



# NEWS

3rd Quarter 2002

## Surface Treating Technology

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## More science and less art makes printing operations more profitable.

Steve Utschig is a man of science. Not that he has anything against art. In fact, he helps people print works of art. But he knows a scientific approach to printing leads to repeatability. And repeatability breeds profitability.

His approach is well grounded and based on his 22 years of converting industry experience. As a Flexographic Printing Instructor at Fox Valley Technical College (FVTC) he teaches press operators how to take control of their printing process. Enercon Sales Manager Rick Young recently caught up with Steve at FVTC and took the opportunity to explore some of the key issues facing flexographic printers.

### **RY: What is the most common cause of down time and waste on a printing press?**

**Steve:** It's the lack of preparation that goes into the job, based for the most part on the lack of understanding of how the flexographic printing process works.

### **RY: How do you control the process?**

**Steve:** First you need to recognize the variables and determine which are within your control. There are too many interactions to control 100% of the variables, but with a scientific approach you



**Fox Valley's Steve Utschig and Enercon's Rick Young discuss the science and art of printing.** can efficiently produce print jobs that are profitable and repeatable.

### **RY: What constitutes a scientific approach?**

**Steve:** Knowing why you're doing something is critical. I'll ask a press operator why he did something and too many times I hear "because it works" or "that's the way we do things here." That's not an acceptable answer.

A scientific approach is grounded in understanding cause and effect. In order to do that you need to maintain a historical record of press jobs. It serves as a reference and it's invaluable when it comes to troubleshooting a job in the future. So whether it's first shift or third shift you can expect the results to be consistent.

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## Chase and Sons' expand capabilities

Chase & Sons' Webster, MA, was recently featured in Paper Film and Foil Converter Magazine. The company is in the middle of an extensive facility and capabilities expansion for their high-speed, solventless, 100% solids laminating line.

Chase is a leader in custom converting for many industries including pharmaceutical and food packaging. Its primary business is the manufacturing of tape wrap. The company's capabilities include laminating a wide variety of substrates including plastic films, foils, papers, and fabrics.

To learn how they remedied tension control problems visit [www.pffc-online.com](http://www.pffc-online.com). Look for the story in the May 2002 archive.



**The company relies on an Enercon Universal corona treater for surface treatment.**

**Specify Enercon. From the ordinary to the extraordinary.**

# Clearing the air on the gap between ceramic coated ground rolls and their bare roll predecessors



**Tom Gilbertson**  
VP Application  
Engineering

Years ago, corona treating technology was pretty simple and straightforward. There were two types of corona treating systems to choose from: covered-roll systems and bare-roll systems. Since that time ceramic coated ground rolls have revolutionized bare roll systems.

These systems have become popular because they provide more power than their predecessors and also eliminate common problems associated with covered rolls. While the cost of a new silicone roll covering is not great, many companies are realizing there are more costs associated with replacing them than just the cost of the new sleeve.

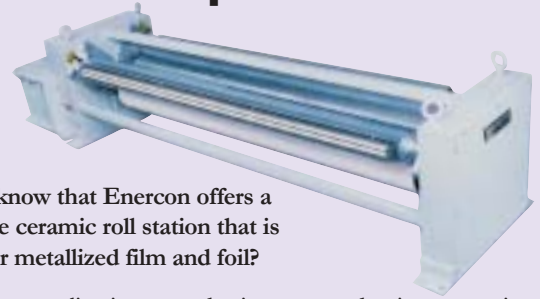
Consider the following scenarios. Your silicone covered roll becomes damaged from either over exposure to corona or because it was cut with a knife. If the damage is severe enough you'll know right away because it will cause a high voltage trip. That will cause you to shut down the line, most likely during an important run, and replace the roll covering.

But what if the damage isn't enough to cause a high voltage trip? In this case your substrate could be experiencing pinholing or backside treatment. These two problems are often difficult to detect and will certainly compromise your product's quality. And you might not learn of the problem until your customer complains that your last delivery isn't up to par. By this time you may have produced several hundred-thousand feet of sub-standard material. You'll have to deal with excessive scrap, customer complaints, and you'll still lose production time when you shut down to replace the roll covering. So, you can see that the costs can quickly add up to more than just the cost of the roll covering.

So what are the rules of treating with the new wave of "Universal-Roll" treaters? First let's start off with definitions of the terms "ceramic covered rolls", "conductive ceramic coated rolls" and "Universal ceramic coated rolls."

**Ceramic Covered Rolls:** These rolls are covered with a thick ceramic covering (0.060" to 0.100") that is applied via a plasma-spray technique. This roll covering replaces the rubber or epoxy coverings used with metal electrodes. The purpose of the roll covering is to provide a dielectric buffer between the metal electrode and the roll covering allowing the air to ionize to create the corona in the air gap. Ceramic roll covering is widely used because of its high dielectric strength and resistance to physical damage. This type of electrode / roll combination cannot be used to treat conductive films.

**Conductive Ceramic Coated Rolls:** Conductive ceramic is a thick coating (0.002" to 0.005") that is applied via a plasma-spray technique. This coating is used on bare roll systems where ceramic electrodes are utilized. The coating protects the ground roll from oxidation (corrosion). This covering replaces chrome or electro-less nickel plating which are porous and will allow oxidation between the roll core and the plating.



**Did you know that Enercon offers a conductive ceramic roll station that is ideal for metallized film and foil?**

From an application standpoint, a conductive ceramic coated ground roll in a bare roll system is recommended when treating metal foils or the non-conductive side of conductive films. The conductive ceramic coating ensures a conductive path to ground from the conductive web surface. Please keep in mind that the primary benefit of the conductive ceramic is to prevent oxidation and other damage to the roll surface.

**Universal Ceramic Coated Rolls:** Universal ceramic is also applied to the roll core via a plasma-spray process. The universal ceramic coating is non-conductive and also serves as a dielectric covering on the ground roll. This roll coating is used in systems utilizing ceramic electrodes. Although the universal ceramic coating is non-conductive, it is unlike the ceramic coating used with metal electrodes. In fact, the universal ceramic is NOT to be used with metal electrodes.

So, can one use a universal ceramic-coated roll system to treat metallized films or foils? The answer is "yes". How is this possible?

Since both the high voltage electrode and the ground electrode (ground roll) are covered with a dielectric, the corona will be established in the air gap between the electrode and metallized film or foil. However, it is important that the metallized surface of the film be in contact with a clean and grounded idler roll. This idler roll can be covered with conductive ceramic to prevent oxidation and provide a ground path from the conductive film surface.

The advantages of using universal ceramic-coated roll system versus bare-roll system are:

- Superior treatment levels
- The elimination of film wrinkling or puckering
- The elimination of backside treatment
- The elimination of pin holing on the metallized surface

**Universal roll compared to silicone covered:** While the initial cost of a ceramic covered roll is greater than a silicone covered roll, it can cost less over the life of the station. It is important to note that in some cases the initial costs are very close. The higher efficiency ceramic covered roll requires less power to meet the same treat requirements, therefore reducing the cost of the power supply required.

I hope this clears the air regarding your ceramic options. Please send me an e-mail ([tgilbertson@enerconmail.com](mailto:tgilbertson@enerconmail.com)) if you have any comments or questions. I would like to hear from you.

## e Feature story

# More Science and less art...

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### **RY: How do you properly set-up a job?**

**Steve:** First, always review the job history or jacket to see if there were any idiosyncrasies when you've run the job in the past. There may be details you have forgotten or even another operator's notes that might tip you off to a potential problem.

The other way to prevent avoidable problems is to make sure to do a pre-flight check. It's an important step that, along with proper press maintenance, pays long-term dividends.

### **RY: Is ink control often overlooked?**

**Steve:** Not only overlooked, but also misunderstood. Most printers don't use or get enough information from ink suppliers about the ink systems they use. Controlling the ink's recommended viscosity and PH levels for water based printing, and solvent blends for alcohol-based printing is critical.

And you can't mix and match ink systems and predict the outcomes. Each ink system has certain additive mix requirements based on its resin blend to perform, whether it be scuff resistance, heat resistance, etc. Measuring and documenting are critical. Concocting a "witch's brew" without guidelines and documentation yields unrepeatable results.

Of course, once the ink is under control you also have to make sure your substrate is under control.



**Corona treaters add value and can be conveniently mounted on any printing press.**

### **RY: How do you control the substrate?**

**Steve:** Whether you're using water or solvent based printing you want to ensure the surface energy of the substrate is as consistent as possible. The best way to guarantee ink adhesion consistency is with a corona treater.

### **RY: Do many solvent printers reject the idea of treatment.**

**Steve:** If there are printers who think that, then they should possibly reconsider

their thinking. Films are pretreated, but they're not guaranteed to be perfect when it comes time to print. Treatment degrades over time so that's one issue you have to contend with. Even if the film makes the grade on a dyne test you still have the possibility of additives rising to the surface. These surface imperfections can result in pinholing and other quality issues. A corona treater can help to eliminate these problems.

### **RY: So you would always have a treater on your press?**

**Steve:** Absolutely. For the price and quality assurance they give you they're a great value. Besides it only takes one or two rejected jobs or quality issues to justify the cost of a treater. Whether I had a water or solvent based press operation I'd have a corona treater on it.

#### **More Info Available On-Line**

[www.enerconind.com/enews/features/fvrtc.html](http://www.enerconind.com/enews/features/fvrtc.html)

Log onto Enercon's website for more of our conversation with Steve Utschig, including his insights on setting up a press and common mistakes to avoid. You'll also find more information on Fox Valley Technical College.

## e Custom Configurations

# Enercon's economic solution aids Indonesian company

PT. Panverta Cakrakencana was running out of options. Three years ago the company installed a new line for producing cast polypropylene. The line worked well except for a problematic corona treater. The company was unable to remedy the problem on their own and they did not want to purchase a new system.

At the recommendation of their sister company PT. Trias Sentosa TBK, the company contacted Enercon. At their Surabaya, Indonesia plant PT Trias Sentosa TBK had extensive experience with Enercon surface treaters.

Trouble-free operation and local support made the recommendation an easy one. Although PT Panverta Cakrakencana is located in a remote area of Indonesia it is accessible from Enercon's local service center in Singapore.



**PT Trias Sentosa's corona treater from Enercon.**

Enercon General Sales Manager John Smallshaw recalls "We try and provide our customers with the most economic solutions possible. In the long run, they appreciate our efforts to work with them on their projects in this manner. In this case we were able to solve their problems without requiring them to invest in a complete new system."

Enercon service engineer Jason Hua visited the facility and then consulted with Enercon's engineering team at the company's headquarters. It was determined that a new power supply would be the first step to remedying the problem.

With the new power supply installed Enercon was able to determine that an inconsistent air gap on the covered roll station was also leading to insufficient treating. By working with the customer Enercon's engineering team was able to devise a solution by modifying the replacement Enercon power supply and replacing the ground roll.

The new Series 9000 25 kW power supply and station modifications have been in place for over a year and are providing the company with outstanding performance and reliability they now equate with Enercon.

## **e** Educational Seminars

### **TAPPI's PLACE Division holds Troubleshooting Short Course for Extrusion Coating and Flexible Packaging Converters**



photo courtesy of PCMC

The PLACE Short Course was held over a four day period in Green Bay, Wisconsin. Over one-hundred attendees learned from industry experts how to identify and solve common converting problems. Participants were informed about the latest materials and equipment used in the extrusion coating and flexible packaging industries. The course covered the basics of polymer science, resin selection, equipment evaluation, printing, coating, laminating, and troubleshooting procedures.

Paper Converting Machine Company, manufacturer of flexographic printing presses and laminators held an open house for the attendees. PCMC gave the TAPPI group a quick plant tour and a demonstration of their new Avanti CT flexographic press.

## **2002 Upcoming Events**

**PLACE Conference**  
(Polymers, Laminates Symposium)  
Sept 8-12 Boston, MA

**Labelexpo USA 2002**  
September 10-12 Chicago, IL  
Booth # 155

**INTC 2002—Intl. Nonwovens and Technical Conference**  
September 24-26 Atlanta, GA

**TLMI Annual Meeting**  
October 20-23 Las Vegas, NV

**AIMCAL Technical Conference**  
October 21-23 Sedona, AZ

**International Flexo Seminar**  
October 23-24 Mexico DF, Mexico

**Pack Expo**  
November 3-7 Chicago, IL  
Booth # S874

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## **e** New Products

# **PlasmaReady™ eases purchasing decisions**

We've had many customers interested in positioning themselves for the future use of atmospheric plasma. In response we've developed Enercon's exclusive PlasmaReady™ Upgrade Program.

This option is available to you when you purchase a new corona treater station. With the PlasmaReady™ Upgrade Program you'll be positioned for a future upgrade of your new station to a variable chemistry Plasma3™ Atmospheric Plasma Treating System.

For a nominal price, Enercon can design your corona treater station to be retrofittable for treating a wide range of substrates using our exclusive Plasma3™ atmospheric plasma treatment technology.

As new materials challenge production processes, Plasma3™ technology will keep

you on the leading edge by enhancing the surface energy and treatment longevity of the most challenging substrates.

The Enercon PlasmaReady™ Upgrade includes all necessary station frame size modifications, as well as station preparation for variable chemistry control. When you finally upgrade your station to generate plasma treatment, you will realize the following benefits:

- Higher treatment levels
- Long-lasting surface activation
- Elimination of pin-holing
- No ozone is produced
- "Cold Flame" with controlled chemistry
- Surface morphologies unaffected
- Construction to any production width

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