT THE AUTHOR

Scott Fuller is the product line manager, pouch and intermittent-motion equipment at CMD Corporation. Fuller has been with CMD since 2009 and has 30+ years of experience in the film, bag and pouch converting industry, including experience in Six-Sigma/continuous improvement; equipment technology development; and new package design.



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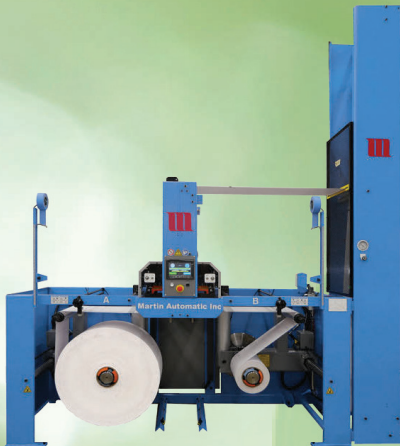
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# A Surge in Demand for Antimicrobial Protection

By Darrell Taylor, EMEA Key Account Manager, Microban® International, and Jonathan Francis, Product Manager, MacDermid Enthone Industrial Solutions



## The new normal

The COVID-19 pandemic has touched all our lives in ways we could never imagine. We are all now more acutely aware of the role that microorganisms play and how easy it is to unwittingly transfer them between surfaces. Simple, routine actions – such as the touch of a button, using a card reader or operating a treadmill – warrant more concern than perhaps they did before. Collectively, our hands are the ‘surfaces’ that are exposed to the greatest burden of foreign bacteria and, for that reason, they are the best at cross-contaminating microorganisms from one place to another. The saying often goes that ‘many hands make light work’ but, when protecting surfaces from microbes, interacting with more hands simply means more cleaning. Therefore, as we emerge from this pandemic, industries are

crying out for an easy, comprehensive strategy to reassure consumers that high-touch screens are clean and protected from mucky hands.

## The digital era

Long before the pandemic hit, there was a shift in industries such as the hospitality and food sectors towards using smart technology – including contactless payments and self-service kiosks – for more efficient check-out. Embracing digitalization can also offer faceless transactions which, arguably, may have inadvertently equipped industries to emerge from this pandemic sooner. These screens and touchpoints are frequently covered with hard-coated films but, even with this added protective layer, consumers and operators alike know that it is often impractical to expect them to be continually sprayed and wiped between every

contact. Unfortunately, traditional disinfectants can only offer limited residual activity against microbes once sprayed onto a surface, making them a ‘one-hit wonder’, and allowing microbial communities to bounce back after a single touch. Consequently, even regular disinfection only goes a little way to relieving user concerns regarding the cross-contamination of microbes. In addition, harsh cleaning formulas, the activity of damaging bacteria and regular wear-and-tear can lead to early product degradation, which many associate with a disregard for appearance and sanitation. In this microbe-conscious world, the ability to reassure users of cleanliness and care has never been more important.

To combat this, some manufacturers are protecting screens and touchpoints with antimicrobial-treated hard-coated films for enhanced surface cleanliness and

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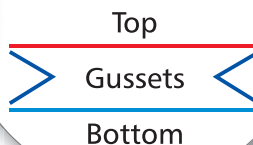
## Pouch Making Systems



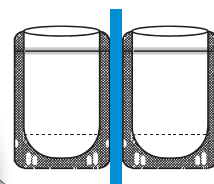
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defense against product-damaging microbes. Built-in antimicrobial technology, such as zinc pyri-thione, lives within the chemistry of films so is always active to continually prevent the growth of microbes between cleans, even in those hard-to-reach places. Reducing the bioburden of potentially degrading or odor-causing bacteria on a high-touch surface can help to extend the lifetime of the film, even after frequent use, to keep that fresh product feeling for longer and alleviate user concerns.

**Uncompromising integrity**

Built-in antimicrobial technology has the power to provide a cleaning strategy that complements regular disinfection practices in

**Film manufacturers need to know that this technology can be added without compromising key product features.**

all manners of industries, including gyms, hospitality, offices, and healthcare, and reassures users where it matters most. However, the formulation of films is a fine-tuned process and incorporating a new technology into an existing product line is never an easy feat or without its challenges. Film manufacturers need to know that this technology can

be added without compromising key product features such as the durability of surfaces, the clarity, glide and smoothness of screens, and the desired finish. Crucially, the chosen antimicrobial additive must complement the structural integrity of the film without adding to the thickness, and must avoid wearing away, even after excessive use or chemical abrasion from contact with harsh cleaning chemicals, hand cream, sweat, foodstuffs and much more.

**A meeting of minds**

Partnering with a leading antimicrobial additive company can help manufacturers find a solution – or multiple solutions – to reflect the demands for film applications

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in today's technological world. Scientists can offer an intricate understanding of antimicrobial technologies that perfectly complements the materials know-how of film manufacturers, finding the perfect balance of minds and chemistries. Trusted experts should not only ensure that any technology added does not hamper the quality of the films, but should also certify that the chosen chemistries meet regulations and do not compromise antimicrobial efficacy. As we introduce more and more of these user-machine interfaces into our lives, we should also guarantee – beyond doubt – that the chosen antimicrobial technology is safe, for production and use, with stringent testing.

Thus far, antimicrobial

polycarbonate films have successfully been developed by adding zinc-based technology – with proven efficacy and safety – to the lacquer mixture during production, coating the film in lasting protection and uniformly embedding the additive into the hard-coat. This technology disrupts normal microbial function to prevent the growth of microorganisms, and has been applied as a complementary strategy to cleaning in healthcare facilities and gyms. The potential for antimicrobial technology on high-touch surfaces is expected to reach beyond this as we see seismic shifts in consumer awareness, providing an additional level of surface cleanliness and reassurance when operating user-machine interfaces. ■

## ABOUT MICROBAN INTERNATIONAL

Part of Barr Brands International (BBI), Microban International is a global specialist in antimicrobial, odor control, smart surface and disinfection technologies. The company's proactive systems keep products cleaner, and control odors better by preventing problems before they start. Microban drives innovation by combining science and creative solutions that enhance high-quality consumer, textile, industrial and medical products around the world. Today the Microban brand and technologies are featured on thousands of products worldwide. The company is headquartered in North Carolina with operations in North America, Europe and Asia Pacific. For more information, please visit [www.microban.com](http://www.microban.com).



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# NDC Technology's Points on Testing, Inspection and Quality Control

**In the converting industry, what is your area of expertise in testing, measurement and quality control?**

**Rainville:** NDC Technologies is a leading global provider of intelligent, connected measurement and control solutions. We offer a wide range of non-contact gauging and process analysis technologies that accurately and reliably measure the basis weight, thickness, coating weight, moisture and length and speed. Our products address a broad scope of applications in industries such as Paper, Film and Foil; Labels and Tape; Coating and Laminating; and Protective and Flexible Packaging. Our measurement technologies include infrared, optical, beta/gamma, laser, terahertz, haze and x-ray. As a measurement and controls solutions provider, we work closely with converters to understand their unique quality, cost and gauging objectives to deliver the best application-specific solution. Every measurement system is individually optimized for each project. Our goal is to help customers improve product quality, increase productivity, boost process efficiencies and reduce manufacturing costs.

**What are some challenges your customers face and how do your products and services solve these problems?**

**Rainville:** There are a number of them, and it depends on the application. For example, as you know, the Paper, Film and Foil



**Mark Rainville**, Product Manager,  
Film, Extrusion & Converting  
Business, NDC Technologies



industry covers a broad range of coating processes and end-user products. The manufacturing processes are often complex, requiring specialized measurements and web gauging applications expertise. Frequently, the coating combination represents the greatest value-added component of converted paper, film and foil products. As such, it's vitally important that the right coat weight measurement technique is employed. NDC has the widest range of non-contact gauges dedicated to coat weight measurement, combined with in-depth applications knowledge. NDC's applications expertise extends across a broad range of coating techniques to provide the most effective measurement solution. These solutions provide accurate coat weight measurement

and controls that are independent of the substrate's characteristics.

In label and tape applications, successful label stock manufacture depends on the accurate measurement of four key properties: moisture content of facing and backing paper, adhesive coat weight, silicone release coat weight and optical quality. NDC's non-contact gauges are designed to directly measure adhesive coat weights for tapes, plus measure label stock moisture and silicon release coat weight using a single gauge and scanner configuration. This provides a cost-effective, low-maintenance solution. For applications where a single gauge is not suitable, NDC typically provides either direct or differential measurements using gauges before and after the coating station. These may be either infrared, terahertz or beta/gamma gauges or x-ray gauges using same-spot measurement techniques to provide accurate coat weight measurement and control. In addition, we offer other product control strategies to flatten the coat profile and optimize coat weight and material usage.

**How can improvement in testing, inspection and quality control improve the overall converting process?**

**Rainville:** Employing the right non-contact measurement and control system in the converting process enables converters to meet their customers' expectations while optimizing their own

manufacturing operations and delivering long-term value, such as:

- Improved product quality
- Reduced start-up times
- Raw material savings
- Higher yields
- High productivity
- Better process efficiency
- Flat coat weight profiles
- Optimized coat weight
- Improved materials usage
- Reduced scrap/waste
- Greater profitability

Understanding the process is key to ensuring measurement success. NDC has a long history of helping customers with their specific measurement needs and optimizing processes and product quality.

**What new technologies and products have you incorporated into your product portfolio? How do they benefit converters?**

**Rainville:** There are a few notable new products to mention. The first one is our HazePro sensor. It's designed to measure the optical quality (haze) of film during the process. We released this product over a year ago. We found out that

in this circular economy countries want to reduce their plastic scrap. Many of our customers are moving from films that are hard to recycle to films that are easy to recycle -- especially films with barrier properties. New single polymer films are being worked on, and the haze in a film can indicate the barrier property. A low haze indicates a better barrier property. A high haze indicates a deteriorating barrier property.

Another new product that we came out with is the Series 9 sensor. This next-generation infrared sensor directly measures the moisture and coat weight in converted products. This new sensor really expands the range of coating and converting applications, and we incorporated added capabilities for increased reliability and advanced diagnostics for peace-of-mind operation.

Our new Terahertz sensor offers highly accurate measurements for multiple layer film and sheet applications, which in the past would require multiple sensors and scanners. This new product makes all the film or sheet thickness measurements simultaneously using a single sensor. For example, our Terahertz sensor can measure the

thickness of each individual layer, the combined thickness of layers and even the density of a particular layer – to improve the overall quality of products.

In addition to these new products, we also recently released our SlimTrak II scanner with compact footprint for narrow web processes. This single-beam scanner is uniquely designed to fit into the tightest machine spaces and is built for reliable, long-lasting, trouble-free operation.

**What are key factors converters should pay attention to when choosing the right testing and quality control products and services for their needs?**

**Rainville:** As a solutions provider, we've seen more and more companies relying on measurement technology to automate the quality control of their products. With the promise of cutting costs, streamlining production and improving product quality, many companies are looking for a measurement system solution that can deliver a substantial return on investment (ROI) – and continue to deliver value for the long term. Important

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factors to consider include:

**Experience.** Be sure the company you're evaluating has the depth of experience and applications expertise to understand your process and measurement challenges and will be able to offer a specific gauging solution to meet your unique needs. NDC has been delivering measurement and control solutions for over 50 years and we have over 100,000 measurement systems in service around the globe that have amassed over 1 billion operating hours. We know how to solve the toughest measurement and control challenges.

**Peace of mind.** Be sure to look at the best measurement and control strategy for your process operation and how you'll plan to evaluate the system's performance. The adoption of an in-process measurement system is not merely a technology investment; it's a business investment. So, it's prudent to prepare a business case to

evaluate the ROI, long-term value and peace of mind you'd like to realize. NDC's measurement and control systems help converters to transform acquired process data into knowledge and knowledge into intelligence. Intelligence that enables them to enhance production processes, increase productivity, boost process efficiencies and deliver the highest quality products.

**Service and Support.** Be sure to evaluate the company's after-the-sale service and support programs.

Ask about the ease of product servicing, regional and international service and support locations, training programs, available maintenance contracts, and on-line service and support capabilities, to name a few. NDC has a globally connected team in over 60 countries to assist customers through the service lifecycle. And we've digitized the customer support experience, so our valued customers get immediate care via our 24-7 service cloud – myNDC.com. ■

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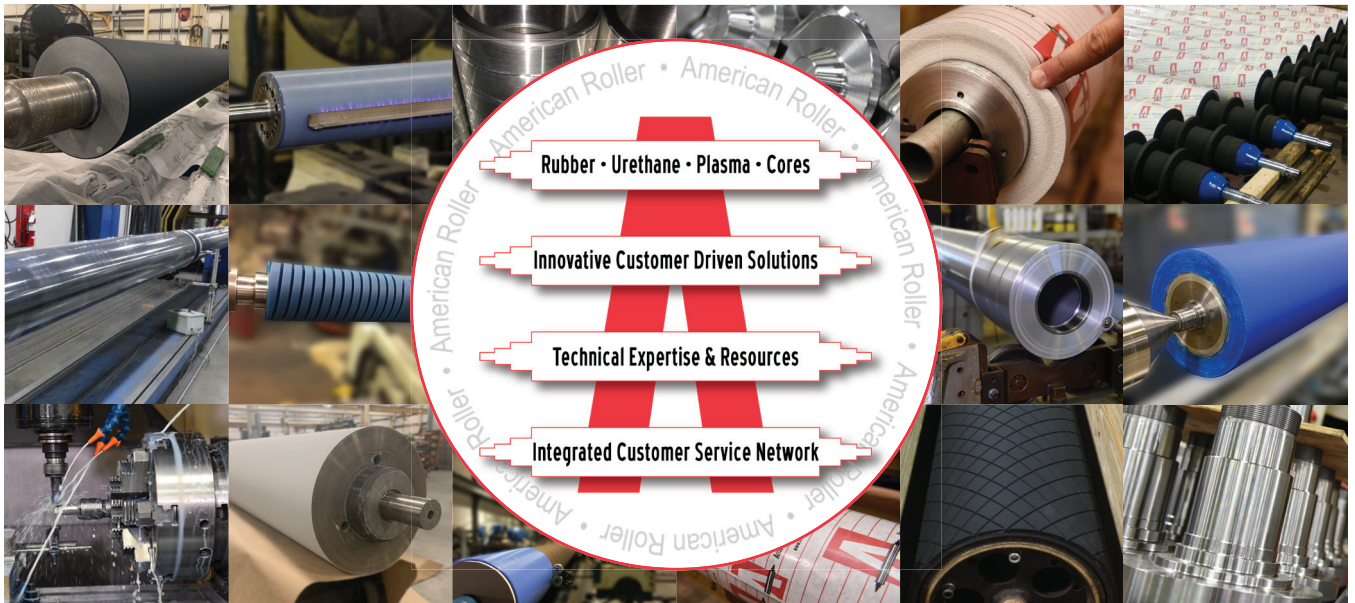
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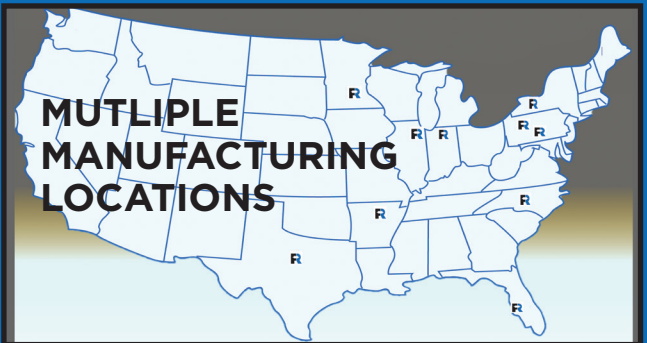
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