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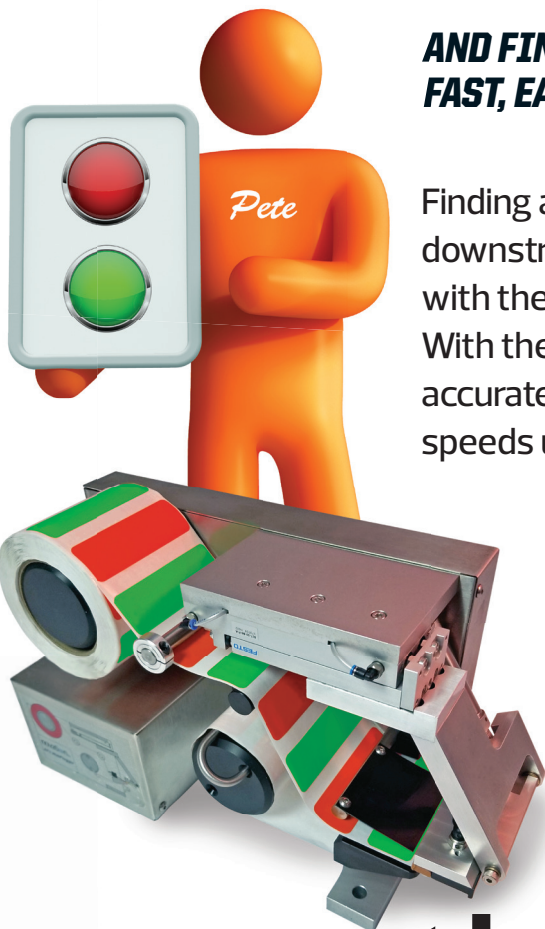
**Buyers' Guide** 32

**ALSO IN THIS ISSUE**

NEW FOOD-SAFE LAMINATING ADHESIVES	6
UNWIND AND REWIND WEB GUIDES	14
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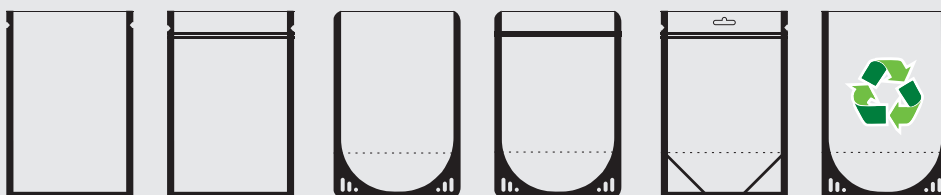
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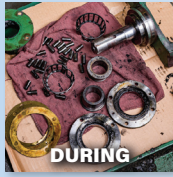
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## A Back-to-Buyers Guide



**Angel Morris**  
Editor

No matter how old you get, the month of August brings to mind going back to school. In the spirit of continued education, this month's edition features the annual *PFFC Buyers Guide*, where you'll learn of leaders in printing equipment, materials and service providers. In addition to checking out the listings here, active buyers can access the guide at <https://directory.pffc-online.com>, where entries of more than 1,200 suppliers are continually updated, so page viewers receive the latest information ... and if you missed out on being included, you can follow that link to be added so that clients

are finding you year-round! Many featured company listings include profiles of their specialized services making it easier for people to find the most appropriate suppliers for their needs.

Speaking of supplies, this month is a great time to help a local classroom. Consider this: The national average of students in classrooms last year was 24. That's two dozen children coming in with 24 different backgrounds — from skill level and maturity, to emotional and physical well-being. Unlike a typical workplace where you can tell an employee if things simply aren't working out, the classroom is expected to engage all these children for a full year, come what may. Teachers maneuver students through educational lessons and life lessons. They play the role of parent, counselor, nurse and even friend, to successfully get students to the next level. It simply can't be said enough: Good teachers are a gift. Good parents and the support of a good community make teachers' incredibly important jobs that much easier, and, in turn, children are better served all the way around.

If you're looking for ways to make a difference in the life of a child, assist a teacher. Volunteer (even if for only one hour a month), donate classroom supplies or send a gift card to be given to the staffer of the school's choice as a simple sign of appreciation.

In a back-to-school lesson of our own, we introduce new food-safe laminating adhesives for flexible packaging through this month's cover story. This issue offers some mechanical design considerations toward unwind and rewind web guides, as well as some advancing curing/drying trends. May these and other articles remind you, there's always something to learn ... and a teacher deserving of thanks behind every lesson!

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# New Food-safe Laminating Adhesives for Flexible Packaging

By **Junya Aoyama**, Researcher, Toyo-Morton, Ltd.

The global food market has doubled in size over the past decade due to worldwide population growth. Amid the global distribution of food products, flexible packaging materials will play an increasingly important role given that they are lightweight and their shelf-stability is high for long-distance transportation.

In addition, the circular design of food packaging materials is gaining greater attention as an approach to addressing marine plastic waste issues, global warming and countries' toughening regulations regarding the import and export of waste. Flexible packaging materials could also assist the reduction of food loss by decreasing greenhouse gas emissions that lead to global warming.

Suppliers of materials throughout the supply chain are not just working to protect packaged contents by using flexible packaging and working to conform to increasingly strict regulations and standards, they are also striving to develop alternative packaging materials and solutions with greater environmentally-friendly advantages.

## Laws and Regulations Regarding Food Contact Materials

Let's start by taking a look at past changes in key global laws and regulations regarding food contact materials and at recent regulatory



trends in Europe (**Figure 1**).

In Japan, the Food Sanitation Act regulates and secures food safety. Laminating adhesives for food packaging applications are subject to the Voluntary Regulations on Adhesives for Food Packaging Materials formulated by the Japan Adhesive Industry Association. These laws and regulations provide negative lists (NLs) of substances that are, in principle, banned from use in food packaging. The U.S. has established a positive list (PL) of substances that may be used as packaging materials.

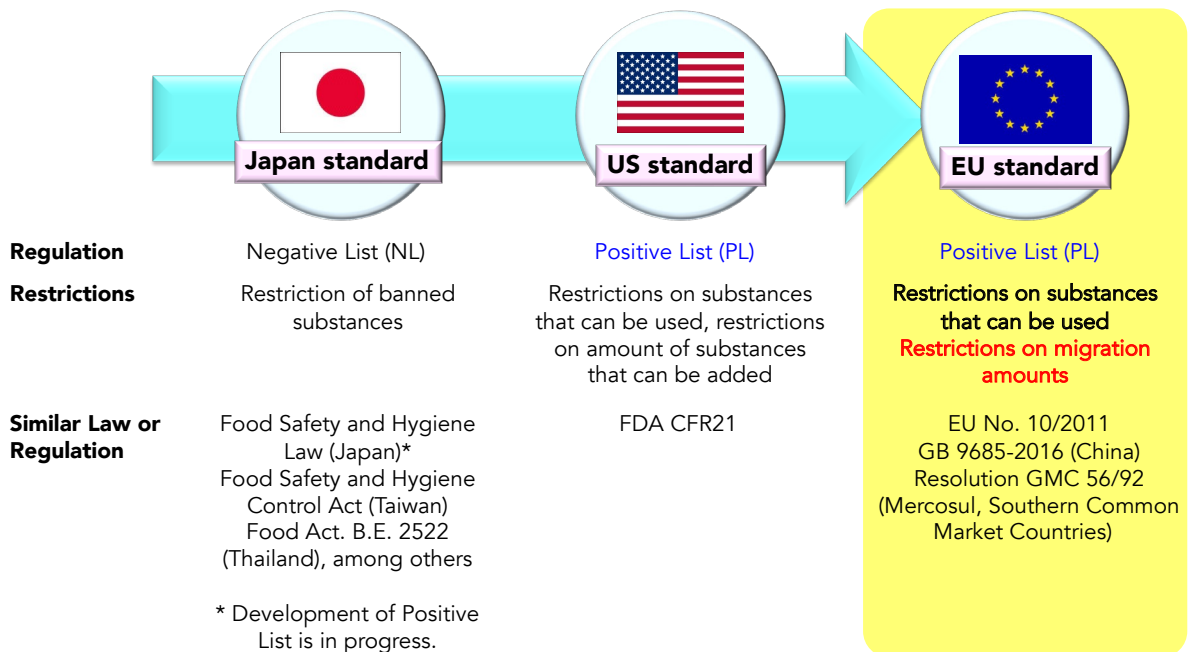
In the Japanese market, packaging materials are required to comply with both Japan's Food Sanitation Act and the regulations formulated by the U.S. Food and Drug Administration (FDA). Adhesives must satisfy the FDA 175.105, whereas adhesives for

retort sterilization at 121°C and higher must meet FDA 177.1390.

The European Union (EU) has long been working to integrate within its member states the comprehensive laws and regulations regarding food contact materials (EC No.1935/2004). In 2011, the EU established the Plastics Implementation Measure (PIM, EU No.10/2011), which focuses on plastic materials and articles intended to come into contact with food.

Unlike the conventional regulations in Japan and in the U.S. that correspond to the amount of additive used, the PIM is unique in that it sets migration limits on individual substances on the list. This means that to comply with the EU regulations, manufacturers must not only create products from safe materials using safe methods but also make sure that substances actually do not migrate





**Figure 1** Comparison of Regulations (Japan, US, EU) for food contact materials.

into food at levels that could harm.

In addition, since the aforementioned measure came into effect, an independent body assesses food safety and updates the list as appropriate. As a result, the EU's safety standards are so highly objective that China (GB 9685-2016), Latin American countries and others have adopted them in succession. They are quickly becoming the global standard.

### New Food-safe Adhesive Products for Demanding Flexible Packaging Applications

Given that global food exports are projected to rise, food packages need to fulfill the laws and regulations in different regions. **Table 1** displays a lineup of the latest solvent-based and non-solvent-based laminating adhesives that are compliant with Japanese, U.S. and EU regulations.

Process	Application	Products (Type / catalyst)	EU	China	USA		Japan	Epoxy-silane compounds	Tin compounds
			No. 10 /2011	GB9685 -2016	FDA175. 105	FDA177. 1390	No. 196 PL		
Solvent Based	Retort Package	TOMOFLEX TM-2300 (Polyester / aliphatic)	✓	✓	✓	✓	✓	None	None
	Liquid Package	TOMOFLEX TM-2470 (Polyester / aromatic)	✓	✓	✓	-	✓	None	None
	Snack Package	TOMOFLEX TM-3040 (Polyether / aromatic)	✓	✓	✓	-	✓	None	None
Solvent Free	Liquid Package	ECOAD EA-N6008 (Polyester / aromatic)	✓	✓	✓	-	✓	None	None
	Snack Package	ECOAD EA-N6001 (Polyester / aromatic)	✓	✓	✓	-	✓	None	None

**Table 1** New epoxy silane-free laminating adhesives.

Product	Laminated structures	Pre-retort		Post-retort		Over time (40°C, 4 weeks)	
		Bond strength (N/15mm)	Bond strength (N/15mm)	Appearance	Bond strength (N/15mm)	Appearance	
TM-2300 /CAT-RT86	PET/AL/CPP	PET/AL	5.6	4.0	Good	4.1	Good
		AL/CPP	8.7	7.5	Good	5.8	Good
	PET(SiOx)/NY/CPP	PET/NY	3.4	3.0	Good	3.0	Good
		NY/CPP	9.6	5.8	Good	6.2	Good

Coating weight: 4.2g/m<sup>2</sup>, aging conditions: 50°C, 4 days; peel speed: 300 mm/min  
Retort conditions: 135°C, 30min; contents: tomato ketchup/vegetable oil/vinegar)

**Table 2** Bond strength for retort applications (N/15mm).

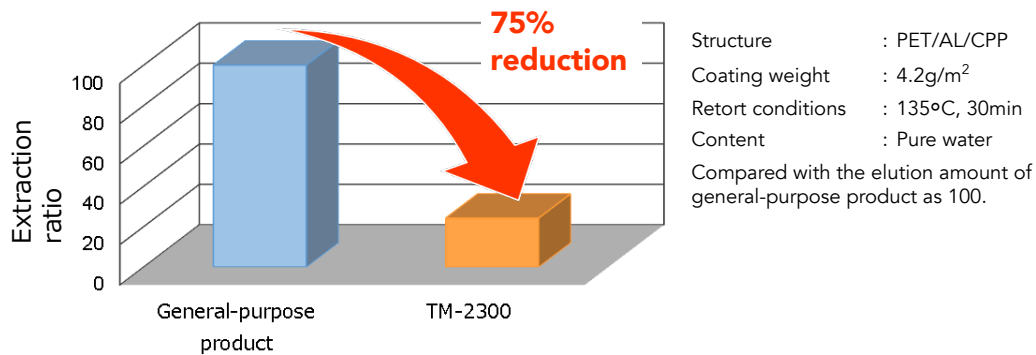


Figure 2 Extraction test results.

Products	Contents	Structure	Initial	Over time	
			Bond strength (N/15mm)	Bond strength (N/15mm)	Appearance
New product TM-2470 /CAT-10	Chili sauce (made in Indonesia)	AL/LLDPE	5.7	9.0 <sup>1)</sup>	Good
	Tomato ketchup (made in USA)		5.9	7.4 <sup>2)</sup>	Good
General-purpose product	Chili sauce (made in Indonesia)		5.6	1.4 <sup>1)</sup>	Delamination
	Tomato ketchup (made in USA)		5.5	1.5 <sup>2)</sup>	Delamination

Structure: PET/AL/LLDPE; coating weight: 3.5g/m<sup>2</sup>; aging conditions: 40°C, 3 days; peeling speed: 300 mm/min; storage conditions: 1) 50°C, 4 weeks, 2) 60°C, 3 days

Table 3 Bond strength for liquid applications (N/15mm).

## Epoxy Silane-free Adhesives for Retort Packaging

Adhesives for retort packaging must be resistant to heat and water at the time of retort processing, resistant to the package's contents and low in substances that can po-

tentially seep into food. Packaging materials used in retort pouches to be processed at temperatures over 121°C must also meet FDA §177.1390 for enhanced safety.

To fulfill the aforementioned requirements without using the substances restricted by the EU (i.e.,

epoxy silane and tin compounds), new polymer synthesis technologies and interfacial adhesion technologies need to be applied.

In response to this, adhesive manufacturers have been conducting research and development for these technologies and have developed new epoxy silane-free adhesive systems that prevent the laminated film from coming off (delaminating) during retort processing. As seen in **Table 2**, laminated structures using epoxy silane-free products show no significant deterioration in bonding strength after processing.

In addition, our proprietary synthesis process is very safe and paves the way for the design of polymers with very limited migration of adhesive ingredients into the contents of packages. For instance, a PET/AL/CPP laminate migration test involving retort processing at 135°C for 30 minutes demonstrated that the migration level is around 75 percent lower than the conventional product, minimizing its impact on the taste and flavor of the packaged content (**Figure 2**).

## Adhesives for Liquid Packaging

The packaging of sauces and

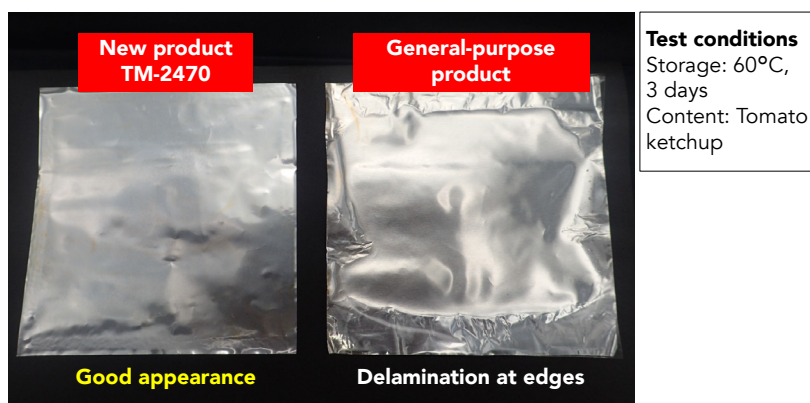
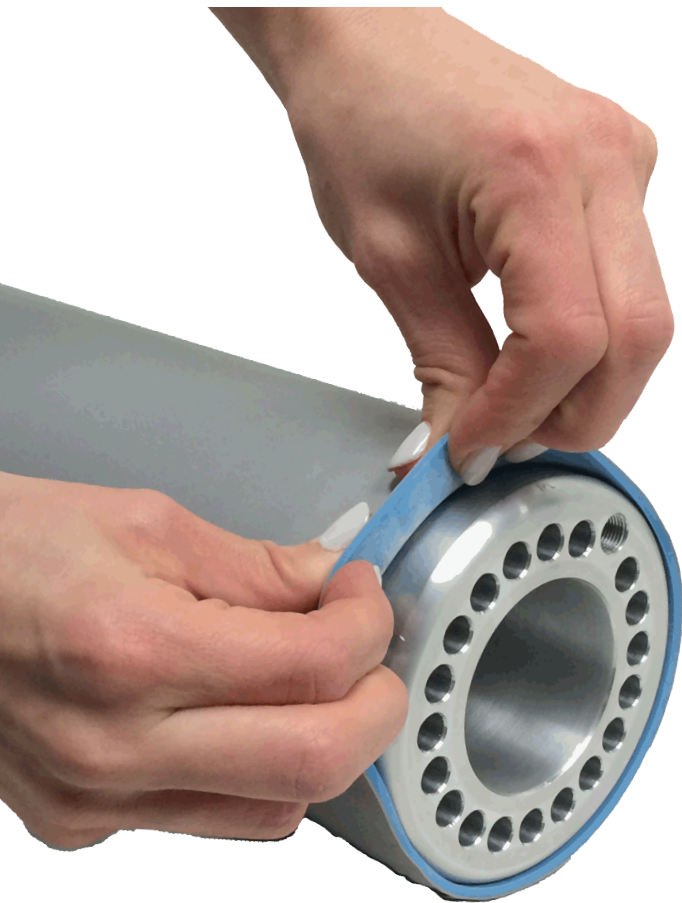


Figure 3 Dipping test results for liquid applications.

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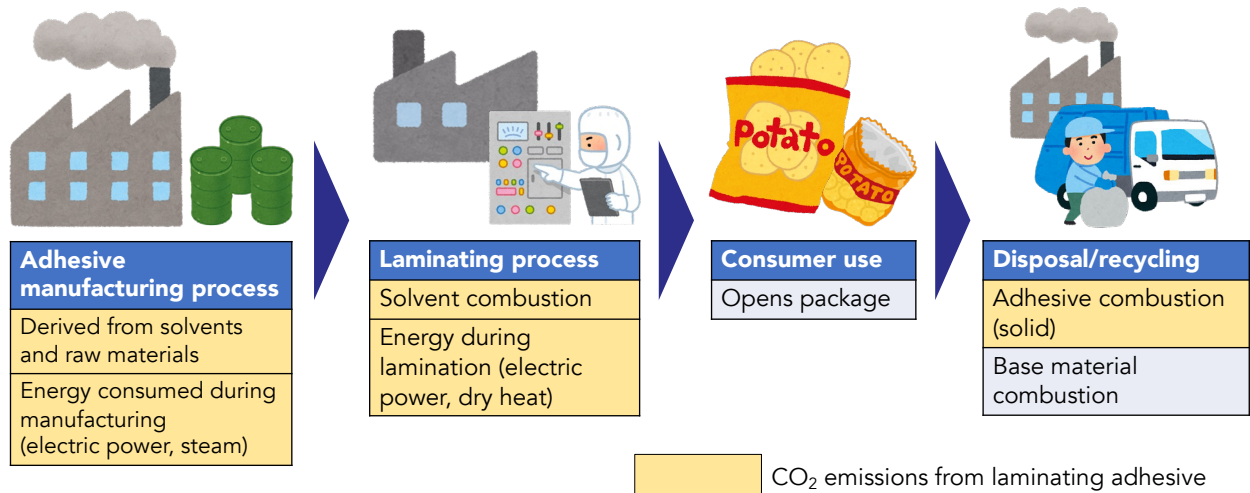


Figure 4 CO<sub>2</sub> emissions from laminating adhesive throughout the product lifecycle

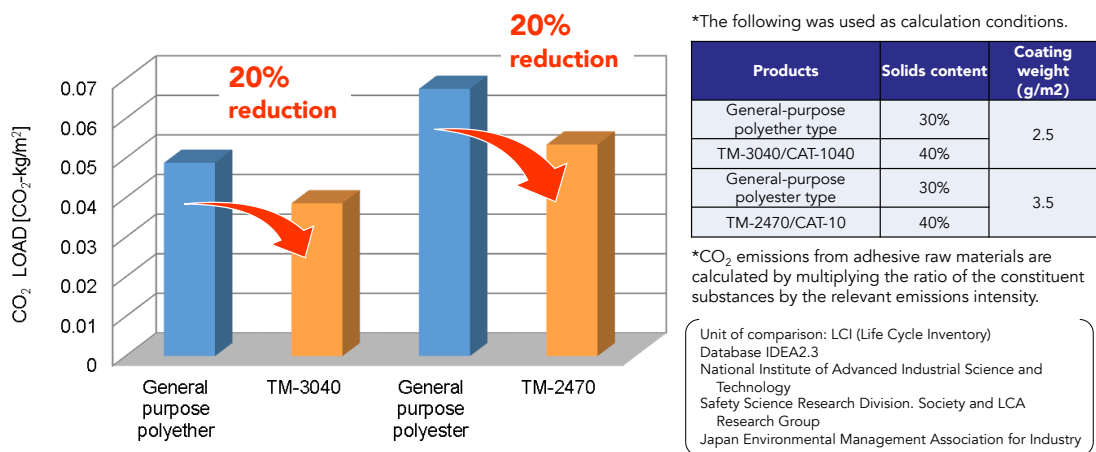


Figure 5 CO<sub>2</sub> loads reduced by 20 percent for both polyether and polyester adhesives.

condiments often contains acidic products, including ketchup, chili sauce and spaghetti sauces. In laminated configurations that include aluminum foil or vapor-deposited aluminum film, adhesives need to have metal adhesion properties comparable with those for retort packaging.

Table 3 shows that new interfacial adhesion technology effectively controls delamination and the deterioration of adhesive strength in comparison with general-purpose adhesives, even

when the package contains highly acidic contents like ketchup or chili sauce.

Of the many tests, the dipping test is a more rigid method of evaluating the package's resistance to the aggressiveness of its contents. In this test, a sample cut from a laminated product is immersed in the package's contents to check if delamination occurs. A test sample of the metallized pouch structure produced using an aromatic polyester adhesive with catalyst was immersed in tomato

ketchup at 60°C for three days. The delamination observed was limited in comparison with the test results of a general-purpose adhesive sample. Figure 3 shows the samples after the dipping test.

### High Solids Polyether and Polyester-based Adhesives

Solvent-based adhesives have long been used in lamination processing. In fact, a huge amount of greenhouse gases are emitted throughout the solvent-based

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adhesive's lifecycle of production, processing and incineration.

Addressing the emissions issue, newly released high solids polyether and polyester adhesives that are free of any regulated substances are proving effective in reducing solvent consumption for lowered CO<sub>2</sub> emissions. In the lifecycle of laminated packaging, the laminating adhesive is responsible for CO<sub>2</sub> emissions at the stages of manufacturing, lamination processing and the disposal of packaging materials (Figure 4).

Figure 5 portrays a total sum of CO<sub>2</sub> emissions from individual processes and estimated on the basis of the substances that compose the adhesive, their non-volatile content and the amount of application. An adhesive formula-

tion containing 40 percent solids generates CO<sub>2</sub> emissions that are around 20 percent lower than general-purpose products containing 30 percent solids. This increases food safety while reducing its environmental impact.

As demand for global food distribution grows, so do the calls for safer packaging material design. In Europe, materials that have been used for decades are now coming under scrutiny, while laws and regulations are expected to become increasingly stringent.

In recent years, many countries, including Japan, have started formulating regulations promoting circularity of plastic resources. As this trend is expected to continue for the foreseeable future, we expect to see more

innovations in laminating adhesive design that help to not only advance a closed loop economy, but also maintain a high degree of safety and hygiene. ■

## ABOUT THE AUTHOR

Mr. Junya Aoyama is a researcher at Toyo-Morton, Ltd., Japan's largest manufacturer of laminating adhesives. He is responsible for the design and development of adhesive solutions that are gentle to the health of humans and the Earth's ecosystems. Toyo-Morton has been delivering highly reliable adhesive systems to the flexible packaging, electronic devices and other industrial markets for over 45 years. Learn more at [toyomorton.co.jp/en/](http://toyomorton.co.jp/en/).

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Mechanical Design Considerations For

# Unwind and Rewind Web Guides

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

In the previous article, the sensor location and installation for unwind and rewind guides were discussed. In this article the mechanical design considerations will be reviewed.

## Mechanical Structure Stiffness and Rigidity

The mechanical structure’s primary consideration relates to the structural rigidity of the carriage supporting the roll. Poorly designed carriages may lead to significant vibration and mechanical resonance if the system’s stiffness is inadequate.

The natural frequency of the guide structure, along with the roll mass, should be designed to be well above the control system’s natural frequency to avoid mechanical resonance. For terminal web guides, the natural frequency of the system is similar to a mass-spring system, given by:

$$fn = \frac{1}{2\pi} \sqrt{\frac{Ke}{M}} = 0.498 \sqrt{\frac{Ke}{W}}$$

where Ke is the equivalent stiffness of the terminal guide structure, M is the mass of the terminal guide structure along with the roll (W is the weight), and fn is the natural frequency of the terminal guide structure in Hz. As seen from the

natural frequency equation, a stiffer mechanism is necessary when moving a larger mass.

In addition to the stiffness of the terminal guide structure, the design should also consider the stiffness of the actuator, the actuator mounting and any support plate for mounting the actuator. These individual component stiffnesses contribute to the equivalent stiffness, which can be modeled as equivalent stiffness of springs in series. The least stiff element will significantly influence the overall effective stiffness of the assembly:

$$\frac{1}{Ke} = \frac{1}{K1} + \frac{1}{K2} + \frac{1}{K3}$$

A natural frequency between 25 Hz to 50 Hz is an ideal choice for terminal web guides, as most control systems for these guides are

typically designed to have a natural frequency between 8 Hz to 15 Hz.

## Actuator Type

Legacy actuators for unwind and rewind guides were hydraulic or pneumatic cylinders. However, with advances in controls and drives, state-of-the-art stepper and servo actuators offer benefits such as smooth response at variable speeds and full force/thrust at zero speed, while eliminating the need for plumbing and the risk of product contamination due to hydraulic fluid leaks. It is crucial to choose an appropriate actuator based on the desired dynamic response by considering the mass to be moved. Moreover, the stiffness of the actuator (piston/rod and the mounting) should follow the same

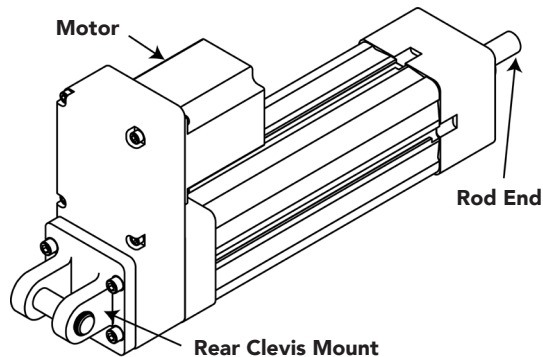


Figure 1 RP Actuator.



# Speed and Innovation

## Catbridge surface winders



constraints as the stiffness of the carriage to avoid resonance issues.

## Motor Type

While moving a large mass, simple DC motors may not be an ideal choice. A servo motor or a stepper motor with advanced drives (microstepping) and controller (motion profiles) may be necessary. Servo motors provide the highest performance since the thrust can be maintained at high speeds. However, tuning a servo motor is load dependent, and such tuning might need to happen in the field to ensure proper performance.

A properly designed stepper motor system (speed and position motion profiles) can provide comparable performance at a lower cost. By taking advantage of the fact that stepper motors can provide high torque at low speeds (less than 1000 rpm), when compared to a similarly sized servo motor, mechanical gearing and lead screw pitch can be designed to meet the thrust/speed requirements of a terminal web guiding system. By utilizing advanced stepper drive and controller capabilities such as microstepping, current chopper control, speed ramping, anti-resonance modes, load-based current control, etc., the low-cost stepper can provide similar performance to a servo motor for terminal guide actuators.

The main consideration, irrespective of the type of motor, is the inertial effect of moving a large mass and sudden direction changes required for web guiding. Appropriate compensation for backdriving or back emf generated during deceleration should be implemented. With advanced stepper and servo drives, coasting can be avoided and braking by means of

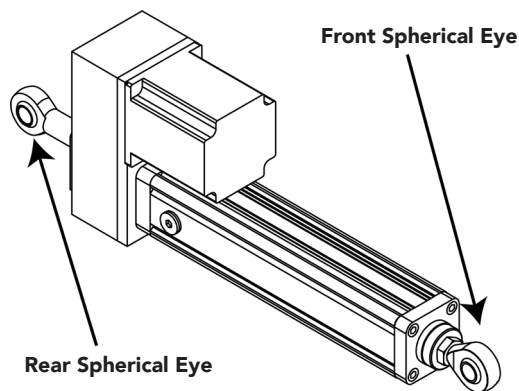


Figure 2 RP Actuator spherical eye.

deliberate deceleration can help reduce regeneration problems. Additionally, a linear power supply or a regenerative power supply can absorb some of the energy generated during deceleration. Regeneration breaks can also be used to dissipate the excess energy while a switching power supply is used.

## Actuator Sizing

The actuator must be sized appropriately to ensure that enough thrust is available from the actuator to move the mass at the desired speed. The thrust needed should overcome the breakaway force due to the bearing friction as well as accelerate the mass to achieve the desired dynamic response.

## Breakaway Force

The breakaway force refers to the amount of force required to initiate movement of the mass from a stationary position. This force must overcome static friction, which is determined by the coefficient of friction and the combined weight of the carriage and the web roll. Breakaway force is influenced by factors such as bearing type, alignment of sliding or rolling surfaces, seal drag, lubrication viscosity and pre-loading.

To accurately measure breakaway force, the carriage can be loaded with the roll, and the force needed to set the carriage in motion is measured using a spring weight gauge or any other force measuring device.

## Force for Acceleration

In addition to breakaway force, adequate thrust is necessary for accelerating the mass to achieve the desired dynamic response. The required thrust is directly proportional to the mass and the desired acceleration, as per Newton's law. Understanding the nature and magnitude of expected disturbances can help determine the acceleration requirements. Terminal web guides are primarily designed to address steady-state disturbances, which are less demanding in terms of dynamic response compared to sinusoidal disturbances. In applications where web guides need to make small, rapid corrections, acceleration becomes a crucial factor, as does actuator correction speed.

## Actuator Mounting

The way an actuator is mounted plays a crucial role in terminal guide design, as it directly affects

the system's stiffness and can contribute to resonance issues. Two common mounting methods are fixed and floating mounting.

Fixed mounting involves rigidly attaching the actuator to a fixed base and the rod end to the moving carriage. This approach provides optimal performance due to the lack of play in the mounting but requires precise alignment to prevent binding and premature failure.

Floating mounting, on the other hand, introduces an additional degree of freedom through the use of eye or clevis mounts, allowing the actuator to pivot during extension and retraction. While this method can alleviate alignment issues, it may introduce play in the connection and requires careful installation to ensure the proper plane of motion.

## Conclusion

Terminal web guiding systems play a crucial role in ensuring the accurate and efficient processing of web materials in various industries. The design and selection of key components such as actuators, motors, sensors, control systems and mounting configurations have a significant impact on the performance and reliability of these systems.

Proper integration with other web handling equipment, regular maintenance and effective troubleshooting practices are essential for maintaining the long-term performance and reliability of terminal web guiding systems. By considering these factors and utilizing the latest technologies and best practices, designers and engineers can

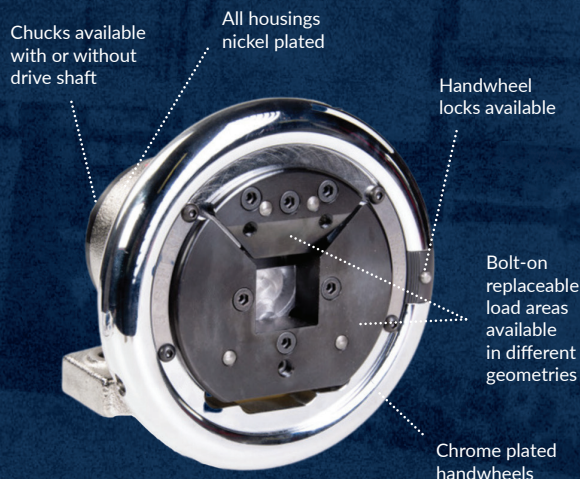
develop high-performance terminal web guiding systems that meet the unique requirements of various web processing applications. ■

## ABOUT THE AUTHOR

Aravind Seshadri has more than 18 years experience in the design of control systems for roll-to-roll systems specifically in lateral web dynamics, tension control, print registration and sensor development with over 25 publications and two patents. His contributions have been recognized by AIMCAL (John Matteucci Awards for Technical Excellence in 2017) and ASME (Rudolf Kalman Best Paper Award in 2011). He is President of Roll-2-Roll Technologies, a leading supplier of web guiding solutions for the roll-to-roll processing industry. He can be reached at [aravind@r2r.tech](mailto:aravind@r2r.tech) or through <https://r2r.tech>.

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# Passive, Active and Intelligent IQ Electrostatic<sup>®</sup> Eliminators

By Manuel C. Blanco, Senior Electrical Design Engineer, Simco-ION, an ITW Company

Across a wide array of industries, static electricity is the principle obstacle to achieving higher processing speeds and the main cause of quality problems. Significant surface charge levels build up as a by-product of the material being conveyed, **Figure 1a**. Fundamentally, charges exist as two polarities (+) Positive and (-) Negative ions. The attraction and repulsion force between the two charges is defined by Coulomb's Law, which states opposite charges will attract and similar charges will repel each other.

The processed conveyed material is in motion, and typically stretched/put under surface tension as it wraps along several types of circular rollers made up of chemically dissimilar, insulative or conductive materials than that being processed. Insulators have their electrons strongly bounded to each atom, prohibiting the movement of charge freely so charge concentrations can be localized and have a natural tendency to spread to the

surface because of repulsive forces. Conductors have their electrons loosely bound to each atom so they can move about allowing conductive charge flow within the conductor.

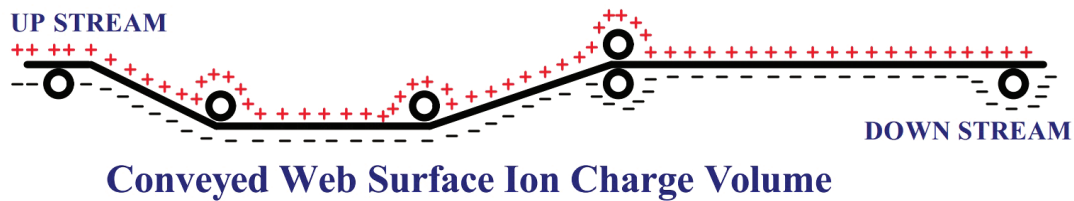
These dissimilar insulative or conductive surfaces meet, come in contact with each other, and separate along the circular, curved, tangential contour of the roller, **Figure 1b**. This results in triboelectric charge distribution governed by Gauss's Law which relates the distribution of electric field and electric flux across an enclosed surface as a function of the electric charge, surface area and the normal angle that forms between the electric field lines and the web surface.

At the contact interface of both surfaces, insulative and conductive, an electron migration exchange takes place such that when the dissimilar surfaces separate the surface material which has given up electrons becomes (+)

Positively charged and the surface that has gained electrons becomes (-) Negatively charged. The charge polarity of each surface is governed by the triboelectric series, which is an organized enumerated list of insulative and conductive materials that can acquire a Positive, Neutral or Negative charge based on charge strength.

These electrostatic charges now in motion accumulate to high levels, leading to the formation of elevated voltages and currents spread along the conveyed web materials surface and are related to the moving web parameters involved: Web Width [cm], Web Speed [FPM], Material Surface Charge Density [nC/cm<sup>2</sup>], and roller Velocity [cm/s]. Other charge level dependencies include ambient temperature [°C] and air humidity[g\*m<sup>3</sup>].

Process conveyed web materials have been well known to accumulate high charge concentration levels ranging from 1KV to



**Figure 1a** Cumulative charges on web material being conveyed.

100KV. At these charged levels, ambient dust and fiber particulates cause contamination, manufacturing non-uniformities, material damage, spontaneous arc flash discharge, damage to sensitive programmable logic controllers (PLC) electronics and become a shock hazard to operators putting their safety and those around them at risk.

As a result of these operational consequences the selection of electrostatic eliminator technology — Passive or Active: AC, Pulsed DC or Intelligent Systems — needs to be understood and correctly implemented in the manufacturing process to reduce charge levels to a manageable degree where material damage is reduced, quality yield is improved and operator safety is paramount, with minimal operational down time for maintenance.

### Passive, Active and Intelligent Eliminators

Modern manufacturing demands requiring faster web speeds, increased productivity volumes and through put have led to elevated charged levels and production bottlenecks requiring the need for more optimized electrostatic control with intelligence. To overcome these process obstacles, several evolutionary technologies in electrostatic eliminators are available to the customer based on their

process requirement needs. An understanding of static eliminator technology is essential for implementing and solving electrostatic problems.

### Electrostatic Eliminator Technology

Passive Jurassic Methods, such as Tinsel, use fine copper filaments arranged to concentrate charge conduction via direct grounding to the machine frame. Tinsel filaments are directly coupled to the web at very close proximity, but do not make physical contact, and can flake off over time contaminating the conveyed material.

These exposed copper filaments are usually less than one inch away from the web, causing the exposed strands to break into corona utilizing the energy charge flow of the moving conveyed web material producing a single polarity. Over time these copper filament strings will attract contaminants and get dirty causing the corona onset voltage to increase resulting in large volumes of charged material passing through untreated, un-neutralized and stripping the web.

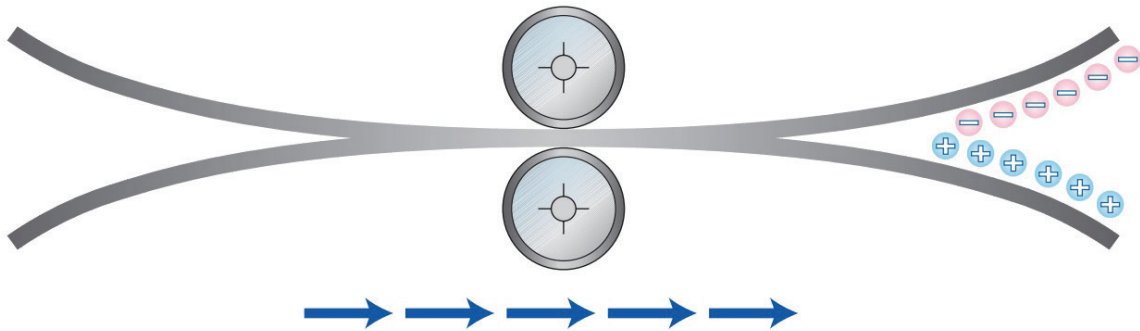
Tinsel has no current limiting capability, since it is not resistively coupled, so if charge levels aggressively build up you can arc and punch through the material or at worst cause an incendiary event and expose operators to safety

hazards. There is no intelligence with passive ionization — it has no way to homogenize the ion current across the web and cannot provide web charge condition or operational information to establish performance metrics.

Mechanical mounting is a challenge since traditionally it is draped across the surface area of the conveyed material, without making contact. Other slightly improved but fair mounting methods involve magnets for affixing and suspending in air or tinsel can be purchased in the form of a rod for rigidity, and for obtaining some web distance space regularity. However, extreme caution must be exercised when reorienting a passive ionizer during operation since the device can be drawn into a pinch point causing additional safety concerns. Tinsel and other passive equivalents are not recommended due to various inconsistencies, impracticalities, shortcomings and extremely low efficiencies.

AC Systems: In AC ionization we have a single power supply that produces alternating high voltage sine waves of both polarities to an array of single point emitter pins on a bus. Each independent emitter pin is current-limited and resistively coupled to the web resulting in homogenous generation of both (+) Positive and (-) Negative ions throughout the surface of the con-

## CONTACT + PRESSURE + SEPARATION



**Figure 1b** Static Electricity is a function of friction, pressure and contact separation.

veyed material from a single pin.

Since AC ionization uses a single point emitter to produce opposite polarity ions, some ion production is lost due to recombination effects. Also, ion production does not occur immediately since the voltage at the emitter points must be greater than 3KV to break the pin into corona. As a result of the wave shape, only about 40 percent of the sine wave peaks produce ionization, rather than the entire cycle.

These AC systems are also shockless to the operator posing no safety hazards and can be securely mounted on a machine frame or gantry arm suspended over the web without making contact. Despite the minor ion loss, higher neutralization efficiencies can be obtained because separate ion voltage levels are produced. Also, by implementing analog feedback techniques to isolate the ion production at each half cycle, an indication of bar and web performance can be obtained for maintenance and cleaning of the electrostatic eliminator.

Pulsed DC Systems utilize two individual power supplies for

generating separate (+) Positive and (-) Negative ions. Square pulses used by this technology allow near 100 percent ion production and more instantaneous power supply turn-on. Recombination effects are minimized by positioning and spacing of emitter pin pairs.

These systems can apply both polarities to a single emitter pin or to separate, closely spaced pair of emitters points each independently running on a separate voltage bus. These Pulsed DC systems are also shockless having each emitter pin resistively coupled and current limited, homogenizing its output across the bar and web.

Separate high-voltage generation for each polarity means we have flexibility for adjusting several tuned parameters such as voltage, current, power, phase, frequency and modulation with analog feedback to achieve ion balance and maintain neutralization at farther distances from the target web material. This added flexibility translates to stable mounting onto the machine frame or gantry arm at various distances facing the web, adding more focused and adaptable electrostatic

elimination solutions.

Intelligent Systems utilize the same method of ion production as Pulsed DC Systems with the addition of intelligent microprocessor-controlled math algorithms adaptively formulated for electrostatic solutions, e.g., closed loop feed-back, (CLFB). Individual switch-mode power supplies — utilizing high frequency switching magnetics enabling a multitude of switch-mode topologies — are used for the high-voltage generation of (+) Positive and (-) Negative ions. They can be miniaturized and embedded into the electrostatic eliminators based on the required output voltage, current and power levels implementing regulated ion production independent of charged web load demands.

This also permits the embedded power supplies to be driven off +24Vdc for ease of interfacing and installation to programmable logic controllers (PLCs), and can be powered with a DC wall adapter that utilizes power factor correction techniques to reduce electromagnetic interference noise and improve overall power system losses.

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This intelligent technology facilitates the implementation of monitoring capabilities that capture real-time data of emitter pin and bar conditions as it interacts with the conveyed web material and can discern if any contamination, insulative or conductive, is affecting the bar efficiency by direct measurement of the ion currents generated and their charge interactions with the web.

The technology of electrostatic eliminators continues to evolve based on the developments of new materials and the manufacturing demands for faster processing speeds. Triboelectric charging of the conveyed web material continues to impede a multitude of manufacturing operations at these elevated speeds, but it does not have to be that way. Manufacturers have better active electrostatic neutralizer options available that can solve their static problems.

Advances in high frequency switched-mode power supply technology coupled with micro-controllers have led us to present-day state-of-the-art Intelligent Systems, that can implement closed-loop feedback, with Sensor technology for accurate measurement of field intensity at various locations of the charged web or target.

This intelligent Systems design approach allows for various configurations and facilitates the secure positioning of both electrostatic eliminators and sensors across the conveyed web for a complete picture of your electrostatic charge issues. In addition, PLC integration is possible with user-controlled alarms along with monitoring capabilities to give the manufacturing customers the flexibility for selective time interval data points and event logging for planned maintenance. This helps ensure improved process controls, reducing machine down time and increasing production volumes with minimum defects in a safe environment. ■

### ABOUT THE AUTHOR

At Simco-ION, an ITW company, Manuel C. Blanco develops new strategic product design initiatives and market design requests that directly impact the company's portfolio in broad markets such as medical devices, food and beverage, automotive, flat panel displays, semiconductor devices, and material processing and conveyance. He is part of a team that has several patents in the areas of design, control and calibration methods of switch mode power supplies and high frequency magnetics, analog and digital circuit design as applied to the fields of electrohydrodynamic (EHD), and electrostatic neutralizing and charging systems.





# Advancing Curing/Drying Trends:

*A Pathway to Sustainable Bio-based Coating Solutions*

By **Albert John Tietz**, Co-founder, Earthodic



In today's dynamic industrial landscape, the pursuit of sustainable and eco-friendly solutions is a vital consideration for companies across various sectors as they attempt to reach both internal ESG (Environmental, Social and Governance) goals and geo-specific legislative pressure.

As the focus on reducing environmental impact and decarbonisation intensifies — particularly with focus on fossil-based plastics — the coatings industry is also witnessing significant advancements in curing/drying trends. These trends not only address traditional challenges of efficiency and productivity but also pave the way for the adoption of bio-based coatings processes.

Let's explore the intersection of curing/drying trends and bio-based coatings, shedding light on their potential to shape a more sustainable future.

## Evolving Landscape of Curing/Drying Trends

Curing and drying play crucial roles in the coating industry, affecting product quality, durability and overall performance.

Historically, conventional curing/drying techniques relied heavily on high-energy consumption and the use of volatile organic compounds (VOCs), contributing to environmental concerns.

However, recent years have witnessed a shift toward more sustainable practices that improve both operational efficiency and environmental impact<sup>1</sup>.

## Energy-Efficient Curing/Drying Techniques

Innovative curing/drying technologies, such as infrared and ultraviolet (UV) radiation<sup>2</sup>, have gained traction due to their energy efficiency, reduced carbon footprint and ability to help power net zero climate goals<sup>3</sup>. For instance, the emergence of LED lamps has provided an opportunity to move away from more energy intensive mercury arc lamps<sup>4</sup>. These techniques significantly accelerate the curing/drying process, enhancing productivity while minimizing energy consumption and greenhouse gas emissions. Furthermore, they enable precise control over curing parameters, resulting in improved coating performance and reduced waste.

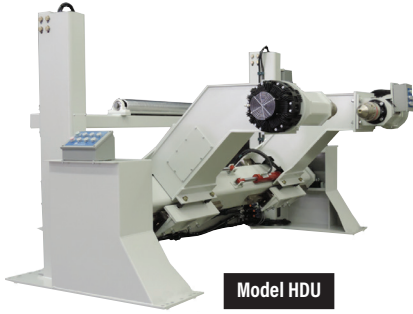
## Waterborne Coatings

Waterborne coatings are emerging as sustainable alternatives to traditional solvent-based systems. Waterborne coatings, which use water as the primary solvent, significantly reduce VOC emissions and offer enhanced safety for workers and the environment<sup>5</sup>. Waterborne technologies promote resource conservation, while delivering excellent finish quality and durability.

## Bio-Based Coatings: Pioneering Sustainability

In conjunction with these curing/drying trends, the coatings industry is witnessing a remarkable surge in the development and adoption of bio-based coatings. These coatings leverage sustainable, renewable resources such as agriculture waste, cellulose, protein, geopolymers, plant-based oils, natural resins and biopolymers, offering a viable alternative to petroleum-derived raw materials<sup>6</sup>. Bio-based coatings not only reduce dependence on fossil fuels but also contribute to lower carbon emissions and environmental impact throughout their life cycle.

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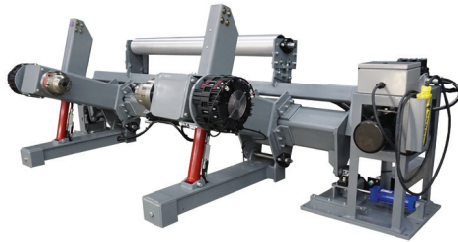
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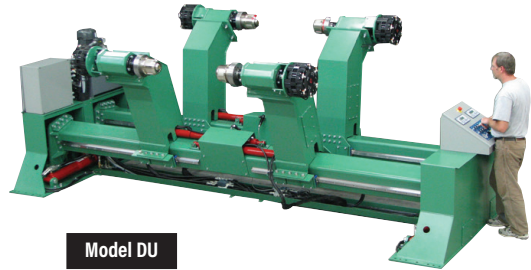
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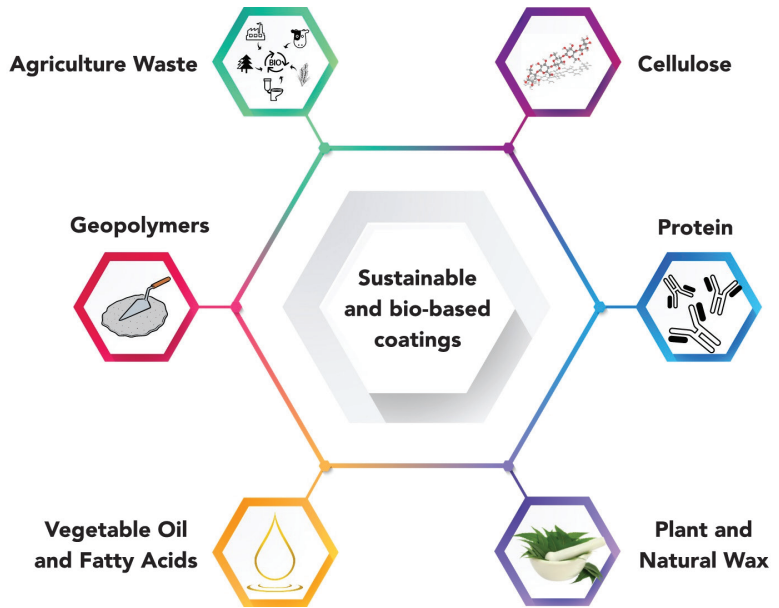
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**Benefits of Bio-Based Coatings**

Bio-based coatings can exhibit comparable or superior performance characteristics to their conventional counterparts, ensuring long-term protection and aesthetic appeal. These coatings are inherently low in VOCs, minimizing emissions during the application and curing processes. Furthermore, their renewable nature and biodegradability make them more environmentally friendly, aligning with the principles of a circular economy. Coating materials of biobased nature can help support UN Sustainability Goals<sup>4</sup>.

The coatings industry is undergoing a transformative shift toward sustainability through

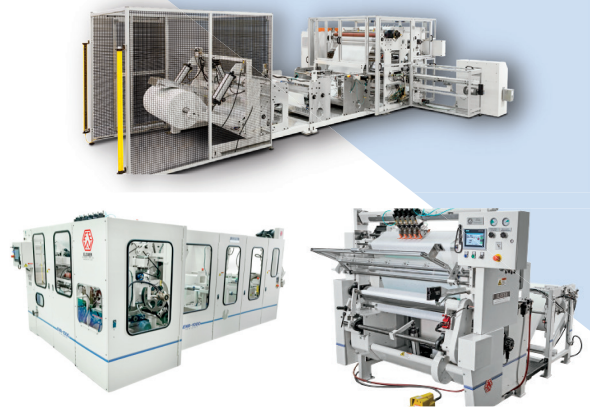


Advanced curing/drying trends with biobased coatings can contribute to the development of sustainable coating processes.

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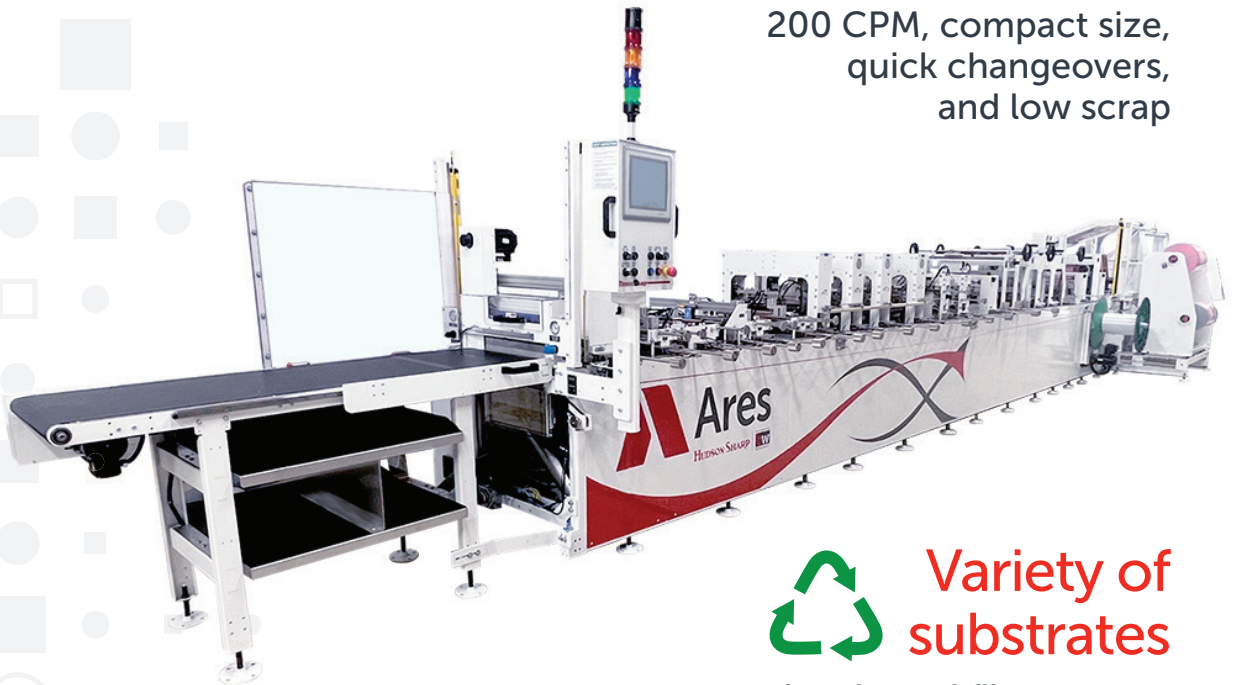


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UV curing technology offers energy-efficient and rapid drying capabilities.

advancements in curing/drying trends and the adoption of bio-based coatings. The integration of energy-efficient curing/drying techniques, such as infrared and UV radiation, has not only improved operational efficiency but also reduced energy consumption and greenhouse gas emissions.

Waterborne coatings offer sustainable alternatives to solvent-based systems, minimizing VOC emissions and promoting resource conservation. Furthermore, the rise of bio-based coatings, derived from renewable

resources, addresses the need for environmentally friendly solutions, reducing dependence on fossil fuels and lowering carbon emissions throughout the product life cycle.

The benefits of bio-based coatings, including comparable or superior performance characteristics, low VOC emissions and their alignment with circular economy principles, make them an ideal choice for sustainable coating solutions. ■

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## ABOUT THE AUTHOR

Albert John Tietz, a dedicated researcher in sustainable coatings, co-founded Earthodic ([www.earthodic.com](http://www.earthodic.com)) with a vision to transform the industry through environmentally conscious solutions. With extensive expertise in bio-based coatings processes, Tietz has spearheaded numerous research initiatives and collaborated with industry leaders to promote the adoption of sustainable practices.

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# How Brands Can Appeal to Generation Z with Sustainable Packaging Solutions

By Sarah Stieby, Fresh-Lock® Marketing Manager

Compelled by legislators and consumers alike, sustainability is a central thought for the packaging industry and beyond. With a new generation of eco-conscious consumers entering the arena, brands and packagers are facing an ever-greater sense of urgency to find and develop sustainable packaging solutions.

Generation Z is likely one of the most influential generations thus far, given their unparalleled access to technology. Through ongoing use of cell phones, computers and social media, Gen Z is hyper connected and can more easily access information on global news — including the current data surrounding climate change and pollution.

Before the pandemic, Generation Z was estimated to have a buying power of nearly \$143 billion.<sup>1</sup> Now, as more of this generation enters the workforce, that

number should be increasing. With this level of financial influence, brands must take note of these consumers' needs and wants. As Gen Z consumers continue to have conversations on topics of waste, global warming and single-use plastics, brands and packagers are working to identify ways to align business practices with the expectations of these sustainability-minded audiences.

## Reclosable Flexible Packaging

With this continued environmental focus, packaging partners are developing solutions targeted at supporting circularity. Reclosable flexible packaging has consistently been a solution helping brands enhance their sustainability initiatives, especially as it relates to waste.

The Boston Consulting Group<sup>2</sup> currently estimates that

annual food loss and waste will hit 2.1 billion tons by 2030. After purchase, it's vital for packaging to help conserve that product until the final serving is consumed. If the product spoils before it can be fully used, it's not only a waste of the consumer's time and money, but also a waste of the time, energy, resources and labor behind the entire supply chain for that product.

To help preserve food post purchase and combat waste, the proper closure for a brand's product can help extend the shelf life after the package is initially opened and reclosed. A quality closure is ideal because it can go a long way in providing a strong barrier against moisture and oxygen when reclosed properly, helping slow microbiological growth.

Reclosable flexible packaging not only helps in cutting down on waste, but also offers additional sustainability benefits throughout



the package's lifecycle. Compared to rigid packaging alternatives, reclosable flexible packaging is often lighter in weight and takes up less space. This is particularly ideal for transporting goods as it can help reduce a brand's overall carbon footprint — something of which consumers are becoming increasingly aware.

### Enhance Reclosable Flexible Packaging Using Recyclable or Compostable Materials

With flexible packaging, reclosability helps ensure products can be stored for multiple servings, helping support the goal of reducing food spoilage. While this is a great feat on its own, brands can take their sustainability initiatives one step further by opting for reclosable packaging composed of fully recyclable or compostable materials.

Recyclable packaging is an ever-popular choice because it aims to reduce the amount of waste in landfills by reusing materials. Many countries have also introduced legislation to reduce the use of single-use plastics and promote the use of recyclable options.

Compostability, on the other hand, is still growing. Primarily made from plants such as sugar cane, stover, vegetable oil, straw, dent corn and hemp, these organic materials can break down under certain conditions and leave behind nutrients that can be returned to the soil. While compostable products are still new, the long-term benefits they can have really put the opportunity into perspective.

As the technology behind recyclable and compostable packaging formats advances, CPG brands can match quality closures with recyclable and compostable

films. With a fully recyclable or compostable pouch, brands can still provide the same convenience features of conventional reclosable flexible packaging, but with the added benefit that environmentally conscious consumers will appreciate.

### Choosing the Right Sustainable Path

While there are many options available for brands looking to adopt a sustainable approach to packaging, it's crucial that brands invest in the solution that best suits their product and consumer audiences.

While recyclability continues to be embraced by many brands, for a flexible package to be 100 percent recyclable, every component of the pouch must meet individual requirements. If a component of the pouch isn't compatible, consumers may need to remove labels or other parts of the package before recycling it.

To do so accurately, consumers also need to be able to easily identify which part of the package can be recycled and which cannot. If that information is not readily available, consumers may be less likely to follow through with recycling, or they may end up wishful recycling and contaminate the entire recycling stream by not realizing they need to separate the materials. Similarly, recycling may not be practical for certain applications because it would require consumers to clean the material of any oils or residues. For food and organic products that are soil safe, compostability might be the better choice.

Brands looking to improve their sustainability efforts by providing either recyclable or compostable packaging first need to

identify which opportunity is right for their product and consumer audience. To manufacture a reclosable flexible pouch, many materials and components need to be considered. By collaborating with the right partners, brands can get further insight into their options and determine the best course of action.

### Cater to Consumer Demand

The call for sustainable solutions is growing, so it's up to CPG brands to determine how they want to get ahead. For brands looking to achieve increased consumer loyalty and improved brand perception, investing in sustainable packaging solutions can only help. Today's consumers are becoming increasingly conscious of the environment and are more likely to choose products that are packaged in an environmentally responsible way. Investing in sustainable packaging can be a key differentiator, helping to set brands apart from competitors who aren't placing as much importance on such initiatives. ■

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- 2 <https://www.bcg.com/featured-insights/closing-the-gap/food-waste>

#### ABOUT THE AUTHOR

Sarah Stieby is the Fresh-Lock® marketing manager. The Fresh-Lock® brand is a market leader in press-to-close zipper and track and slider reclosable solutions for flexible packaging. Fresh-Lock® products are designed and produced by Presto Products, a business of Reynolds Consumer Products.



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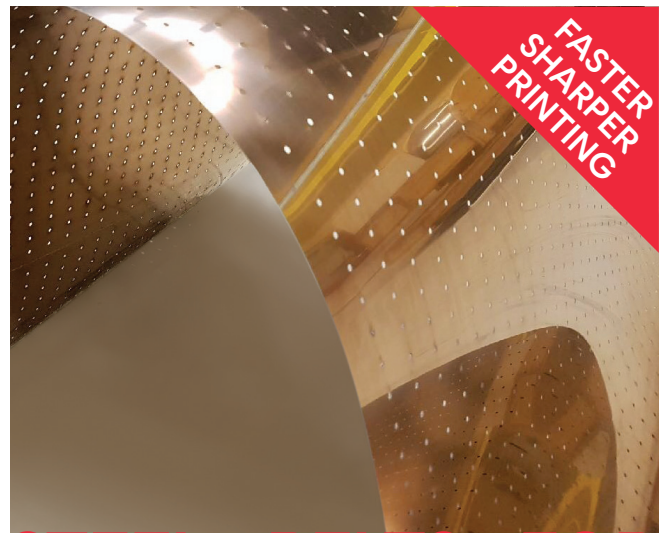
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#### Cellophane, Coated

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#### Polybutylene

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#### Polycarbonate Film

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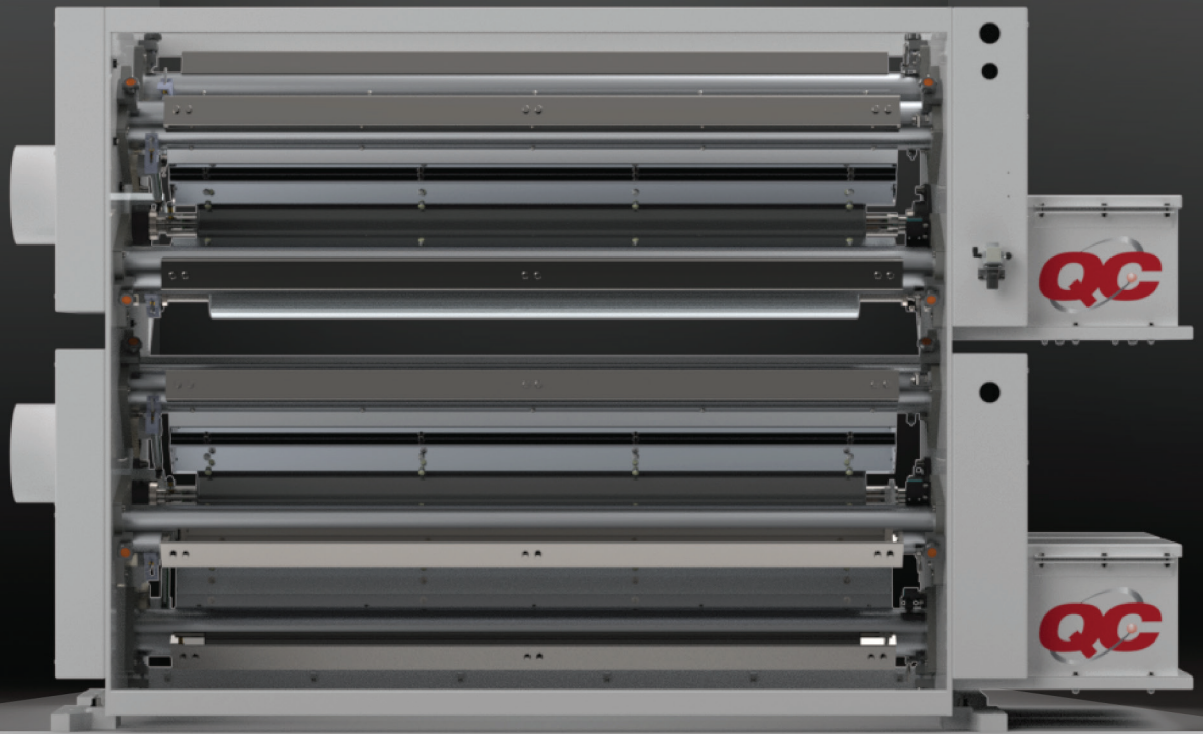
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QC is dedicated to providing top-quality corona treatment and adhesion solutions for our customers. Our commitment to innovation and customer satisfaction has earned us a reputation as a trusted provider of corona treatment solutions, and we are committed to continuing to set the standard in the industry.

As we celebrate 35 years in business, we are truly grateful for the support and loyalty of our customers, partners, and employees. We are proud of the strong foundation we have built and the lasting relationships we have formed over the years. Thank you for helping us reach this milestone and for being a part of our journey. Contact [sales@qcelectronics.com](mailto:sales@qcelectronics.com) to get in touch with a representative.



## **Polyvinylidene Chloride Film**

D&K Coating Technologies  
Griff Paper & Film  
**NOW Plastics, Inc.**  
Sanyo Corporation of America  
Supply55, Inc / NEPATA Converting  
Equipment  
**ZOi Films**

## **Structured Films: Coated or Laminated**

Coated Film Consultants LLC  
D&K Coating Technologies  
Griff Paper & Film  
Mirror Polishing & Plating Co Inc.  
**NOW Plastics, Inc.**  
Supply55, Inc / NEPATA Converting  
Equipment  
Technical Coating Intl  
**ZOi Films**

## **Water-Soluble Film**

Griff Paper & Film  
Sanyo Corporation of America  
Supply55, Inc / NEPATA Converting  
Equipment

## **BASIC MATERIALS - FOILS**

Connecticut Metal Industries, Inc.  
Griff Paper & Film  
MCL Die Cutting  
**NOW Plastics, Inc.**  
Pro Tapes & Specialties, Inc.  
Sanyo Corporation of America  
Technical Coating Intl  
**ZOi Films**

## **Aluminum Foil: Laminates, Supported, Unsupported**

Connecticut Metal Industries, Inc.  
Griff Paper & Film  
MCL Die Cutting  
Mirror Polishing & Plating Co Inc.  
**NOW Plastics, Inc.**  
Pro Tapes & Specialties, Inc.  
Sanyo Corporation of America  
Supply55, Inc / NEPATA Converting  
Equipment  
Technical Coating Intl  
**ZOi Films**

## **Other Metallic Foils**

Connecticut Metal Industries, Inc.  
Griff Paper & Film  
**NOW Plastics, Inc.**  
Sanyo Corporation of America  
Supply55, Inc / NEPATA Converting  
Equipment  
**ZOi Films**

## **Stamping Foils**

Griff Paper & Film  
Sanyo Corporation of America  
Supply55, Inc / NEPATA Converting  
Equipment  
**ZOi Films**

## **BASIC MATERIALS - PAPER & BOARD**

Argent International  
Griff Paper & Film  
MCL Die Cutting  
**NOW Plastics, Inc.**  
Technical Coating Intl  
**ZOi Films**

## **Black Paper**

Mirror Polishing & Plating Co Inc.  
Supply55, Inc / NEPATA Converting  
Equipment

## **Board: Coated**

Griff Paper & Film  
Mirror Polishing & Plating Co Inc.  
Supply55, Inc / NEPATA Converting  
Equipment  
Technical Coating Intl

## **Board: Folding Carton**

Griff Paper & Film  
Mirror Polishing & Plating Co Inc.  
**ZOi Films**

## **Board: Linerboard (Colored or Preprinted)**

Griff Paper & Film  
Mirror Polishing & Plating Co Inc.

## **Cup & Container Stock**

Griff Paper & Film  
Mirror Polishing & Plating Co Inc.

## **Customized Papers: Made to Specifications**

Mirror Polishing & Plating Co Inc.

## **Electrostatic Papers**

MCL Die Cutting

## **Holographic Papers**

MCL Die Cutting  
Mirror Polishing & Plating Co Inc.  
Supply55, Inc / NEPATA Converting  
Equipment

## **Insulating Paper & Board**

MCL Die Cutting  
Mirror Polishing & Plating Co Inc.

## **Kraft**

Griff Paper & Film  
Mirror Polishing & Plating Co Inc.  
Supply55, Inc / NEPATA Converting  
Equipment

## **Metallized Papers**

Griff Paper & Film  
Supply55, Inc / NEPATA Converting  
Equipment

## **Nonwoven Materials**

Argent International  
Mirror Polishing & Plating Co Inc.  
**NOW Plastics, Inc.**  
Supply55, Inc / NEPATA Converting  
Equipment  
Technical Coating Intl  
**ZOi Films**

## **Paper**

Griff Paper & Film  
Mirror Polishing & Plating Co Inc.  
Supply55, Inc / NEPATA Converting  
Equipment  
Technical Coating Intl  
**ZOi Films**

## **Tissue**

Griff Paper & Film  
Mirror Polishing & Plating Co Inc.  
Supply55, Inc / NEPATA Converting  
Equipment

## **BASIC MATERIALS - PRINTING & CONVERTING SUBSTRATES**

Sanyo Corporation of America

## **SHEET: APET**

Sanyo Corporation of America

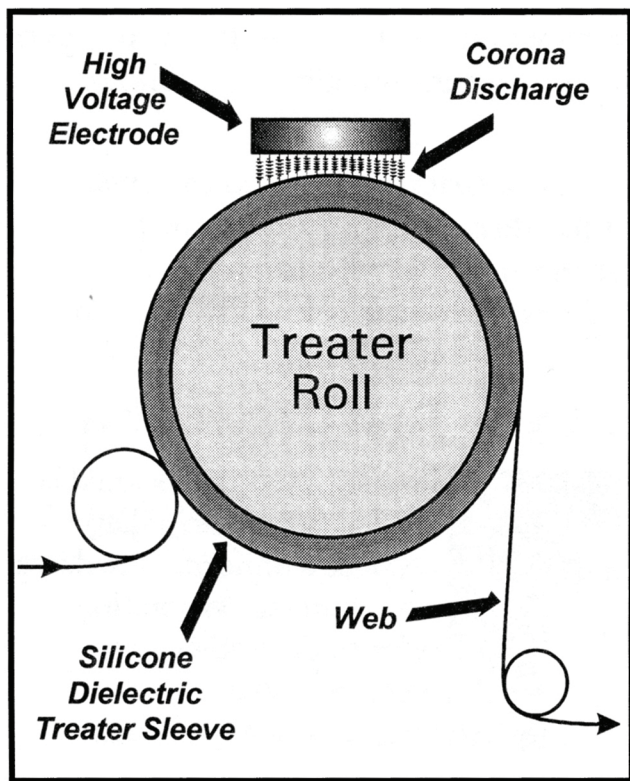
## **SHEET: HIGH DENSITY POLYETHYLENE**

Sanyo Corporation of America

## **EQUIPMENT, ACCESSORIES & MACHINERY**

3DT LLC - Representative of SOFTAL in North America  
**Advanced Greig Laminator Inc. (AGL)**  
Alliance Machine and Engraving LLC  
Allison Systems Corp  
**American Roller Co.**  
Apex North America  
**Applied Rigaku Technologies, Inc.**  
ASHE Converting Equipment  
ASI, Division of Thermal Technologies, Inc.  
**Associated Machine Design, Inc**  
AZCO Corp.  
Baldwin Technology Company, Inc. (AMS Spectral UV)  
Blower Application Company, Inc.  
Bobst North America Inc.  
Boschert LLC  
BST North America  
BW Papersystems  
**Cadence, Inc.**  
**Catbridge Machinery**  
CESCO American, LLC  
Chase Machine & Engineering  
CMD Corporation  
Coating Tech Slot Dies, LLC  
Comexi North America Inc  
Corotec Corp  
**CTC - A Quantum Design Product Line**  
Davis-Standard, LLC  
Deacro Industries Ltd  
**Delta ModTech**  
Dienes Corporation  
Diversified Enterprises  
Double E Group  
Dürr Systems, Inc.  
Eaglewood Technologies, LLC  
ELBA SPA  
**Elite Cameron, Inc.**  
Elsner Engineering Works Inc  
Emerson and Renwick Ltd  
Enercon Industries Corp  
**ETI Converting Equipment**  
**Faustel Inc**  
Fazertec Inc.  
**FMS Force Measuring Systems**  
**Frontier - a Delta ModTech Company**  
Global Equipment Intl. LLC  
GOEBEL IMS - a brand of IMS TECHNOLOGIES  
Goldenrod Corp  
Griff Paper & Film  
Heraeus Noblelight America LLC  
Hudson-Sharp  
INTEGRITY ROLLER SERVICES  
IPCO USLLC  
Jemmco, LLC  
Jennerjahn Machine  
Kampf Machinery Corporation  
Karlville  
Kelva-Matik  
**Kingsun Machinery Industrial Co.,Ltd**  
**KTI - A Quantum Design Product Line**  
LAEM IMS - a brand of IMS TECHNOLOGIES  
Lotar Enterprises  
**Mamata Enterprises, Inc.**  
Martin Automatic  
Matik Inc  
**Maxcess Intl**  
MCL Die Cutting  
Mecmesin USA dba PPT Corp.  
**Meech International**  
Miraclon Corporation  
Montalvo  
MTorres Diseños Industriales  
New Era Converting Machinery  
Nordmeccanica NA  
Nordson Measurement & Control (formerly NDC Technologies)  
Novanta  
Novation Inc

# **SILICONE** Treater Sleeves



## **Life inside a corona treater is hell.**

Dielectrics must withstand high frequency, high voltage discharge, plasma-induced ion bombardment, elevated temperature, and concentrated ozone. Even the slightest defect can result in premature failure.

We closely inspect each and every sleeve that goes out the door, and we guarantee our sleeves against immediate blowout on your treater. *That's why we can say, with full assurance...*

*"Our silicone sleeves are equal or superior to those supplied by the world's leading treater manufacturers."*

We've been selling these treater sleeves for over 25 years now — in that long period of time, we have had only one or two sleeves fail on installation. 100% visual inspection is, indeed, very effective!

**We guarantee these are the same high quality treater sleeves sold by OEMs worldwide — all at significant savings!**

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

[www.accudynetest.com](http://www.accudynetest.com)

Diversified Enterprises, 101 Mulberry St., Suite 2N, Claremont, NH 03743

Phone 800-833-4644 or 603-543-0038; fax 603-543-1334; email [rsmith@accudynetest.com](mailto:rsmith@accudynetest.com)

OLBRICH GmbH  
 Parkinson Technologies  
**Pearl Technologies Inc.**  
**Powell Engineering Inc**  
**Precision Roll Solutions**  
 Printco Industries, LLC  
 Pro Tapes & Specialties, Inc.  
 Pyradia Inc.  
 QC Electronics Inc.  
 RD Specialties  
**Roll-2-Roll Technologies LLC**  
**Rollem International**  
 SCHOBER USA INC  
 Sensory Analytics (SpecMetrix Systems)  
**Simco-Ion**  
**Sonic Solutions**  
 SPS Ideal Solutions, Inc.  
 SRC Systems, Ltd.  
**Static Clean International**  
 TAKK Industries  
**Telstar Engineering**  
 Tokuden Inc  
**Totani Corp/Totani America**  
**Unilux**  
 Valley Grinding & Mfg  
 Vetaphone North America  
 Weducon

**Accumulators**  
 AZCO Corp.

**Catbridge Machinery**  
 Chase Machine & Engineering  
**CTC - A Quantum Design Product Line**  
 Davis-Standard, LLC  
 Elsner Engineering Works Inc

## FAUSTEL

**Faustel Inc**  
 New Era Converting Machinery  
 OLBRIKH GmbH  
**Totani Corp/Totani America**

**Actuating Devices**  
**Maxcess Intl**  
**Roll-2-Roll Technologies LLC**

**Air Pollution Control Equipment: Incineration**  
 Dürr Systems, Inc.  
**Kono Kogs, Inc.**

**Air Pollution Control Equipment: Solvent Recovery**  
 Dürr Systems, Inc.  
 Heraeus Noblelight America LLC

**Air Tables**  
 OLBRIKH GmbH

**Applicators**  
 Davis-Standard, LLC  
 Griff Paper & Film  
 Nordmeccanica NA

**Bag Machinery: Paper or Plastics**  
 CMD Corporation  
**Delta ModTech**  
 ELBA SPA  
 Global Equipment Intl. LLC  
 Griff Paper & Film  
 Hudson-Sharp  
 Karlville



**Kingsun Machinery Industrial Co.,Ltd**  
**Mamata Enterprises, Inc.**  
**Pearl Technologies Inc.**  
**Totani Corp/Totani America**

**Balers**  
 Global Equipment Intl. LLC  
 OLBRIKH GmbH

**Banding, Strapping Machines**  
 CMD Corporation  
 Elsner Engineering Works Inc

**Bar Code Reader/Verification System**  
 BST North America

**Bars (including Spreader & Turn)**  
 OLBRIKH GmbH  
**Pearl Technologies Inc.**  
**Telstar Engineering**

**Belting & Guides (including Corrugator, Folder/Gluer & Vacuum)**  
 IPCO USLLC  
 Jemmco, LLC

**Blades: Special Purposes**  
 American Cutting Edge, A Division of CB Manufacturing  
 AZCO Corp.  
**Cadence, Inc.**  
**Maxcess Intl**  
**TGW International**

**Brakes (including Air, Electrical, Electromagnetic & Mechanical)**  
 Boschert LLC  
 Double E Group  
 Dover Flexo Electronics  
**Maxcess Intl**  
 Montalvo

**Bridge Mandrel/Sleeve Carrier**



**Precision Roll Solutions**

**Burners & Combustion Equipment**  
 Dürr Systems, Inc.

**Carton/Case Packing Equipment**  
**Autotec Solutions**  
 BW Papersystems  
 Elsner Engineering Works Inc

**Can/Core Winding Machinery (Convolute & Spiral Wound)**  
 Chase Machine & Engineering  
**Kingsun Machinery Industrial Co., Ltd**

**Chucks: Core & Safety**  
**Autotec Solutions**  
 Boschert LLC  
 Double E Group  
**Elite Cameron, Inc.**  
 Goldenrod Corp  
**Maxcess Intl**  
 Montalvo  
 New Era Converting Machinery  
**Powell Engineering Inc**

**Cleaning Equipment: Sheet & Web**  
 3DT LLC - Representative of SOFTAL in North America  
 Baldwin Technology Company, Inc. (AMS Spectral UV)  
 Chase Machine & Engineering  
 Eaglewood Technologies, LLC  
 Jemmco, LLC  
 Kelva-Matik  
**Meech International**  
**Simco-Ion**



**Sonic Solutions**  
**Static Clean International**  
 Weducon



**HIGHEST & QUICKEST ROI**

Ultrasonic cleaning systems for:

- Anilox Rolls
- Anilox Sleeves
- Cylinders
- HP Indigo 20000/30000
- HP PageWide T240

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Customer\_Service@SonicSolutionsUSA.com  
 www.SonicSolutionsUSA.com

**Clutches**

Boschert LLC  
**Maxcess Intl**  
 Montalvo

**Coating Equipment**

CESCO American, LLC  
 Chase Machine & Engineering



**ETI Converting Equipment**  
**FMS Force Measuring Systems**  
**Frontier - a Delta ModTech Company**  
 Global Equipment Intl. LLC  
**Kingsun Machinery Industrial Co.,Ltd**  
 PNT (People and Technology)  
 Printco Industries, LLC  
 Sensory Analytics (SpecMetrix Systems)

**Coating Machines: Extrusion Coating**

Chase Machine & Engineering  
 Davis-Standard, LLC  
**Elite Cameron, Inc.**  
 Global Equipment Intl. LLC  
 Mirror Polishing & Plating Co Inc.

**Coating Machines: Fluid Coating**

Bobst North America Inc.  
**Catbridge Machinery**  
 CESCO American, LLC  
 Chase Machine & Engineering



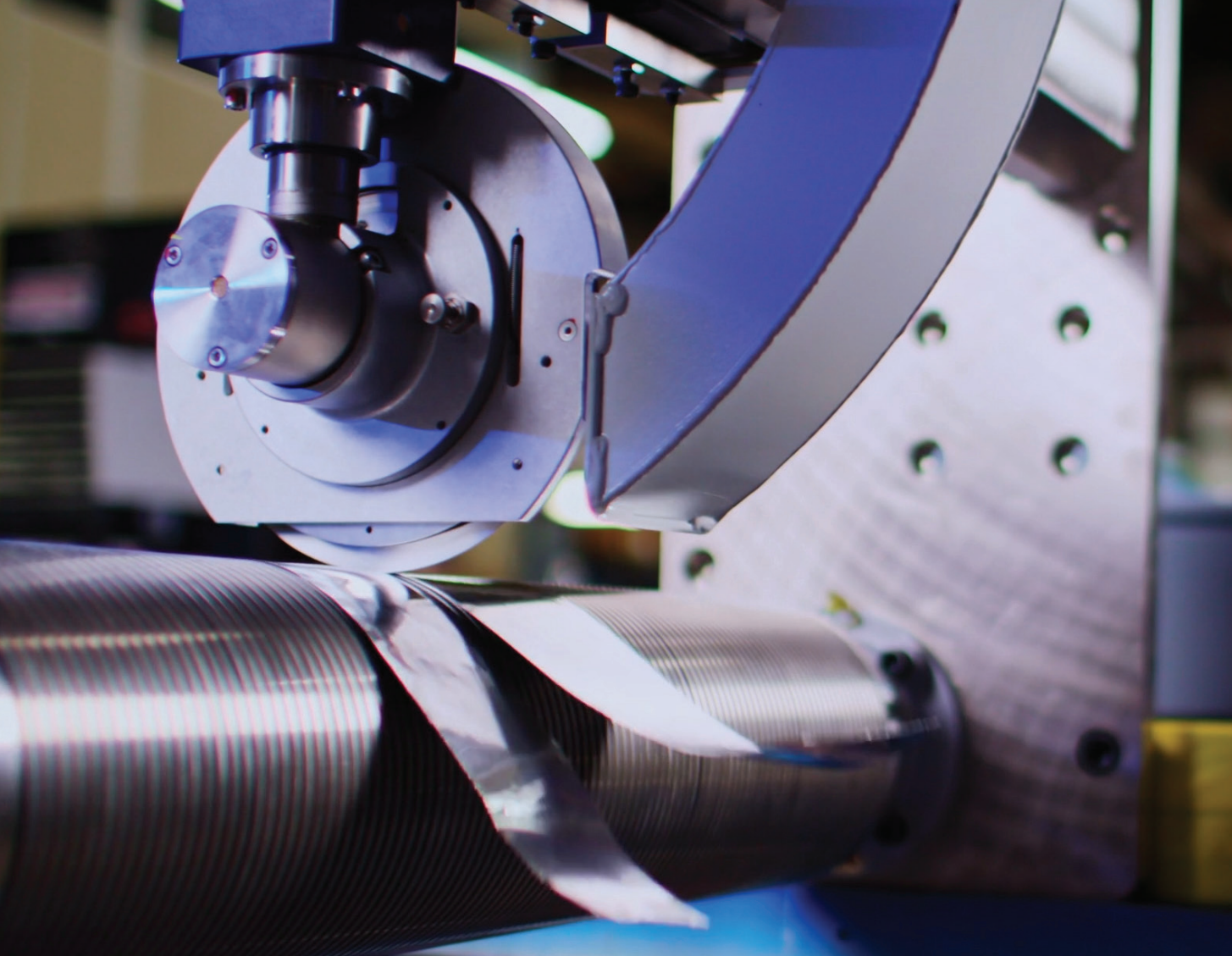
**Elite Cameron, Inc.**  
**ETI Converting Equipment**  
**Faustel Inc**  
**Frontier - a Delta ModTech Company**  
 Global Equipment Intl. LLC  
 Griff Paper & Film  
**Kingsun Machinery Industrial Co.,Ltd**  
 Matik Inc  
 New Era Converting Machinery  
 Nordmeccanica NA  
 OLBRIKH GmbH

**Coating Machines: Vacuum Roll**

Chase Machine & Engineering  
 Davis-Standard, LLC  
 Emerson and Renwick Ltd

**Coating Stations: Open Systems - Blade/Knife & Comma**

Bobst North America Inc.  
 CESCO American, LLC



# FIND YOUR EDGE.

**YOUR CREATION. OUR KNOW HOW.** Find your edge by minimizing downtime with Dienes shear slitting systems. Our intelligent control systems provide feedback, from alerting operators of a knife requiring replacement to reporting off-site diagnostic feeds. Dienes provides the expertise without the need for in-house control engineers.

Dienes knife setting systems are the fastest and most reliable in the market today. Longer blade life? No problem—DIENES has you covered.

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to watch us in  
action

**DIENES**

Chase Machine & Engineering  
 Davis-Standard, LLC  
 Emerson and Renwick Ltd  
**ETI Converting Equipment**  
**Faustel Inc**  
**Frontier - a Delta ModTech Company**  
 Griff Paper & Film  
 Matik Inc  
 New Era Converting Machinery  
 Nordmeccanica NA  
 OLBRIch GmbH  
 Pyradia Inc.  
 Valley Grinding & Mfg

**Coating Stations: Open Systems - Dip**  
 CESCO American, LLC  
 Chase Machine & Engineering  
**Faustel Inc**  
 New Era Converting Machinery  
 OLBRIch GmbH

**Coating Stations: Open Systems - Flexographic**  
 CESCO American, LLC  
 Davis-Standard, LLC  
**Elite Cameron, Inc.**  
 Emerson and Renwick Ltd  
**ETI Converting Equipment**  
 Global Equipment Intl. LLC  
 Matik Inc  
 Mirror Polishing & Plating Co Inc.  
 OLBRIch GmbH  
 Printco Industries, LLC

**Coating Stations: Open Systems - Gravure**  
 Bobst North America Inc.  
**Catbridge Machinery**  
 CESCO American, LLC  
 Chase Machine & Engineering  
 Davis-Standard, LLC  
 Emerson and Renwick Ltd  
**ETI Converting Equipment**  
**Faustel Inc**  
**Frontier - a Delta ModTech Company**  
 Global Equipment Intl. LLC  
 Griff Paper & Film  
 Matik Inc  
 Mirror Polishing & Plating Co Inc.  
 Nordmeccanica NA  
 OLBRIch GmbH  
 Printco Industries, LLC  
 Pyradia Inc.

**Coating Stations: Open Systems - Mayer Rod**  
 Bobst North America Inc.  
 Buschman  
**Catbridge Machinery**  
 CESCO American, LLC  
 Chase Machine & Engineering  
 Davis-Standard, LLC  
 Emerson and Renwick Ltd  
**ETI Converting Equipment**  
**Faustel Inc**  
**Frontier - a Delta ModTech Company**  
 Griff Paper & Film  
 Matik Inc  
 New Era Converting Machinery  
 Nordmeccanica NA  
 OLBRIch GmbH  
 Printco Industries, LLC  
 RD Specialties

**Coating Stations: Open Systems - Screen**  
 Emerson and Renwick Ltd  
**Frontier - a Delta ModTech Company**  
 Matik Inc  
 New Era Converting Machinery  
 Nordmeccanica NA  
 OLBRIch GmbH

**Coating Stations: Premetered - Slot Dies**  
 Bobst North America Inc.  
**Catbridge Machinery**  
 Chase Machine & Engineering

Coating Tech Slot Dies, LLC  
 Davis-Standard, LLC  
**Elite Cameron, Inc.**  
**ETI Converting Equipment**

### FAUSTEL

**Faustel Inc**  
**Frontier - a Delta ModTech Company**  
 Griff Paper & Film  
 Matik Inc  
 New Era Converting Machinery  
 Nordmeccanica NA  
 OLBRIch GmbH

**Coating Stations: Premetered - Spray**  
**Catbridge Machinery**  
 CESCO American, LLC

**Coextrusion Dies: Films**  
 Bobst North America Inc.  
 Davis-Standard, LLC  
 Mirror Polishing & Plating Co Inc.

**Coextrusion Systems**  
 Chase Machine & Engineering  
 Davis-Standard, LLC  
 Mirror Polishing & Plating Co Inc.

**Collators**  
 Elsner Engineering Works Inc  
 SCHOBER USA INC

**Controls (including Color & Color Register)**  
 Baldwin Technology Company, Inc. (AMS Spectral UV)  
 BST North America

**Controls (including Curl & Moisture)**  
 CESCO American, LLC  
 Davis-Standard, LLC  
 Nordson Measurement & Control (formerly NDC Technologies)  
 OLBRIch GmbH

**Controls (including Nuclear Instrument & Thickness/Gauging)**



**Applied Rigaku Technologies, Inc.**  
 Davis-Standard, LLC  
 Nordson Measurement & Control (formerly NDC Technologies)  
 Sensory Analytics (SpecMetrix Systems)

**Controls (including Speed, Temperature & Timing)**  
 Chase Machine & Engineering  
 Davis-Standard, LLC



**Maxcess Intl**  
 Nordson Measurement & Control (formerly NDC Technologies)

**Controls: Cutoff**  
 BST North America

**Controls: Drives & Motors**  
 Chase Machine & Engineering  
 Davis-Standard, LLC  
 OLBRIch GmbH

**Controls: All Air**



**Meech International**  
 Weducon

## CONTROLS: ELECTRIC & PHOTOELECTRIC

Chase Machine & Engineering

**Controls: Position Sensor**  
**Maxcess Intl**  
 Nordson Measurement & Control (formerly NDC Technologies)



**Roll-2-Roll Technologies LLC**

**Controls: Tension**  
 Boschert LLC  
 Chase Machine & Engineering  
**CTC - A Quantum Design Product Line**  
 Davis-Standard, LLC  
 Double E Group  
 Dover Flexo Electronics  
 Elsner Engineering Works Inc



**FMS Force Measuring Systems**  
**Maxcess Intl**  
 Montalvo  
 OLBRIch GmbH

**Controls: Web (Machine Direction & Transverse)**  
 BST North America  
 Chase Machine & Engineering  
 Davis-Standard, LLC  
**Maxcess Intl**  
 OLBRIch GmbH  
**Telstar Engineering**

**Controls: Web Guiding**  
 BST North America  
 Chase Machine & Engineering  
 Davis-Standard, LLC  
 Double E Group  
**Maxcess Intl**  
 Montalvo  
**Roll-2-Roll Technologies LLC**  
**Telstar Engineering**

**Conveyor Systems**



**Autotec Solutions**  
 AZCO Corp.  
 IPCO USLLC  
 Pillar Technologies  
**Telstar Engineering**

**Core Loading Machinery (Automatic)**  
**Autotec Solutions**  
**Catbridge Machinery**  
 Davis-Standard, LLC  
 Deacro Industries Ltd  
**Elite Cameron, Inc.**  
 Elsner Engineering Works Inc  
 Global Equipment Intl. LLC  
 Jennerjahn Machine  
 OLBRIch GmbH

**Core Machinery**  
 Double E Group  
**Elite Cameron, Inc.**  
 Global Equipment Intl. LLC  
 Parkinson Technologies

**Core Plugs**  
 Double E Group  
**Powell Engineering Inc**

MEET THE  
**PEOPLE**  
BEHIND THE  
**PROCESS**



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The Leading Technical Conference For:  
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Printing · Finishing · Slitting · Material Innovation · And more...



## **Core Shafts & Straighteners**

Double E Group  
**Elite Cameron, Inc.**  
 Goldenrod Corp  
**Maxcess Intl**

## **Cores: Paper or Plastic**

**Elite Cameron, Inc.**  
 Griff Paper & Film  
 Northcore Industries, Inc  
 Pro Tapes & Specialties, Inc.

## **Corrugator, Major Components (including Double Facers, Preheaters, Single Facers & Steam Systems)**

BW Papersystems  
 Global Equipment Intl. LLC

## **Corrugators**

BW Papersystems  
 Global Equipment Intl. LLC  
**Kingsun Machinery Industrial Co.,Ltd**

## **Counters**

Novation Inc

## **Cup Machines (including Lid & Handle-Applying Machines)**

**Kingsun Machinery Industrial Co.,Ltd**

## **Curing Equipment & Accessories: Infrared**

ASI, Division of Thermal Technologies, Inc.  
 Baldwin Technology Company, Inc. (AMS Spectral UV)  
 Dürr Systems, Inc.  
 Heraeus Noblelight America LLC

## **Curing Equipment & Accessories: Ultraviolet (including Lamps)**

Baldwin Technology Company, Inc. (AMS Spectral UV)  
 Heraeus Noblelight America LLC

## **Cutters: Card (Rotary)**

AZCO Corp.  
 Griff Paper & Film  
**Rollem International**  
 SCHOBER USA INC  
 Valley Grinding & Mfg

## **Cutters: Guillotine**

AZCO Corp.  
 Davis-Standard, LLC  
 Griff Paper & Film  
**Kingsun Machinery Industrial Co., Ltd**  
 Valley Grinding & Mfg

## **Cutters: Label**

AZCO Corp.  
 BW Papersystems  
**Delta ModTech**  
**Kingsun Machinery Industrial Co., Ltd**  
 Novanta  
 SCHOBER USA INC  
**Telstar Engineering**  
 Valley Grinding & Mfg

## **Cutters: Laser**

Novanta  
 SCHOBER USA INC

## **Cutters: Platen**

**Delta ModTech**  
 MCL Die Cutting

## **Cutters: Rotary**

AZCO Corp.  
 Blower Application Company, Inc.  
 BW Papersystems  
**Delta ModTech**  
 Fazertec Inc.  
 Griff Paper & Film  
 MCL Die Cutting  
**Rollem International**

SCHOBER USA INC  
 Supply55, Inc / NEPATA Converting Equipment  
 Valley Grinding & Mfg

## **Cutters: Tube & Core**

ASHE Converting Equipment  
 AZCO Corp.  
 Double E Group  
**Elite Cameron, Inc.**  
**Kingsun Machinery Industrial Co.,Ltd**  
 Northcore Industries, Inc  
**TGW International**  
 Valley Grinding & Mfg

## **Cylinders: Flexographic**

Printco Industries, LLC

## **Cylinders: Reconditioning**

Alliance Machine and Engraving LLC

## **Cylinders: Rotogravure**

**Kingsun Machinery Industrial Co.,Ltd**

## **Die-Cutting Equipment: Jackets/Blankets/Covers**

MCL Die Cutting

## **Die-Cutting Equipment: Platen/Flat Bed**

Bobst North America Inc.  
 BW Papersystems  
 CESCO American, LLC  
 Chase Machine & Engineering



## **Delta ModTech**

Griff Paper & Film  
**Kingsun Machinery Industrial Co.,Ltd**  
 MCL Die Cutting  
**Totani Corp/Totani America**

## **Die-Cutting Equipment: Rotary**

Bobst North America Inc.  
 BW Papersystems  
 CESCO American, LLC  
 Chase Machine & Engineering  
 CMD Corporation  
**CTC - A Quantum Design Product Line**  
**Delta ModTech**  
**Elite Cameron, Inc.**  
**ETI Converting Equipment**  
 Fazertec Inc.  
 Global Equipment Intl. LLC  
 Griff Paper & Film  
**Kingsun Machinery Industrial Co.,Ltd**  
**Maxcess Intl**  
 MCL Die Cutting  
**Rollem International**  
 SCHOBER USA INC  
**Telstar Engineering**

## **Die-Making Equipment & Supplies**

Pro Tapes & Specialties, Inc.

## **Dies: Cutting & Embossing**

Davis-Standard, LLC  
 Global Equipment Intl. LLC  
 Griff Paper & Film  
 Pro Tapes & Specialties, Inc.  
 SCHOBER USA INC

## **Doctor Blades & Enclosures**

Allison Systems Corp  
 Davis-Standard, LLC  
 OLBRICH GmbH  
 Printco Industries, LLC  
**Telstar Engineering**  
 Valley Grinding & Mfg

## **Drawstring Equipment: for Bags & Pouches**

Hudson-Sharp  
**Pearl Technologies Inc.**

## **Drilling Machinery: Paper**

Griff Paper & Film  
 Novanta  
**Rollem International**

## **Drying Equipment: Convection**

ASI, Division of Thermal Technologies, Inc.  
 Chase Machine & Engineering  
 Dürr Systems, Inc.  
 OLBRICH GmbH  
 Pyradia Inc.

## **Drying Equipment: Tunnels & Ovens**

ASI, Division of Thermal Technologies, Inc.  
 Bobst North America Inc.  
 CESCO American, LLC  
 Chase Machine & Engineering  
 Dürr Systems, Inc.  
**ETI Converting Equipment**  
**Frontier - a Delta ModTech Company**  
 Heraeus Noblelight America LLC  
 Matik Inc  
 OLBRICH GmbH  
 Printco Industries, LLC  
 Pyradia Inc.

## **Dust-Removal Equipment**

Dürr Systems, Inc.  
**Meech International**  
**Simco-Ion**  
**Static Clean International**  
 Weducon

## **EMBOSSING MACHINERY**

Chase Machine & Engineering

## **Embossing Machinery (including Holograms)**

Alliance Machine and Engraving LLC  
 Chase Machine & Engineering  
 CMD Corporation  
 Davis-Standard, LLC  
**Delta ModTech**  
 Elsner Engineering Works Inc  
 IMS TECHNOLOGIES  
**Kingsun Machinery Industrial Co.,Ltd**  
 LAEM IMS - a brand of IMS TECHNOLOGIES  
 New Era Converting Machinery  
 OLBRICH GmbH  
**Precision Roll Solutions**  
**Rollem International**  
 SCHOBER USA INC

## **End Plates**

SPS Ideal Solutions, Inc.

## **Envelope Machines**

**Totani Corp/Totani America**

## **Extruder Dies & Auxiliary Equipment**

Davis-Standard, LLC  
 Global Equipment Intl. LLC

## **Extruder/Laminators**

Bobst North America Inc.  
 Chase Machine & Engineering  
 Davis-Standard, LLC  
 Global Equipment Intl. LLC  
 MCL Die Cutting  
 Mirror Polishing & Plating Co Inc.  
 Nordmeccanica NA

## **Extruding Machines: Blown Film**

Chase Machine & Engineering  
 Davis-Standard, LLC  
 Global Equipment Intl. LLC  
 Mirror Polishing & Plating Co Inc.

## **Extruding Machines: Cast Film**

Chase Machine & Engineering  
 Davis-Standard, LLC  
 Global Equipment Intl. LLC  
 Mirror Polishing & Plating Co Inc.



### **Extruding Machines: Thermoforming**

Davis-Standard, LLC

### **Extrusion Coaters**

Bobst North America Inc.  
Chase Machine & Engineering  
Davis-Standard, LLC  
**Elite Cameron, Inc.**  
Global Equipment Intl. LLC  
Mirror Polishing & Plating Co Inc.

### **Extrusion Coating: Extruders**

Chase Machine & Engineering  
Davis-Standard, LLC  
Mirror Polishing & Plating Co Inc.

### **Extrusion Coating: Slot Dies**

Chase Machine & Engineering  
Davis-Standard, LLC  
**Elite Cameron, Inc.**

### **Extrusion Dies**

Davis-Standard, LLC  
ELBA SPA  
**Elite Cameron, Inc.**

### **Fanfolding Equipment**

AZCO Corp.  
Chase Machine & Engineering  
CMD Corporation  
SCHOBER USA INC

### **Feeders & Components (including Lead Edge Feeders)**

AZCO Corp.  
**Rollem International**

### **Festooning Machines**

Chase Machine & Engineering  
**CTC - A Quantum Design Product Line**  
**Delta ModTech**  
MTorres Diseños Industriales  
**Telstar Engineering**

### **Film Cutting & Folding Machines**

AZCO Corp.  
**Elite Cameron, Inc.**  
Hudson-Sharp  
IMS TECHNOLOGIES  
LAEM IMS - a brand of IMS TECHNOLOGIES  
Novanta  
SCHOBER USA INC  
**Telstar Engineering**  
**Totani Corp/Totani America**

### **Film Orienters**

Davis-Standard, LLC

### **Film Reclaim Systems**

Chase Machine & Engineering  
Jemmco, LLC

### **Film Stretchers**

Davis-Standard, LLC

### **Finishing Equipment**

**Autotec Solutions**  
Davis-Standard, LLC  
**Delta ModTech**  
**Elite Cameron, Inc.**  
**Kingsun Machinery Industrial Co.,Ltd**  
OLBRICH GmbH  
**Roll-2-Roll Technologies LLC**



**Rollem International**  
SCHOBER USA INC  
**Simco-Ion**  
**Static Clean International**  
**Telstar Engineering**

### **Flexo Folder/Gluers**

BW Papersystems

### **Foil Machinery**

**Elite Cameron, Inc.**  
Elsner Engineering Works Inc  
**Telstar Engineering**

### **Folder/Gluers: Corrugated**

Bobst North America Inc.  
Griff Paper & Film  
**Kingsun Machinery Industrial Co.,Ltd**

### **Folder/Gluers: Folding Carton**

Bobst North America Inc.  
Griff Paper & Film  
**Kingsun Machinery Industrial Co.,Ltd**  
**Rollem International**

### **Folding Machinery**

CMD Corporation  
Elsner Engineering Works Inc  
Griff Paper & Film  
Hudson-Sharp  
**Rollem International**

# Cutting and creasing with maximum efficiency and quality, thanks to Vector Technology



## Opening Features

Straw Holes

## Spouts

Ventilation Holes

Half Cut

## Opening Perforation

Beverage Carriers/Trays

## Liquid Packaging

Development and design of machines, modules and spare parts for the production of

## Packaging

## Inspection Windows

Level Indicator

Flexible Packaging

## Tobacco Blanks

Holes

Braille Embossing

Embossing

Hot Foil

Hologram

As a manufacturer of digitally printed folding boxes and in-mould labels, your best way into the future is with our new RSM520HD-DIGI-VARICUT. Thanks to our innovative drive technology, continuous and intermittent processes can be combined in the ongoing cutting and creasing process without changing the magnetic cylinder. For you, this means shorter set-up time, minimal tool costs and optimal workflow connection with reduced waste.

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Telefon +49 7042 790-0  
[info@schobertechnologies.de](mailto:info@schobertechnologies.de)



**Totani Corp/Totani America**

**Food-Tray Machinery**

Novanta

**Gauges**

Fazertec Inc.  
Nordson Measurement & Control (formerly NDC Technologies)  
**Roll-2-Roll Technologies LLC**  
Sensory Analytics (SpecMetrix Systems)

**Gluers**

CESCO American, LLC

**Gussetting Machines**

CMD Corporation  
ELBA SPA  
Hudson-Sharp

**Handle & Attachment Applicators (including Bags, Corrugated Boxes & Folding Cartons)**

CMD Corporation  
ELBA SPA  
Hudson-Sharp

**Heat Recovery**

ASI, Division of Thermal Technologies, Inc.  
Dürr Systems, Inc.



**Kono Kogs, Inc.**

**Heaters: Printing Press**

MCL Die Cutting  
OLBRICH GmbH

**Humidifiers**

CESCO American, LLC  
OLBRICH GmbH

**Impregnating Machines**

CESCO American, LLC  
OLBRICH GmbH

**Imprinting Machines (Coders, Markers, etc. for Bags, Cartons, Labels, etc.)**

MCL Die Cutting  
Novanta

**Inspection Equipment: 100% Inspection**

Baldwin Technology Company, Inc. (AMS Spectral UV)  
Bobst North America Inc.  
BST North America  
Chase Machine & Engineering  
**Elite Cameron, Inc.**  
IMS TECHNOLOGIES  
**Maxcess Intl**  
MCL Die Cutting  
Novation Inc  
TECO Manufacturing LLC  
**Unilux**

**Inspection Equipment: Bar Code**

Baldwin Technology Company, Inc. (AMS Spectral UV)  
BST North America  
Novation Inc  
TECO Manufacturing LLC

**Inspection Equipment: Laser**

BST North America  
**Maxcess Intl**  
Nordson Measurement & Control (formerly NDC Technologies)  
Novanta

**Inspection Equipment: Optical/Video**

Baldwin Technology Company, Inc. (AMS Spectral UV)  
BST North America  
Chase Machine & Engineering  
**Elite Cameron, Inc.**  
**Kingsun Machinery Industrial Co.,Ltd**  
**Maxcess Intl**  
Nordson Measurement & Control (formerly NDC Technologies)  
Novation Inc  
**Roll-2-Roll Technologies LLC**  
Sensory Analytics (SpecMetrix Systems)  
TECO Manufacturing LLC



**Unilux**

**Inspection Equipment: Photoelectric**

BST North America  
**Roll-2-Roll Technologies LLC**  
TECO Manufacturing LLC

**Inspection Equipment: Rewinding Machines**

ASHE Converting Equipment  
BST North America  
Chase Machine & Engineering  
Deacro Industries Ltd  
**Elite Cameron, Inc.**  
Elsner Engineering Works Inc  
**Kingsun Machinery Industrial Co.,Ltd**  
LAEM IMS - a brand of IMS TECHNOLOGIES  
New Era Converting Machinery  
OLBRICH GmbH  
TECO Manufacturing LLC

**Inspection Equipment: Strobe Light**

BST North America  
Chase Machine & Engineering  
Diversified Enterprises  
TECO Manufacturing LLC  
**Unilux**

**Knives: Air**

American Cutting Edge, A Division of CB Manufacturing  
AZCO Corp.  
**Maxcess Intl**  
**Simco-Ion**  
**Static Clean International**

**Knives: Bag Machinery**

American Cutting Edge, A Division of CB Manufacturing  
AZCO Corp.  
CMD Corporation  
ELBA SPA  
Hudson-Sharp  
Valley Grinding & Mfg

**Knives: Cutoff**

American Cutting Edge, A Division of CB Manufacturing  
AZCO Corp.  
**Elite Cameron, Inc.**  
New Era Converting Machinery  
SCHOBBER USA INC  
Valley Grinding & Mfg

**Knives: Cutter**

American Cutting Edge, A Division of CB Manufacturing  
AZCO Corp.  
Blower Application Company, Inc.  
Dienes Corporation  
**Elite Cameron, Inc.**  
**TGW International**  
Valley Grinding & Mfg

**Knives: Holders**

Dienes Corporation

Double E Group

**Elite Cameron, Inc.**  
Global Equipment Intl. LLC  
Jemmco, LLC  
Matik Inc  
**Maxcess Intl**  
SCHOBBER USA INC  
Valley Grinding & Mfg

**Knives: Perforating**

American Cutting Edge, A Division of CB Manufacturing  
AZCO Corp.  
**Cadence, Inc.**  
Dienes Corporation  
**Elite Cameron, Inc.**  
Jemmco, LLC  
Pro Tapes & Specialties, Inc.  
SCHOBBER USA INC



**TGW International**  
Valley Grinding & Mfg

**Knives: Positioning Systems**

**Catbridge Machinery**  
Dienes Corporation  
**Elite Cameron, Inc.**  
Jemmco, LLC  
**Maxcess Intl**

**Knives: Scoring**

American Cutting Edge, A Division of CB Manufacturing  
AZCO Corp.  
**Cadence, Inc.**  
Dienes Corporation  
**Elite Cameron, Inc.**  
Global Equipment Intl. LLC  
Jemmco, LLC  
**Maxcess Intl**  
Pro Tapes & Specialties, Inc.  
SCHOBBER USA INC  
Valley Grinding & Mfg

**Knives: Sheeter**

AZCO Corp.  
BW Papersystems  
Global Equipment Intl. LLC  
Pro Tapes & Specialties, Inc.  
**TGW International**  
Valley Grinding & Mfg

**Knives: Slitter**

American Cutting Edge, A Division of CB Manufacturing  
AZCO Corp.



**Cadence, Inc.**

Dienes Corporation  
Double E Group  
**Elite Cameron, Inc.**  
Global Equipment Intl. LLC  
Jemmco, LLC  
Matik Inc  
**Maxcess Intl**  
MCL Die Cutting  
Pro Tapes & Specialties, Inc.  
SCHOBBER USA INC  
TECO Manufacturing LLC  
Valley Grinding & Mfg

**Knives: Splitting**

American Cutting Edge, A Division of CB Manufacturing  
Pro Tapes & Specialties, Inc.  
Valley Grinding & Mfg

**Laminating Machines: 100% Solids**



**Advanced Greig Laminator Inc. (AGL)**  
 Bobst North America Inc.  
**Catbridge Machinery**  
 Chase Machine & Engineering  
 Comexi North America Inc  
 Davis-Standard, LLC  
**Delta ModTech**  
**Elite Cameron, Inc.**  
**ETI Converting Equipment**  
**Faustel Inc**  
 Griff Paper & Film  
**Kingsun Machinery Industrial Co.,ltd**  
 MCL Die Cutting  
 New Era Converting Machinery  
 Nordmeccanica NA  
 OLBRIch GmbH

**Laminating Machines: Solvent**  
**Advanced Greig Laminator Inc. (AGL)**  
 Bobst North America Inc.  
**Catbridge Machinery**  
 Comexi North America Inc  
 Davis-Standard, LLC  
 Emerson and Renwick Ltd  
**ETI Converting Equipment**  
**Faustel Inc**  
 Global Equipment Intl. LLC  
 Griff Paper & Film  
 Karlville  
**Kingsun Machinery Industrial Co.,ltd**  
 MCL Die Cutting  
 New Era Converting Machinery  
 Nordmeccanica NA

OLBRICH GmbH  
 Pyradia Inc.

**Laminating Machines: Waterborne**  
**Advanced Greig Laminator Inc. (AGL)**  
 Bobst North America Inc.  
**Catbridge Machinery**  
 CESCO American, LLC  
 Chase Machine & Engineering  
 Comexi North America Inc  
 Davis-Standard, LLC  
**Elite Cameron, Inc.**  
 Emerson and Renwick Ltd  
**ETI Converting Equipment**  
**Faustel Inc**  
 Global Equipment Intl. LLC  
 Griff Paper & Film  
**Kingsun Machinery Industrial Co.,ltd**  
 New Era Converting Machinery  
 Nordmeccanica NA  
 OLBRIch GmbH  
 Pyradia Inc.

**Levers: Slitter**  
 Griff Paper & Film  
 IMS TECHNOLOGIES  
 LAEM IMS - a brand of IMS TECHNOLOGIES  
 Supply55, Inc / NEPATA Converting  
 Equipment

**Machinery: Alignment**  
 CMD Corporation  
**Maxcess Intl**  
**Roll-2-Roll Technologies LLC**

**Machinery: Bought & Sold**  
 CESCO American, LLC  
 Griff Paper & Film

**Machinery: Conversions**

CESCO American, LLC  
 Chase Machine & Engineering  
 Davis-Standard, LLC  
 MCL Die Cutting  
 Novanta

**Machinery: Custom**

ASI, Division of Thermal Technologies, Inc.  
**Autotec Solutions**  
 AZCO Corp.  
 CESCO American, LLC  
 Chase Machine & Engineering  
 CMD Corporation  
 Coating Tech Slot Dies, LLC  
 Davis-Standard, LLC  
**Delta ModTech**  
 Dürr Systems, Inc.  
 ELBA SPA  
 Elsner Engineering Works Inc  
 Emerson and Renwick Ltd  
**Faustel Inc**  
 Heraeus Noblelight America LLC  
 IPCO USLLC  
 Jennerjahn Machine  
 MTorres Diseños Industriales  
 Novanta  
 OLBRIch GmbH  
 Pyradia Inc.  
 QC Electronics Inc.  
 SCHOBBER USA INC

**Machinery: Installation**

Bobst North America Inc.  
 CMD Corporation  
 Davis-Standard, LLC  
 Dürr Systems, Inc.  
 ELBA SPA

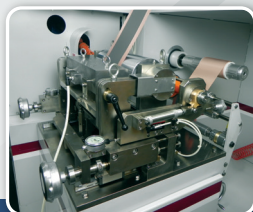
# FAUSTEL

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*Exacting process control coupled with industry leading machine speeds make Faustel the highest value partner for your new battery & separator coating equipment.*

## Optional Custom-Integrated Features:

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- Intermittent Coating
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## **Machinery: Moving**

Bobst North America Inc.  
Davis-Standard, LLC  
IPCO USLLC

## **Machinery: Rebuilt**

Bobst North America Inc.  
CESCO American, LLC  
Davis-Standard, LLC  
Jennerjahn Machine  
Kono Kogs, Inc.

## **Machinery: Vibration Analysis**

Fazertec Inc.

## **Mandrels**

Goldenrod Corp  
Printco Industries, LLC  
TECO Manufacturing LLC

## **Materials-Handling Equipment: Forklifts & Accessories**

### **Autotec Solutions**

Global Equipment Intl. LLC

## **Materials-Handling Equipment: Joggers, Aerators**

Global Equipment Intl. LLC  
Griff Paper & Film

## **Materials-Handling Equipment: Load Turners**

Autotec Solutions  
Global Equipment Intl. LLC  
Nordmeccanica NA

## **Materials-Handling Equipment: Manipulators**

Deacro Industries Ltd  
Elite Cameron, Inc.  
Global Equipment Intl. LLC

## **Materials-Handling Equipment: Palletizing**

Autotec Solutions  
Deacro Industries Ltd  
Elite Cameron, Inc.  
Global Equipment Intl. LLC  
IMS TECHNOLOGIES  
LAEM IMS - a brand of IMS TECHNOLOGIES

## **Materials-Handling Equipment: Pallets**

Elite Cameron, Inc.

## **Materials-Handling Equipment: Prefeeding**

Autotec Solutions  
Double E Group

## **Materials-Handling Equipment: Shaft Pullers**

Autotec Solutions  
Elite Cameron, Inc.  
Goldenrod Corp  
Kampf Machinery Corporation  
New Era Converting Machinery

## **Materials-Handling Equipment: Stacking**

Autotec Solutions  
CMD Corporation  
Elite Cameron, Inc.  
OLBRICH GmbH  
Simco-Ion  
Static Clean International

## **Materials-Handling Equipment: Transfer Cars**

Autotec Solutions  
Elite Cameron, Inc.  
New Era Converting Machinery

## **Metallizing Machinery**

Bobst North America Inc.  
Emerson and Renwick Ltd  
Kingsun Machinery Industrial Co., Ltd  
Nordmeccanica NA

## **Metering/Coating Equipment**

Buschman  
ETI Converting Equipment

Griff Paper & Film  
Nordmeccanica NA  
OLBRICH GmbH  
RD Specialties

## **Micrometers**

Fazertec Inc.  
Jemmco, LLC  
Nordsen Measurement & Control (formerly  
NDC Technologies)

## **Mixers**

Nordmeccanica NA

## **Moisturizing and DeCurling Equipment**

CESCO American, LLC

## **Moisturizing Machinery: Water based**

CESCO American, LLC

## **Napkin-Converting Equipment**

Global Equipment Intl. LLC  
Griff Paper & Film

## **Pelletizers: Plastic**

Davis-Standard, LLC  
Jemmco, LLC

## **Perforators**

Elite Cameron, Inc.  
Elsner Engineering Works Inc  
Jemmco, LLC  
Novanta



Pearl Technologies Inc.  
SCHOBBER USA INC

## **Placemat Machines**

SCHOBBER USA INC

## **Pouch Machinery**

AZCO Corp.  
CMD Corporation  
Delta ModTech



ELBA SPA  
Griff Paper & Film  
Hudson-Sharp  
Karlville

Mamata Enterprises, Inc.  
Totani Corp/Totani America

## **Printing Equipment (including Noncontact, Dampening, etc.)**

Griff Paper & Film  
Simco-Ion  
Static Clean International

## **Printing Plate Equipment: Flexographic**

Miraclon Corporation

## **Printing Plates: Offset Lithographic**

Elite Cameron, Inc.

## **Printing Plates: Photopolymer**

Miraclon Corporation

## **Printing Presses: Business Forms**

ETI Converting Equipment  
Telstar Engineering

## **Printing Presses: Carton**

Bobst North America Inc.  
ETI Converting Equipment  
Matik Inc

## **Printing Presses: Digital**

Comexi North America Inc

## **Delta ModTech**

IPCO USLLC  
Matik Inc  
Telstar Engineering

## **Printing Presses: Flexographic**

Bobst North America Inc.  
CESCO American, LLC  
Comexi North America Inc  
Delta ModTech  
ETI Converting Equipment  
Faustel Inc  
Global Equipment Intl. LLC  
Griff Paper & Film  
Jennerjahn Machine  
Kingsun Machinery Industrial Co.,Ltd  
Matik Inc  
Printco Industries, LLC  
Pro Tapes & Specialties, Inc.



Telstar Engineering

## **Printing Presses: Inkjet**

Delta ModTech  
Matik Inc

## **Printing Presses: Label**

Bobst North America Inc.  
Delta ModTech  
ETI Converting Equipment  
Griff Paper & Film  
Kingsun Machinery Industrial Co.,Ltd  
Matik Inc  
Telstar Engineering

## **Printing Presses: Letterpress**

Griff Paper & Film  
Matik Inc

## **Printing Presses: Offset Lithography**

Comexi North America Inc  
Griff Paper & Film  
Matik Inc

## **Printing Presses: Rotogravure**

Bobst North America Inc.  
ETI Converting Equipment  
Griff Paper & Film  
Kingsun Machinery Industrial Co.,Ltd  
Matik Inc  
OLBRICH GmbH

## **Printing Presses: Screen**

Delta ModTech  
Griff Paper & Film  
Matik Inc  
OLBRICH GmbH  
Telstar Engineering

## **Printing Presses: Ticket & Tag**

Delta ModTech  
Griff Paper & Film  
Matik Inc

## **Printing Presses: Tinters**

Printco Industries, LLC

## **Pumps: Ink (including Vacuum & Centrifugal)**

Printco Industries, LLC

## **Punchers (including Hole Punchers)**

AZCO Corp.  
CESCO American, LLC  
Griff Paper & Film  
Hudson-Sharp  
Pearl Technologies Inc.  
SCHOBBER USA INC

## **Registering Systems**

BST North America

**Delta ModTech**  
**Telstar Engineering**

**Rewind Equipment**

AZCO Corp.  
CESCO American, LLC  
Chase Machine & Engineering  
**CTC - A Quantum Design Product Line**

Davis-Standard, LLC  
Deacro Industries Ltd

**Delta ModTech**

Double E Group  
Dürr Systems, Inc.  
**Elite Cameron, Inc.**

**ETI Converting Equipment**

Global Equipment Intl. LLC  
GOEBEL IMS - a brand of IMS

**TECHNOLOGIES**

Griff Paper & Film

Hudson-Sharp

IMS TECHNOLOGIES

Jennerjahn Machine

Martin Automatic

**Maxcess Intl**

MTorres Diseños Industriales

Nordmeccanica NA

**Powell Engineering Inc**

Printco Industries, LLC

Pyradia Inc.

**Simco-Ion**

SRC Systems, Ltd.

**Static Clean International**

Supply55, Inc / NEPATA Converting

Equipment

TECO Manufacturing LLC

**Telstar Engineering**

**Totani Corp/Totani America**

**Roll Changers**

**CTC - A Quantum Design Product Line**

Davis-Standard, LLC

**Powell Engineering Inc**

**Simco-Ion**

**Static Clean International**

**Telstar Engineering**

**Roll Cleaners**

Davis-Standard, LLC

Eaglewood Technologies, LLC



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- Anilox Sleeves
- Cylinders
- HP Indigo 20000/30000
- HP PageWide T240

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Global Equipment Intl. LLC

**Simco-Ion**

**Sonic Solutions**

**Static Clean International**

**Roll Coaters**

Chase Machine & Engineering

**ETI Converting Equipment**

PNT (People and Technology)

Printco Industries, LLC

**Roll Converting Machines: Toilet & Towel**

AZCO Corp.

**Elite Cameron, Inc.**

Griff Paper & Film

**Roll Feed Machinery**

AZCO Corp.

**Delta ModTech**

SCHOBER USA INC

**Roll Handling Systems**

**Autotec Solutions**

AZCO Corp.

Comexi North America Inc

Deacro Industries Ltd

Double E Group

Dürr Systems, Inc.

**Elite Cameron, Inc.**

GOEBEL IMS - a brand of IMS

**TECHNOLOGIES**

Goldenrod Corp

IMS TECHNOLOGIES

Jennerjahn Machine

Kampf Machinery Corporation

MTorres Diseños Industriales

New Era Converting Machinery

Nordmeccanica NA

SPS Ideal Solutions, Inc.



## Tap into the potential of linerless labels

Create all kinds of labels with ETI's inline printing, coating and converting equipment.

### Linerless labels:

- Wraparound
- Direct thermal
- Specialty labels with partial adhesive
- Tape
- And more



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[sales@eticonverting.com](mailto:sales@eticonverting.com)



### Roll Stands

AZCO Corp.  
 BW Papersystems  
 CESCO American, LLC  
 Chase Machine & Engineering  
 CMD Corporation  
**CTC - A Quantum Design Product Line**  
**Elite Cameron, Inc.**  
 Elsner Engineering Works Inc  
 Global Equipment Intl. LLC  
 Hudson-Sharp  
 Jemmco, LLC  
 Jennerjahn Machine  
**KTI - A Quantum Design Product Line**  
 MTorres Diseños Industriales  
**Powell Engineering Inc**  
 Printco Industries, LLC  
 SPS Ideal Solutions, Inc.  
 TECO Manufacturing LLC

**Roll Wrapping Machinery: Automatic Autotec Solutions**  
**Elite Cameron, Inc.**  
 Elsner Engineering Works Inc  
 Global Equipment Intl. LLC  
 Jennerjahn Machine

### Roller Coverings



**American Roller Co.**  
 Diversified Enterprises  
**Finzer Roller, Inc**  
 INTEGRITY ROLLER SERVICES  
 Jemmco, LLC  
 Pillar Technologies

**Roller Plating: Chrome, Copper, etc.**  
 Mirror Polishing & Plating Co Inc.  
**Precision Roll Solutions**

**Rollers: Printing**  
**American Roller Co.**  
**Finzer Roller, Inc**  
 INTEGRITY ROLLER SERVICES  
 Jemmco, LLC  
**Precision Roll Solutions**  
 Printco Industries, LLC

**Rolls: Anilox/Metering**  
 Apex North America  
 INTEGRITY ROLLER SERVICES  
 New Era Converting Machinery  
**Precision Roll Solutions**  
 Printco Industries, LLC

**Rolls: Backing**  
 INTEGRITY ROLLER SERVICES  
 Jemmco, LLC  
**Precision Roll Solutions**  
 Printco Industries, LLC

**Rolls: Cooling**  
**American Roller Co.**  
 CESCO American, LLC  
 INTEGRITY ROLLER SERVICES  
 New Era Converting Machinery  
**Precision Roll Solutions**  
 Tokuden Inc

**Rolls: Corona Treating**  
**American Roller Co.**  
 Apex North America  
 Corotec Corp  
 Griff Paper & Film  
 INTEGRITY ROLLER SERVICES  
 Jemmco, LLC  
 Pillar Technologies  
**Precision Roll Solutions**  
 QC Electronics Inc.

**Rolls: Embossing**  
**American Roller Co.**  
 GOEBEL IMS - a brand of IMS TECHNOLOGIES  
 Griff Paper & Film  
 IMS TECHNOLOGIES  
 INTEGRITY ROLLER SERVICES  
 Mirror Polishing & Plating Co Inc.



**Precision Roll Solutions**  
 SCHOBER USA INC

### Rolls: Engraved



Alliance Machine and Engraving LLC  
 Mirror Polishing & Plating Co Inc.  
 New Era Converting Machinery  
**Precision Roll Solutions**  
 Tokuden Inc

**Rolls: Expander**  
 New Era Converting Machinery  
**Precision Roll Solutions**

**Rolls: Heating**  
**American Roller Co.**  
 CESCO American, LLC  
 INTEGRITY ROLLER SERVICES  
**Precision Roll Solutions**  
 Tokuden Inc

**Rolls: Idler**  
**American Roller Co.**  
**CTC - A Quantum Design Product Line**  
 Dover Flexo Electronics  
 INTEGRITY ROLLER SERVICES  
 Jemmco, LLC  
 Pillar Technologies  
**Precision Roll Solutions**  
 Printco Industries, LLC  
 Tokuden Inc

**Rolls: Perforating**  
 Alliance Machine and Engraving LLC



**Finzer Roller, Inc**  
 Jemmco, LLC  
**Precision Roll Solutions**  
 SCHOBER USA INC

**Rolls: Spreader**  
**American Roller Co.**  
 INTEGRITY ROLLER SERVICES  
 New Era Converting Machinery  
**Precision Roll Solutions**

**Rolls: Tensioning**  
 Dover Flexo Electronics  
**Finzer Roller, Inc**  
**Precision Roll Solutions**

**Rolls: Vacuum**  
**Precision Roll Solutions**

**Safety Equipment**  
 Double E Group  
**Maxcess Intl**  
 Novation Inc

**Salvage Machine: Paper & Plastic**  
 Double E Group  
 Kampf Machinery Corporation

**Saturating Machines**  
 CESCO American, LLC

**Scrolls**  
 Baldwin Technology Company, Inc. (AMS Spectral UV)  
**FMS Force Measuring Systems**

**Scanning Equipment**  
**Applied Rigaku Technologies, Inc.**  
 Baldwin Technology Company, Inc. (AMS Spectral UV)  
 BST North America  
 Nordson Measurement & Control (formerly NDC Technologies)

**Scoring Machines (including Cutters & Creasers)**  
 CESCO American, LLC  
 Griff Paper & Film  
**Rollem International**

**Sealing Machines**  
 Chase Machine & Engineering  
 CMD Corporation  
**Delta ModTech**  
 ELBA SPA  
 Pillar Technologies  
 SCHOBER USA INC

**Shafts & Cores**  
 Double E Group  
**Elite Cameron, Inc.**  
 Goldenrod Corp  
 Jemmco, LLC  
**Maxcess Intl**  
 Northcore Industries, Inc  
 SPS Ideal Solutions, Inc.

**Sheeters: Knife & Rotary Knife**  
 AZCO Corp.  
 BW Papersystems  
**Kingsun Machinery Industrial Co., Ltd**

**Shredders**  
 Blower Application Company, Inc.  
 Jemmco, LLC

**Shrink Equipment**  
 Griff Paper & Film  
 Karlville  
**Kingsun Machinery Industrial Co.,Ltd**  
**Simco-Ion**  
**Static Clean International**

**Sleeves: Printing**  
**Precision Roll Solutions**  
 Pro Tapes & Specialties, Inc.

**Sleeves: Roll**  
**American Roller Co.**  
 Apex North America  
 Goldenrod Corp  
 INTEGRITY ROLLER SERVICES  
 Jemmco, LLC  
**Precision Roll Solutions**  
 Pro Tapes & Specialties, Inc.

**Sleeves: Slitter**  
 Jemmco, LLC  
 Pro Tapes & Specialties, Inc.

**Slitter Positioning Systems**  
 AZCO Corp.  
**Catbridge Machinery**  
 Davis-Standard, LLC  
 Deacro Industries Ltd  
 Dienes Corporation  
 Double E Group  
**Elite Cameron, Inc.**  
 Griff Paper & Film  
 IMS TECHNOLOGIES  
 Jemmco, LLC  
 Karlville  
 LAEM IMS - a brand of IMS TECHNOLOGIES  
 Parkinson Technologies

**Slitter-Rewinders: Center Winders**

ASHE Converting Equipment  
**Associated Machine Design, Inc**  
AZCO Corp.



**Catbridge Machinery**

CESCO American, LLC  
Chase Machine & Engineering  
Comexi North America Inc  
**CTC - A Quantum Design Product Line**  
Davis-Standard, LLC  
Deacro Industries Ltd

**Elite Cameron, Inc.**

Elsner Engineering Works Inc  
Global Equipment Intl. LLC  
GOEBEL IMS - a brand of IMS TECHNOLOGIES  
Griff Paper & Film  
IMS TECHNOLOGIES  
Jemmco, LLC  
Jennerjahn Machine  
Kampf Machinery Corporation  
Karlville

**Kingsun Machinery Industrial Co.,ltd**

**KTI - A Quantum Design Product Line**  
LAEM IMS - a brand of IMS TECHNOLOGIES  
Matik Inc  
Parkinson Technologies  
SRC Systems, Ltd.  
Supply55, Inc / NEPATA Converting Equipment

**Slitter-Rewinders: Combination**

ASHE Converting Equipment  
AZCO Corp.

**Catbridge Machinery**

CESCO American, LLC  
Chase Machine & Engineering  
Comexi North America Inc  
Davis-Standard, LLC  
Deacro Industries Ltd  
**Delta ModTech**  
**Elite Cameron, Inc.**  
Elsner Engineering Works Inc  
Global Equipment Intl. LLC  
GOEBEL IMS - a brand of IMS TECHNOLOGIES  
Griff Paper & Film  
IMS TECHNOLOGIES  
Jemmco, LLC  
Jennerjahn Machine  
Kampf Machinery Corporation  
Karlville  
**Kingsun Machinery Industrial Co.,ltd**  
LAEM IMS - a brand of IMS TECHNOLOGIES  
Matik Inc  
Parkinson Technologies  
Pro Tapes & Specialties, Inc.  
SRC Systems, Ltd.  
Supply55, Inc / NEPATA Converting Equipment

**Slitter-Rewinders: Surface Rewind**

ASHE Converting Equipment  
**Associated Machine Design, Inc**  
AZCO Corp.  
**Catbridge Machinery**  
CESCO American, LLC  
Chase Machine & Engineering  
Comexi North America Inc  
Davis-Standard, LLC  
Deacro Industries Ltd  
**Elite Cameron, Inc.**

Elsner Engineering Works Inc  
Global Equipment Intl. LLC  
GOEBEL IMS - a brand of IMS TECHNOLOGIES  
Griff Paper & Film  
IMS TECHNOLOGIES  
Jemmco, LLC  
Jennerjahn Machine  
Kampf Machinery Corporation  
Karlville  
**Kingsun Machinery Industrial Co.,ltd**  
LAEM IMS - a brand of IMS TECHNOLOGIES  
Matik Inc  
MCL Die Cutting  
Parkinson Technologies  
Pro Tapes & Specialties, Inc.  
SRC Systems, Ltd.  
Supply55, Inc / NEPATA Converting Equipment

**Slitting Units**

AZCO Corp.  
**Catbridge Machinery**  
Chase Machine & Engineering  
Davis-Standard, LLC  
Dienes Corporation  
Double E Group  
**Elite Cameron, Inc.**  
Global Equipment Intl. LLC  
GOEBEL IMS - a brand of IMS TECHNOLOGIES  
Griff Paper & Film  
IMS TECHNOLOGIES  
Jemmco, LLC  
Karlville  
LAEM IMS - a brand of IMS TECHNOLOGIES  
**Maxcess Intl**  
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Printco Industries, LLC  
**Rollem International**  
SCHOBER USA INC  
SRC Systems, Ltd.  
Supply55, Inc / NEPATA Converting  
Equipment  
Telstar Engineering

### **Slitting, Nonrewinding Machines: Single-Knife Cutters**

AZCO Corp.  
Chase Machine & Engineering  
**Elite Cameron, Inc.**  
Global Equipment Intl. LLC  
Griff Paper & Film  
Pro Tapes & Specialties, Inc.  
**Rollem International**  
Supply55, Inc / NEPATA Converting  
Equipment

### **Slotting Machinery**

Griff Paper & Film

### **Spectrophotometers**



### **Applied Rigaku Technologies, Inc.**

Baldwin Technology Company, Inc. (AMS Spectral UV)

### **Splicers/Pasters (including Butt, Flying & Lap)**

CESCO American, LLC  
Chase Machine & Engineering  
**CTC - A Quantum Design Product Line**  
Davis-Standard, LLC  
**KTI - A Quantum Design Product Line**  
Martin Automatic  
MTorres Diseños Industriales  
New Era Converting Machinery

### **Spraying Equipment**

CESCO American, LLC

### **Stamping Machines (including Hot & Cold Stamping)**

**Delta ModTech**  
**Kingsun Machinery Industrial Co., Ltd**  
Matik Inc

### **Stands: Unwind & Rewind**

**Autotec Solutions**  
AZCO Corp.  
CESCO American, LLC  
Chase Machine & Engineering  
**CTC - A Quantum Design Product Line**  
Davis-Standard, LLC  
Deacro Industries Ltd  
Dürr Systems, Inc.  
**Elite Cameron, Inc.**  
Elsner Engineering Works Inc  
GOEBEL IMS - a brand of IMS  
TECHNOLOGIES  
Hudson-Sharp  
IMS TECHNOLOGIES  
Jemmco, LLC  
Kampf Machinery Corporation  
**KTI - A Quantum Design Product Line**  
**Maxcess Intl**  
MTorres Diseños Industriales  
New Era Converting Machinery  
OLBRICH GmbH  
**Powell Engineering Inc**  
Printco Industries, LLC  
Telstar Engineering

### **Static Eliminators**

Jemmco, LLC  
**Meech International**



Simco-Ion

### **Static Clean International**

TAKK Industries  
Weducon

### **Static Measurement Equipment**

Jemmco, LLC  
**Meech International**  
**Simco-Ion**  
**Static Clean International**  
TAKK Industries  
Weducon

### **Step & Repeat Machines**

CESCO American, LLC  
**Delta ModTech**

### **Storage Racks (including Cylinders, Rolls & Platen)**

SPS Ideal Solutions, Inc.

### **Stretch-Film Wrapping Equipment**

**Autotec Solutions**  
**Kingsun Machinery Industrial Co., Ltd**

### **Surface-Treating Equipment (including Corona, Flame, Ozone & Plasma)**

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Corotec Corp

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Griff Paper & Film  
Jemmco, LLC  
Pillar Technologies  
QC Electronics Inc.  
Vetaphone North America

### **Tabbing Machines**

Jennerjahn Machine  
Novation Inc

### **Take-Off Units**

CESCO American, LLC  
Chase Machine & Engineering

### **Testing Equipment: Hardness Testing**

Diversified Enterprises

### **Testing Equipment: Linear or Rotary Speed**

Diversified Enterprises  
Nordson Measurement & Control (formerly NDC Technologies)

### **Testing Equipment: Quality of Materials & Products, Including Instruments**

3DT LLC - Representative of SOFTAL in North America

**Rigaku**  
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### **Applied Rigaku Technologies, Inc.**

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Lotar Enterprises  
Mecmesin USA dba PPT Corp.  
Nordson Measurement & Control (formerly NDC Technologies)  
QC Electronics Inc.

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### **Testing Equipment: Weight Per Gallon (specific density)**

Diversified Enterprises

### **Testing Equipment: Wet Film Thickness**

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Nordson Measurement & Control (formerly NDC Technologies)  
Sensory Analytics (SpecMetrix Systems)

### **Thermoforming Machinery**

Davis-Standard, LLC  
Pyradia Inc.  
**Simco-Ion**  
**Static Clean International**



**Tray-Forming Equipment (including Paper & Plastic)**

Davis-Standard, LLC

**Trim Conveying & Collecting Equipment**

Blower Application Company, Inc.

**Simco-Ion**

Static Clean International  
Totani Corp/Totani America

**Trimmers: Guillotine**

AZCO Corp.  
Blower Application Company, Inc.

**Tube Machinery**

AZCO Corp.  
Davis-Standard, LLC

**Unwinding Machines: Center Type**

**Catbridge Machinery**

CESCO American, LLC  
Chase Machine & Engineering  
CMD Corporation

**CTC - A Quantum Design Product Line**

Davis-Standard, LLC  
Deacro Industries Ltd

**Elite Cameron, Inc.**

Elsner Engineering Works Inc

**Faustel Inc**

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Jennerjahn Machine

Kampf Machinery Corporation

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New Era Converting Machinery  
Nordmeccanica NA  
OLBRICH GmbH

**Powell Engineering Inc**

Printco Industries, LLC

**Telstar Engineering**

Totani Corp/Totani America

**Unwinding Machines: Combination Surface Center**

**Associated Machine Design, Inc.**

**Associated Machine Design, Inc**

**Catbridge Machinery**

CESCO American, LLC  
Chase Machine & Engineering  
CMD Corporation  
Davis-Standard, LLC

**Elite Cameron, Inc.**

Elsner Engineering Works Inc  
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New Era Converting Machinery

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**Powell Engineering Inc**

Telstar Engineering

**Unwinding Machines: Driven Brake**

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**Catbridge Machinery**

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Elite Cameron, Inc.

Elsner Engineering Works Inc

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**KTI - A Quantum Design Product Line**

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New Era Converting Machinery

OLBRICH GmbH

**Powell Engineering Inc**

Telstar Engineering

Totani Corp/Totani America

**Unwinding Machines: Shafted**

**Associated Machine Design, Inc**

AZCO Corp.

**Catbridge Machinery**

CESCO American, LLC  
Chase Machine & Engineering  
CMD Corporation

Davis-Standard, LLC

Deacro Industries Ltd

**Delta ModTech**

Double E Group

Dürr Systems, Inc.

# Is Static Electricity A Problem?

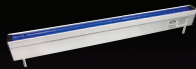
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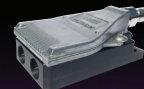
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 Matik Inc  
**Maxcess Intl**  
 New Era Converting Machinery  
 Nordmeccanica NA  
 OLBRIch GmbH  
**Powell Engineering Inc**  
 Printco Industries, LLC  
 TECO Manufacturing LLC  
**Telstar Engineering**  
**Totani Corp/Totani America**

**Unwinding Machines: Shaftless.**

**Associated Machine Design, Inc**  
**Catbridge Machinery**  
 CESCO American, LLC  
 Chase Machine & Engineering  
 CMD Corporation  
 Davis-Standard, LLC  
 Deacro Industries Ltd  
 Dürr Systems, Inc.

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 OLBRIch GmbH  
**Powell Engineering Inc**  
**Telstar Engineering**

**Unwinding Machines: Surface**

**Catbridge Machinery**  
 CESCO American, LLC  
 Chase Machine & Engineering  
 CMD Corporation  
 Davis-Standard, LLC  
**Elite Cameron, Inc.**  
 Elsner Engineering Works Inc  
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 MTorres Diseños Industriales  
 New Era Converting Machinery  
 OLBRIch GmbH  
**Powell Engineering Inc**  
 Pyradia Inc.  
**Telstar Engineering**

**Unwinding Machines: Turreted**

**Associated Machine Design, Inc**  
 AZCO Corp.  
**Catbridge Machinery**

Chase Machine & Engineering  
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**CTC - A Quantum Design Product Line**  
 Davis-Standard, LLC  
 Deacro Industries Ltd  
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 OLBRIch GmbH  
**Powell Engineering Inc**  
 Pyradia Inc.  
**Telstar Engineering**

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 Griff Paper & Film  
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 Printco Industries, LLC

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**Winding Machines: Center Rewind Type**

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 CESCO American, LLC  
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 Davis-Standard, LLC  
 Deacro Industries Ltd

**Elite Cameron, Inc.**

Elsner Engineering Works Inc  
**Faustel Inc**  
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 Hudson-Sharp  
 Jemmco, LLC  
 Jennerjahn Machine  
 Kampf Machinery Corporation  
 LAEM IMS - a brand of IMS TECHNOLOGIES  
 Matik Inc  
 MTorres Diseños Industriales  
 New Era Converting Machinery  
 Nordmeccanica NA  
 OLBRIch GmbH  
 Parkinson Technologies



**Powell Engineering Inc**  
**Totani Corp/Totani America**

**Winding Machines: Combination Surface Center**

**Associated Machine Design, Inc**  
**Catbridge Machinery**  
 CESCO American, LLC  
 Chase Machine & Engineering  
 Davis-Standard, LLC  
 Deacro Industries Ltd  
**Elite Cameron, Inc.**  
 Elsner Engineering Works Inc  
**Faustel Inc**  
 GOEBEL IMS - a brand of IMS TECHNOLOGIES  
 Griff Paper & Film  
 Hudson-Sharp  
 Jemmco, LLC  
 Kampf Machinery Corporation  
 LAEM IMS - a brand of IMS TECHNOLOGIES  
 New Era Converting Machinery  
 Nordmeccanica NA  
 OLBRIch GmbH  
 Parkinson Technologies  
**Powell Engineering Inc**

**Winding Machines: Shafted**

ASHE Converting Equipment  
**Associated Machine Design, Inc**  
 AZCO Corp.  
**Catbridge Machinery**  
 CESCO American, LLC  
 Chase Machine & Engineering  
 Deacro Industries Ltd  
**Delta ModTech**  
 Double E Group  
**Elite Cameron, Inc.**  
 Elsner Engineering Works Inc

**Faustel Inc**  
 GOEBEL IMS - a brand of IMS  
 TECHNOLOGIES  
 Griff Paper & Film  
 Hudson-Sharp  
 Jemmco, LLC  
 Jennerjahn Machine  
 Kampf Machinery Corporation  
 Martin Automatic  
 Matik Inc  
**Maxcess Intl**  
 MTorres Diseños Industriales  
 New Era Converting Machinery  
 Nordmeccanica NA  
 OLBRIch GmbH  
 Parkinson Technologies  
**Powell Engineering Inc**  
 Printco Industries, LLC

**Winding Machines: Shaftless**  
 ASHE Converting Equipment  
**Associated Machine Design, Inc**  
**Catbridge Machinery**  
 Chase Machine & Engineering  
 Davis-Standard, LLC  
 Deacro Industries Ltd  
 Elite Cameron, Inc.  
 Elsner Engineering Works Inc  
**Faustel Inc**  
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 IMS TECHNOLOGIES  
 Jemmco, LLC  
 Jennerjahn Machine  
 Kampf Machinery Corporation  
 Martin Automatic

Matik Inc  
**Maxcess Intl**  
 New Era Converting Machinery  
 Nordmeccanica NA  
 OLBRIch GmbH  
 Parkinson Technologies  
**Powell Engineering Inc**

**Winding Machines: Surface**  
**Catbridge Machinery**  
 CESCO American, LLC  
 Chase Machine & Engineering  
 Davis-Standard, LLC  
 Deacro Industries Ltd  
**Elite Cameron, Inc.**  
 Elsner Engineering Works Inc  
**Faustel Inc**  
 GOEBEL IMS - a brand of IMS  
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 Griff Paper & Film  
 Hudson-Sharp  
 IMS TECHNOLOGIES  
 Jemmco, LLC  
 Jennerjahn Machine  
 Kampf Machinery Corporation  
 MTorres Diseños Industriales  
 New Era Converting Machinery  
 Nordmeccanica NA  
 OLBRIch GmbH  
 Parkinson Technologies  
 Pyradia Inc.

**Winding Machines: Traverse**  
 Chase Machine & Engineering  
 Davis-Standard, LLC  
**Elite Cameron, Inc.**  
 Griff Paper & Film  
 Hudson-Sharp

Jemmco, LLC  
 Kampf Machinery Corporation  
 Martin Automatic  
 MTorres Diseños Industriales  
 New Era Converting Machinery

**Winding Machines: Turreted**  
 ASHE Converting Equipment  
**Associated Machine Design, Inc**  
 AZCO Corp.  
**Catbridge Machinery**  
 Chase Machine & Engineering  
 CMD Corporation



**CTC - A Quantum Design Product Line**

Davis-Standard, LLC  
 Deacro Industries Ltd  
**Delta ModTech**  
 Double E Group  
**Elite Cameron, Inc.**  
 Elsner Engineering Works Inc  
**Faustel Inc**  
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 Jennerjahn Machine  
 Kampf Machinery Corporation  
 LAEM IMS - a brand of IMS TECHNOLOGIES  
 Martin Automatic  
 Matik Inc  
 MTorres Diseños Industriales  
 New Era Converting Machinery



## Custom Converting Equipment

### EQUIPMENT

- Unwind / Rewinds
- Accumulators
- Slitters / Laminators
- Traverse / Spiral Winders
- Festooners
- Inspection Equipment
- Lab / Pilot Extrusion Lines

### MARKETS

- Filtration
- Medical
- Textile
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- Hygiene
- Automotive
- Extrusion
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Ultrasonic Laminators



Unwinds / Rewinds



Custom Assembly Equipment

Nordmeccanica NA  
OLBRICH GmbH  
Parkinson Technologies  
Pyradia Inc.

**Window-Patching Machines**  
Kingsun Machinery Industrial Co., Ltd  
SCHOBER USA INC

**Zipper Attaching Equipment**  
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Mamata Enterprises, Inc.  
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Association For Roll-To-Roll Converters  
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Connecticut Metal Industries, Inc.  
Cork Industries, Inc.  
D&K Coating Technologies  
Davis-Standard, LLC  
Diversified Enterprises  
DUNMORE  
Dürr Systems, Inc.  
Eaglewood Technologies, LLC  
Emerson and Renwick Ltd

**Faustel Inc**  
Fazertec Inc.  
**Finzer Roller, Inc**  
Flexographic Technical Association (FTA)  
Griff Paper & Film  
Hudson-Sharp  
ICEC USA  
Jemmco, LLC

**Kent Adhesive Products Co. dba Kapco**  
MCL Die Cutting  
Metlon Corporation  
Michelman

**Mitsui Chemicals America**  
Novanta  
Novation Inc  
OLBRICH GmbH

**PennPac**  
**Polykote Corp**  
Pro Tapes & Specialties, Inc.  
QC Electronics Inc.  
SCHOBER USA INC  
Seminars for Engineers

**Sonic Solutions**  
**Static Clean International**  
**Sun Chemical Corp**  
TAPPI

Technical Coating Intl  
tesa tape inc  
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Westech Converting  
**ZOi Films**

**Additives & Modifiers**  
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MCL Die Cutting  
Michelman  
**Mitsui Chemicals America**  
Pro Tapes & Specialties, Inc.  
Technical Coating Intl

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Pro Tapes & Specialties, Inc.  
**Sun Chemical Corp**

**Adhesives: Hot Melt**  
Pro Tapes & Specialties, Inc.

**Adhesives: Solventborne**  
Pro Tapes & Specialties, Inc.  
**Sun Chemical Corp**  
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**Adhesives: Solventless**  
Cork Industries, Inc.  
Pro Tapes & Specialties, Inc.  
**Sun Chemical Corp**

**Adhesives: Waterborne**  
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**Sun Chemical Corp**

**Coatings: Solventborne**  
DUNMORE  
**Sun Chemical Corp**  
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**Coatings: Solventless**  
DUNMORE  
**Sun Chemical Corp**

**Coatings: Waterborne**  
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DUNMORE  
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**Color Balancing Systems**  
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**Color Concentrates**  
**Sun Chemical Corp**

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**Computer Software or Systems: Process Control**  
Baldwin Technology Company, Inc. (AMS Spectral UV)  
Fazertec Inc.  
Hudson-Sharp  
Novation Inc

**Computer Software or Systems: Quality Systems**  
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Hudson-Sharp  
Novation Inc

**Consultants: Associations**  
Association For Roll-To-Roll Converters  
Flexographic Technical Association (FTA)  
TAPPI

**Consultants: Certification**  
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**Consultants: Environmental Compliance**  
Dürr Systems, Inc.  
Flexographic Technical Association (FTA)

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Fazertec Inc.

**Consultants: Marketing**  
Coated Film Consultants LLC  
TAPPI

**Consultants: Production**  
**Autotec Solutions**  
D&K Coating Technologies  
Seminars for Engineers

**Consultants: Technology/Product**  
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D&K Coating Technologies  
DUNMORE  
**Faustel Inc**  
Seminars for Engineers

**Consultants: Trade shows**  
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Flexographic Technical Association (FTA)  
ICEC USA  
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**Consultants: Training**  
Association For Roll-To-Roll Converters  
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Flexographic Technical Association (FTA)  
Seminars for Engineers  
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**Contract Converters: Bags/Pouches**  
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Pro Tapes & Specialties, Inc.

**Contract Converters: Clean Room Custom Fabricating & Supplies**  
Griff Paper & Film  
MCL Die Cutting

**Contract Converters: Coating**  
Argent International  
Coated Film Consultants LLC

D&K Coating Technologies  
DUNMORE  
Griff Paper & Film



**Kent Adhesive Products Co. dba Kapco**  
MCL Die Cutting  
**Polykote Corp**  
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Technical Coating Intl  
ZOi Films

**Contract Converters: Corona Treating**

Argent International  
D&K Coating Technologies  
DUNMORE  
Griff Paper & Film  
**Kent Adhesive Products Co. dba Kapco**  
Pillar Technologies  
**Polykote Corp**  
QC Electronics Inc.  
Technical Coating Intl  
Westech Converting  
ZOi Films

**Contract Converters: Die-Cutting**

Argent International



**Custom Fabricating & Supplies**

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Griff Paper & Film  
**Kent Adhesive Products Co. dba Kapco**  
MCL Die Cutting

Polykote Corp  
**Pro Tapes & Specialties, Inc.**  
Westech Converting

**Contract Converters: Embossing**  
ZOi Films

**Contract Converters: Extrusion Coating**

D&K Coating Technologies  
MCL Die Cutting



Polykote Corp

**Contract Converters: Labels**

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D&K Coating Technologies  
Griff Paper & Film  
MCL Die Cutting  
**Polykote Corp**  
Pro Tapes & Specialties, Inc.

**Contract Converters: Laminating**

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**Custom Fabricating & Supplies**  
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DUNMORE  
Griff Paper & Film  
**Kent Adhesive Products Co. dba Kapco**  
MCL Die Cutting  
**Polykote Corp**  
Pro Tapes & Specialties, Inc.  
Technical Coating Intl  
ZOi Films

**Contract Converters: Metallizing**

DUNMORE  
MCL Die Cutting  
Rol-Vac  
Technical Coating Intl

**Contract Converters: Printing**

Argent International  
Griff Paper & Film  
MCL Die Cutting  
Pro Tapes & Specialties, Inc.  
Technical Coating Intl  
ZOi Films

**Contract Converters: Salvage/Rework**

D&K Coating Technologies  
Griff Paper & Film  
**PennPac**  
Pro Tapes & Specialties, Inc.  
Rol-Vac  
ZOi Films

**Contract Converters: Sheeting**  
**Custom Fabricating & Supplies**

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Griff Paper & Film  
MCL Die Cutting  
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Pro Tapes & Specialties, Inc.  
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**ZOi Films**

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Griff Paper & Film  
MCL Die Cutting  
Metlon Corporation  
**PennPac**  
Pro Tapes & Specialties, Inc.

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Griff Paper & Film  
Metlon Corporation  
**PennPac**  
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Valley Grinding & Mfg

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DUNMORE  
Griff Paper & Film  
**Polykote Corp**  
Technical Coating Intl

**Label Stocks: Linerless**  
D&K Coating Technologies  
Griff Paper & Film

**Lacquers**  
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D&K Coating Technologies  
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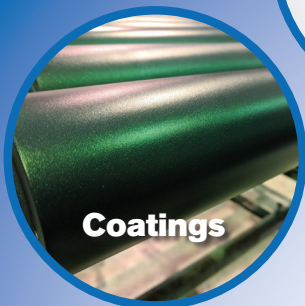
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