



# NEWS

## Surface Treating Technology

3rd Quarter 2008

Visit Enercon on the web for the latest developments in surface treating technology: [www.enerconind.com](http://www.enerconind.com)

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For printing success control your substrate



#### Technical Paper



APT and energy curing of substrates & inks with UV/EB

## High performance atmospheric plasma delivers for versatile APTIV™ film

After extensive market research and numerous customer requests, Victrex LLC embarked on a journey to develop a proprietary extrusion line to convert its PEEK resin into film. Mike Percy, global technical leader, Victrex APTIV films says, "We felt there was a greater opportunity for PEEK polymer-based film (in the broader marketplace) if it was actively sold out there," says Percy. "We also felt that we knew the material better, by far, than any-one in the world," since Victrex controls 95%–98% of the market.

Victrex subsequently expanded its UK facility and commissioned a custom-designed, 1.5-m-wide extruder that produces the film, trademarked APTIV™. An ER-WE-PA/Davis-Standard production line includes an extruder, roll stack, and winder. Off-line slitting/rewinding is accomplished on equipment from Atlas (Bobst Group).

### Plasma Delivers

Key to the success of the APTIV film product, says Percy, is an off-line, post-extrusion Enercon Plasma3™ surface



Enercon's Plasma3™ system at the Victrex U.K. facility provides long lasting treatment levels.

treating system. The atmospheric plasma treater produces high and long lasting dyne levels. Plasma3™ generates an ion discharge to the material's surface 100% more dense than flame treatment.

"As we were building the new facility, we wanted what we felt was the best technology," he says. "So, we took the leap and said, 'We're going to plasma treatment rather than corona treatment,' and the rest is history."

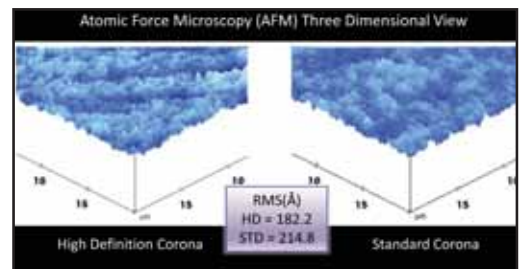
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## Plasma3™ reduces film and ink costs Learn more in Enercon's laboratory

What does surface treatment really do to a surface? Find out by taking advantage of specialized technologies for analyzing the effectiveness of surface treatment. Enercon is pleased to offer the XPS, AFM and SEM imaging as part of its laboratory services.

X-ray Photoelectron Spectroscopy (XPS) is a quantitative spectroscopic technique that measures the elemental composition of the elements that exist within a material.

Atomic Force Microscopy (AFM): is an analytical tool used to measure nanoscale differences in modulus and height of materials.



Scanning Electron Microscopy (SEM): scans surfaces with a high-energy beam of electrons to create a variety of signals which reveal topography data. For more information e-mail us at [info@enerconind.com](mailto:info@enerconind.com).

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## e Application Story

# Atmospheric plasma treatment enables APTIV™ converting

(continued from page 1)

Percy notes that plasma treating is a virtual requirement for maintaining superior performance characteristics during shipment from its UK production facility to customers in Asia, the Americas, and beyond. PEEK-based films previously had been corona treated, but the chemically resistant material made adhesion of its inks and coatings difficult, notes Percy.

The intense level of treatment provided by plasma solved those problems and helped customers with down-line processes. "PEEK is a very chemically resistant material, and as such it's very difficult to get materials to key to it," explains Percy.



The Plasma3™ treater generates long lasting dyne levels that allow APTIV™ film to be converted long after extrusion.

"People want to use PEEK-based film for a variety of reasons," he adds. "High-

"We did look at the corona system as an option, ...but we're making a long-term investment, and we look to be on the technical leading edge. All of the people who have tried [the plasma system] said, 'Wow, this is good.'"

Mike Percy  
Global Technical Leader  
Victrex APTIV™ Films

temperature performance is one of them, but they may want to stick it to something; they may want to vacuum metallize it or to print on it; and to do those three processes, you need the right surface energy characteristics of the film. That was the reason we bought the plasma treater."

### High-Performance Properties

Percy says Enercon's plasma treating system helps PEEK-based films succeed in part by maintaining the properties of the resin itself, including high heat resistance, excellent wear, low moisture absorption, broad chemical resistance, environmental friendliness, high strength and toughness, electrical stability with stable dielectric properties, radiation resistance, excellent barrier properties, and acoustic properties.

"APTIV film provides a unique combination of high-performance properties that you can't find in other materials," says Percy. "If you want something that's high temperature and chemically resistant, with a degree of impact toughness



The smooth glow of atmospheric plasma delivers premium treatment results.

and heat processibility, your options become limited. And that's where PEEK tends to fit in."

"We are at the apex of the high-performance pyramid," explains Percy. "It's not something you choose because it sounds good; you choose it because you need its high-performance qualities: high temperature, chemical resistance, high purity—all of the characteristics that the high end of the industry requires. "It's an expensive material in comparison to most commodity packaging," adds Percy.

"But we're finding the market trend is pushing technology higher, and consequently people need more higher performance materials, so they tend to come to us when their own materials run out of gas. Now that we're providing PEEK resin in a film format, we're actually contacting a whole new universe of customers. Now more companies can benefit from the superior properties of PEEK in a film format."

*This article originally appeared in Paper Film and Foil Magazine. For the complete article visit [www.pffc-online.com](http://www.pffc-online.com).*

## e Product Update

# Use ozone decomposers to insure safe air quality

A by product of all corona treaters is ozone. Enercon corona treaters are designed to ensure ozone is safely exhausted away from the operators area. To ensure the trapped ozone is decomposed before releasing to the atmosphere Enercon offers ozone decomposers for any size application.

The decomposer eliminates 99.999% of Ozone from the exhaust stream of any ozone generating processes. These

systems permit direct release of the exhaust stream into the atmosphere in compliance with clean air acts and laws related ozone standards.

The ozone decomposer converts ozone (O<sub>3</sub>) into Oxygen (O<sub>2</sub>). The unit consists of a particle filter, prefilter material, and oxide catalyst bed that reduces an input ozone level of up to 150 PPM to less than 0.1 PPM at the designated flow rate.



Enercon Ozone Decomposers safely convert ozone into oxygen to satisfy air quality regulations.

## New feature rich control panels will please

### Production Managers and Accountants alike



Tom Gilbertson  
VP Application  
Engineering

Bare-roll treaters, power generators with IGBT, Atmospheric Plasma treatment and High Definition corona are only some of the innovations Enercon has brought to the market over the last thirty years.

Today Enercon is pleased to announce its new control panel designs which are configured to simplify installation, provide maximum operational flexibility, and put smiles on the faces of your Production Manager and Chief Financial Officer.

#### Evolution of corona generators

It wasn't that long ago that most corona treaters provided you with limited operator control; Start/Stop buttons, a means to adjust power level and a few LED fault indicators.

Over the years additional options such as station diagnostics and watt density control have become more popular. Station diagnostics alerts operators to the status of interlocks included with your system. This powerful tool expedites troubleshooting and minimizes downtime by immediately identifying the location of a system fault.

Watt Density and Proportional speed control are popular options for lines that operate at varying speeds, such as flexographic printing lines. This feature allows users to program a precise watt density that will be consistently maintained as it compensates power output based on the speed of the web.

#### New Designs

Enercon's new corona generator control panels take advantage of our latest technology to provide operators with enhanced control.

#### New Compak™ 2000 Deluxe Panel



With the new **Compak™ 2000 Deluxe** Control panel additional boxes and wiring for station diagnostics and watt density options are no longer needed.

These features are integrated into the control panel. The elimination of additional boxes significantly simplifies and reduces installation costs.

An additional benefit of component consolidation is providing users with more flexibility in where they install their corona treater. The overall power generator footprint is reduced and wiring considerations for the treater, power supply and ancillary controls is reduced.

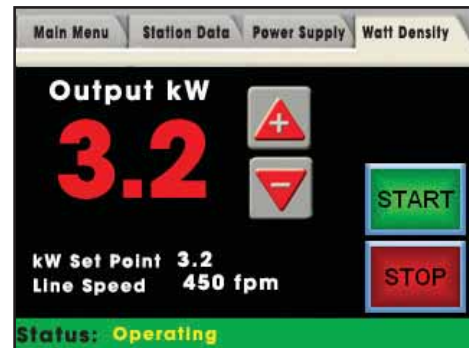
Convenient LED lights, large start/stop buttons are complemented by a menu driven VFD display. Users can select imperial or metric units and take advantage of optional language capabilities.

#### Network connectivity

The **Compak™ 2000 Deluxe** also provides a valuable fault log which is quite useful in resolving ongoing issues. You can also tie these features into your own control system with our network connectivity option.

Remote control, monitoring and operation is not limited to your integrated network. Enercon now provides micro-graphic displays which allow all of the power generator functions to be remotely controlled from a location that meets the unique needs of your specific converting line.

#### New Compak™ 9000 PLC Touch Screen



Enercon is now providing a Color LCD Touch Panel with on board PLC with the **Compak™ 9000**. The capabilities of this system include all the aforementioned features and options of the **Compak™ 2000 Deluxe** control panel plus more.

Enercon's engineers will specifically program the control panel to handle virtually any additional functions for your operation. For example you can build in nip roll control, electrode retraction, and single button start-up into the touch screen.

This control panel configuration also offers robust network connectivity capabilities and extensive fault logging.

#### Compak™ 2000



There's good news for those of you who don't need watt density control or network connectivity. The **Compak™ 2000** control panel continues to cover all the basics with options for station diagnostics and remote control.

Contact me today for more information on these new control panels that are sure to please both your production manager and accounting manager.

*Thomas Gilbertson*

## **e Flexographic Printing**

### **Best practices for troubleshooting printing on substrates**



Surface energy is a key ingredient in the marriage of ink and film. For a surface to be properly wet by a liquid, the surface energy of the substrate must be higher than the surface tension of the liquid.

By controlling the substrate's surface energy printers can eliminate a variable from the ink to film equation.

Learn how to quickly identify substrate adhesion issues and best practices for troubleshooting in Tom Gilbertson's newest technical article. Receive a free copy of this article by e-mailing [info@enerconind.com](mailto:info@enerconind.com).

## **2008 Industry Events**

**Label Expo**  
Booth 403  
September 9-11  
Rosemont, IL

**Pack Expo/CPP**  
Booth S-466  
November 9-13  
Chicago, IL

Set up your personal appointment with our application experts. Call or e-mail us at [info@enerconind.com](mailto:info@enerconind.com).

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## **e Technical Paper**

### **Promote adhesion of UV and EB inks and coatings with atmospheric plasma**

With UV curable, adhesion to plastics are particularly difficult due to the inherent polymerization process of UV resins. When exposed to UV light, the integral photoinitiator starts a chain reaction leading to polymerization of the formulation.

But this process can include shrinking of the transferred ink, coating or adhesive. Diluting of the curable with acrylates reduces the viscosity of UV formulation. Low viscous acrylates with high functionality can positively increase cross-linking density.

But this can also increase shrinkage and therefore decreases adhesion. Choosing diluting acrylates with lower functionality can aid adhesion to the adherend.

Also a major adhesion promotion technique when using diluting adherends is ensuring that the liquid UV formulation have a surface tension no higher (and preferably 10 mN/m lower)



**Get your copy of Rory Wolf's Free Technical Paper on APT for use with UV and EB inks and coatings**

than the critical surface tension of the solid adherend.

Surface treating polypropylene, for example, using a functionalizing atmospheric plasma to raise its surface tension from 31 mN/m to 46 mN/m and create covalent bonding will allow most diluting acrylates to wet sufficiently to its surface.

Request a free technical paper on this topic by e-mailing Rory at [info@enerconind.com](mailto:info@enerconind.com)



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