



NEWS

3rd Quarter 2005

Surface Treating Technology

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Technology aggressive and growth focused companies merit cover stories

Several of Enercon's customers were recently featured on the cover of industry leading magazines including Converting Magazine, Flexible Packaging and Paper Film and Foil (PFFC).

Kendall Packaging, Global Packaging and Rollprint represent three technology aggressive companies that benefit from the use of



Enercon surface treaters for printing, coating and laminating applications.

Each company has defined a unique role in the marketplace.



An Enercon treater (top of photo) prepares surfaces for high speed printing on Global Packaging's Novaflex press from W&H.

On page 3 we share some of article highlights. To read the original articles please visit: www.flexpackmag.com (Kendall Packaging) www.pffc-online.com (Global Packaging) www.convertingmagazine.com (Rollprint)

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Ciba Specialty Chemicals and Enercon announce joint development

Enercon and Ciba Specialty Chemicals proudly announce a joint development agreement which synergizes the innovative surface modification **Plasma3™** technology of Enercon with Ciba Specialty Chemicals new nano-grafting **Prime IT™** technology.

The new agreement promises development of an advanced surface treatment technology which assures Enercon and Ciba Specialty Chemicals customers the ability to truly optimize surface effects on films, foils, papers, metals, nonwovens and textiles through the combined use of these technologies.



Call us or e-mail info@enerconind.com to receive a free information packet on these exciting new technologies.

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Using Watt Density to predict increased dyne levels is not as simple as it appears



Tom Gilbertson
VP Application
Engineering

The ultimate goal of any surface treatment system is to increase surface tension measured in dynes which then increases the wettability and adhesion characteristics of the surface. This allows you to add value to the substrate through printing, laminating, coating etc...

Corona treating systems achieve this by applying a given level of power over a certain period of time to the surface. This power/time parameter is measured in watt density, which is defined as watts/ft² (or m²)/minute.

Although watt density applied is directly related to increases in dyne level (surface tension), the relationship is not linear, and the relationship is dependent on system and material parameters.

System Parameters

Applied watt density is directly proportional to power supply size in watts and inversely proportional to station size (web width). Therefore if the web width is doubled the power supply must be doubled to maintain a required watt density. This simple relationship is complicated by two factors: line speed and the capacity of the electrode to handle a given level of applied power.



Treatment is a function of power (kW) line speed and web width.

All electrodes, whether wire, metal bar, metal shoe or ceramic covered, have an upper limit on the amount of power they can accept per unit length. If, to achieve a given

watt density, the power supply kW increases beyond the electrode's maximum rating, either the electrodes need to be upgraded or additional electrodes must be added. Further, on a covered roll system an increase in the number of electrodes normally require an increase in treater roll diameter.

Line speed also complicates the sizing calculation. On a given system, the higher the line speed, the lower the maximum watt density that can be achieved. Being inversely proportional to watt density, line speed has a significant impact on system sizing and cost, which is why it's important to properly define your application.

$$\text{Watt Density Formula} = \frac{\text{Power Supply Output (Watts)}}{\text{Web Width(m)} \times \text{Line Speed (m/min)} \times \text{\#Treat sides}}$$

Typical Watt Densities Printing, Coating Laminating				
	Solvent	Water	UV	Solventless
Pretreated LDPE	1.5-2.0	2-2.5	2-2.5	1.0-1.3
Pretreated LLDPE	1.5-2.0	2-2.5	2-2.5	1.0-1.3
PET	1-1.5	1-1.5	1-1.5	1.0-1.3
Pretreated BOPP	2-2.5	2.5-3.0	2.5-3.0	1.0-1.3

Note: Variations in resin blend, additives or process will affect values.

Typical Treat Levels and Watt Densities			
Substrate	Incoming Level	Desired Level	Watt Density
Treated BOPP	34-36	40-42	2.5-3.5
Treated BOPET	40-42	54-56	.9-1.5
Treated LDPE, high slip	34-36	40-42	2.5-3.5
Cast PP no slip	38-40	40-42	1.5-2.5
Low slip untreated LDPE	30-31	Need to test	Need to test

Note: Variations in resin blend, additives or process will affect values.

Material-Process Parameters

The most obvious material-process parameters are the basic substrate material composition and the process being performed (extrusion, extrusion coating, printing, etc.). Their impact on corona treating sizing is increasingly complex.

The tables above show immediate problems as most materials are defined by a range of typical surface tensions. The ultimate surface tension and amount of increase are dependent upon the material's starting surface tension.

In addition some materials, such as some polyesters, accept treatment readily and exhibit rapid increases in surface tension under relatively low watt density levels, say 0.9 to 1.2. Other materials, such as polyethylene, accept treatment less readily but will exhibit a significant increase in surface tension under moderate watt density levels, say 2.0 to 2.5.

Finally, some materials, such as polypropylene, are difficult to treat and may exhibit only moderate increases in surface tension under relatively high levels of watt density, say 2.5 to 3. And untreated materials can be completely unpredictable.

So as you can see watt density is a valuable tool that must be balanced with system and operational parameters. And if you need a refresher on accurately determining dyne levels contact me for a copy of ASTM's guidelines.

Technologically aggressive companies earn cover page features



Nsenga Byrd Thompson's PFFC cover story featured Global Packaging and their commitment to technology and future growth.

According to the company's

President Michael Frost, "We have enjoyed considerable growth since our inception in 1996. We have successfully managed this growth by making significant capital investments in the best equipment available and making the investments prior to the real need. We attempt to invest in the future rather than react to the past."

Investments have included PCMC and W&H presses, a Schiavi laminator and Enercon surface treaters. At the heart of the company's converting operation is its state-of-the-art flexographic printing capabilities, which earned the company an honorable mention at the annual FTA Environmental Award Competition.

Frost says, "The addition of the Novaflex is the start of filling the new floor space with additional manufacturing capacity and capability. The new press not only substantially increased our printing capacity, it entered us into the ten-color printing market and the truly high-speed printing arena."

Plant Manager Tim Rooney says "We have been running the press at average line speeds that are double the speeds of our existing equipment. We expect this type of throughput to continue and actually improve as we gain more experience with this equipment."



Converting's cover story, by Editor in Chief Mark Spaulding, provides insight to the future of Rollprint, a fully integrated supplier to healthcare,

industrial and specialty-foods customers.

The company's primary coater/laminator is its 68-in. Davis-Standard Millennium system, (with Enercon ozonator and surface treaters). The four-unit coextrusion coater generally produces clear, peelable, autoclavable film structures in a single pass for the global healthcare market—one of the few such lines in the world, Rollprint says.

"We'd like to take the technology we have for the medical industry and move that into food," says President/COO Dhuane Dodrill. "There's going to be more and more emphasis on barrier materials, particularly clear materials. There's rapid growth in that area,



Rollprint's Davis-Standard Millennium system.

extending into active packaging and oxygen scavengers. Also, rigid containers are being replaced with cost-effective, high-performance flexibles." "We have a tremendous focus within Rollprint centered on down-gauging of films we're currently manufacturing," adds VP-Business Development Craig Livingston. "By using new resin technologies and the blending of resins, we can achieve improved physical properties while lowering costs over traditional films."



Kendall Packaging has doubled its revenue growth and capacity in the last 5 years, and Flexible Packaging's Editor in Chief Andrew Mykytiuk

recently authored a cover story on the fast growing company.

Kendall Packaging CEO and President Eric Erickson III explains, "We took a long look at some of our tired assets and compared it to the new technology that was available and said 'We've got to make the leap'. We knew that we were going to have to make some very significant investments for a company our size, but it was ultimately what was going to protect us 20 years down the line." The first of two waves of technological expansion included one of the first PCMC Vision II 8-color presses.

"We really focused on bringing in the best technology. That's when we brought in the 10-color, gearless W&H Novaflex, more coating and laminating capacity with the addition of the Schiavi Eco-Convert, 100 percent solids laminators, and added more slitting capacity with the acquisition of another Titan SR7 slitter." as well as an Enercon corona treater.

"First and foremost we're printers, we're flexographic printers and we're pretty darn good at it," asserts Erickson. "The W&H is a good example of how much we've gained. We can run faster, turn jobs around faster, and print at very high quality levels. Standards change every time you invest in new equipment and go to the next level. That's one of the hidden advantages for staying on top of the new technology."

Enercon UK adds industry veteran Gareth Denton

As Enercon UK's new Technical Sales Manager for Surface Treating products. Gareth says, "This exciting venture will be demanding and fulfilling. I am able to



use my 12 years experience in surface treatment and ozonisers to help develop this fascinating market in Europe." Contact Gareth at gareth.denton@enerconind.co.uk

2005 Industry Events

INDA/TAPPI International Nonwovens Technical Conference (INTC)

September 20, St. Louis, MO
R. Wolf to present on plasma and photografting

Label Expo Europe

21 - 24 September, Brussels.
Enercon to make technology presentation

TAPPI PLACE Conference

Sept 25-29 Las Vegas, NV
Rory Wolf to present

Converting and Package Printing Expo

Booth 2227
Sept 26-28, Las Vegas, NV
Rory Wolf to present Surface Treating for Flexography (FTA Sponsored)

AIMCAL

Coating & Laminating – Fundamentals for Converting/Packaging Professionals
Sept 26 @ CPP Las Vegas NV
R. Wolf to present on plasma/heat seal strength

Pack Expo

Booth C3284
Sept 26-28 Las Vegas Nevada

International Converting Exhibition

Booth 3-C12D
22-24 November, Munich Germany

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Surface treating presentations abound at upcoming events

Enercon will be exhibiting and presenting at a host of events this fall. At the International Nonwovens Technical Conference Enercon's Vice-President of Business Development Rory Wolf will be presenting a paper on New Atmospheric Plasma and Photografting Approach for Improving the Hydrophilic Properties of Nonwovens Substrates.

In Las Vegas, Nevada, Enercon will participate in the AIMCAL Conference, TAPPI PLACE Conference, and CPP Exhibit.

On Sept 26th Rory Wolf will be making a presentation at the AIMCAL conference related to improvements of heat seal strength for extrusion coating applications. The presentation includes quantifiable test results relative to the effectiveness of atmospheric plasma glow discharge technology for such applications. The session will be moderated by Dave Markgraf.

At the TAPPI PLACE Conference Mr. Wolf will be making two consecutive presentations on Sept 28th. The session is sponsored by the FTA and focuses on flexographic process issues.



Rory Wolf

The first presentation reviews criteria used to select the best surface treatment technology for specific flexographic applications. The second presentation examines printing adhesion improvements that can be achieved through the use of Atmospheric plasma glow discharge technology.

Up first for the Enercon team is a technology presentation at LabelExpo Europe and later in the year an exhibit at the International Converting Exposition slated for Munich Germany November 22-24. Enercon will be jointly represented in booth 3-C12D by members from Enercon UK and Enercon USA.



21 - 24 September, Brussels
www.labelexpo-europe.com



Booth 3-C12D



Booth C3284



Booth 3-C12D

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