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# TRANSDERMAL FEATURE PATCHES

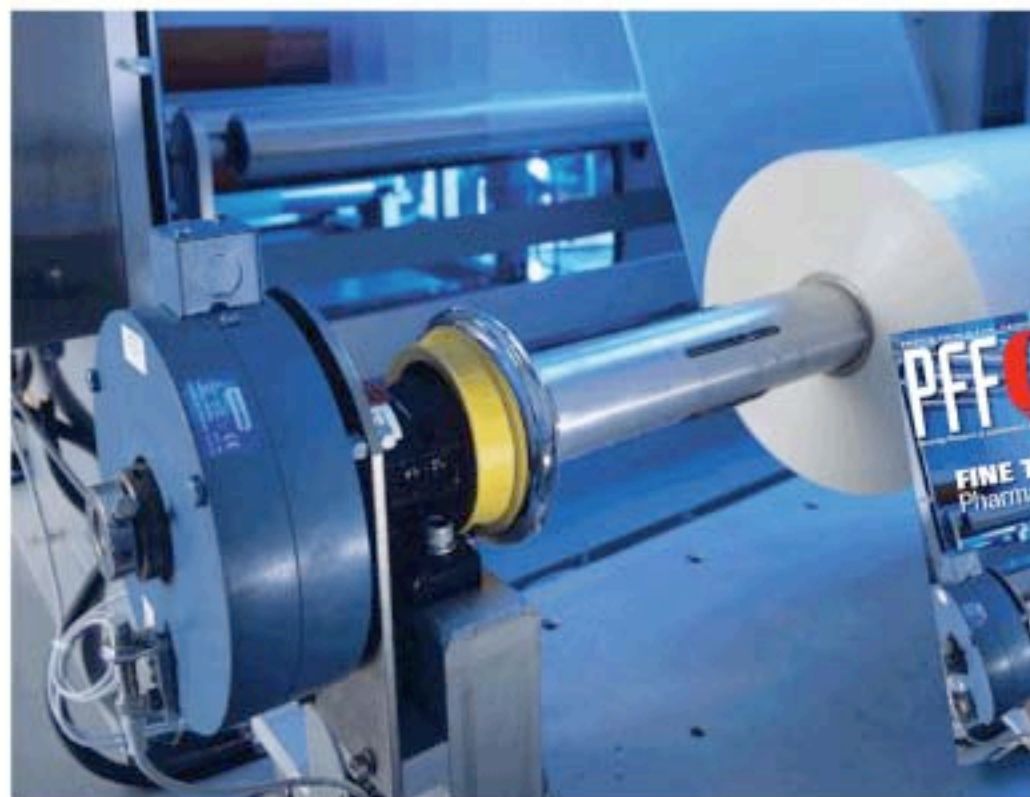
By **Nsenga Byrd Thompson** Associate Editor



*Using **MAGPOWR CYGNUS PID** tension control, Noven retains precise load cell/tension sensor control to ensure uniformity without wrinkles.*

*Crucial point location of control processors for guiding, chasing, and tension yield easy local access for fine-tuning the process, in addition to providing simple integration through central PLC automation. Products shown: Fife web guide controllers and infrared sensors with a wide proportional band.*





*On the cover: Noven Pharmaceuticals fine-tuned its patch manufacturing process with products supplied by Maxcess Intl.*

# Upgrade the Old, Bring in the New!

Noven Pharmaceuticals turns to Maxcess as a resource to upgrade and streamline its coating and laminating operations.

Noven Pharmaceuticals may not be a household name, but the patented creation of this 500-employee company helped revolutionize the way people receive medication. Eighteen years ago, Noven opened its doors and soon after developed a method of transdermal drug delivery it later would license to pharmaceutical companies such as Novartis and Procter & Gamble. Today, Noven is a world leader in the production of the transdermal estrogen replacement patch.

With a new transdermal patch product—methylphenidate (for treatment of ADHD)—Noven Pharmaceutical's transdermal development continues to be revolutionary. However, to accommodate its expanding high quality product lines, the company had to increase efficiency by revolutionizing the equipment on its production floor, which was home to two reliable coating lines.

According to Will Jackson, technical manager, one key challenge that Noven's production team faced with its existing coating lines was the lack of commercially available replacement parts for the equipment.

## A Change of Plans

Planning to replace the two coating lines with new equipment, Noven's executive team met with Maxcess Intl. while visiting PackExpo Chicago in 2004 to discuss possible solutions.

## Making the Patch

Vivelle-Dot is said to be the smallest estrogen patch in the world. It owes its small size, excellent adhesion, and low irritation profile to Noven's patented DOT Matrix technology. The company's transdermal patch is comprised of a blended adhesive and release liner substrate. The adhesive is prepared in a clean room environment and then transferred to a coating line. The adhesive is then coated onto a release liner and laminated to the backing, resulting in a final product to be applied to the patient.

The specially formulated ingredients are prepared in a manner that concentrates the drug and optimizes adhesion, which allows Noven to develop smaller, more wearable patches without adding irritating enhancers. The company's research and development team, led by Juan Mantelle, developed DOT Matrix technology in-house. In addition to the Vivelle-Dot product, Noven says, DOT Matrix technology permitted the company to develop the first (and what was for five years said to be the only) two-drug patch approved in the US (CombiPatch).





*Recent technology investments in converting equipment, including the Fife offset pivot guide with web guide controller, fulfill engineering design concepts as well as the pharmaceutical necessities that are paramount in manufacturing a high quality transdermal delivery system product.*

Noven asked Maxcess to visit its Miami operation with the goal of helping in the decision-making process.

But when the local Maxcess district manager examined Noven's existing lines, he soon discovered that significant gains in production capacity could be achieved by rethinking the existing process line and integrating new equipment.

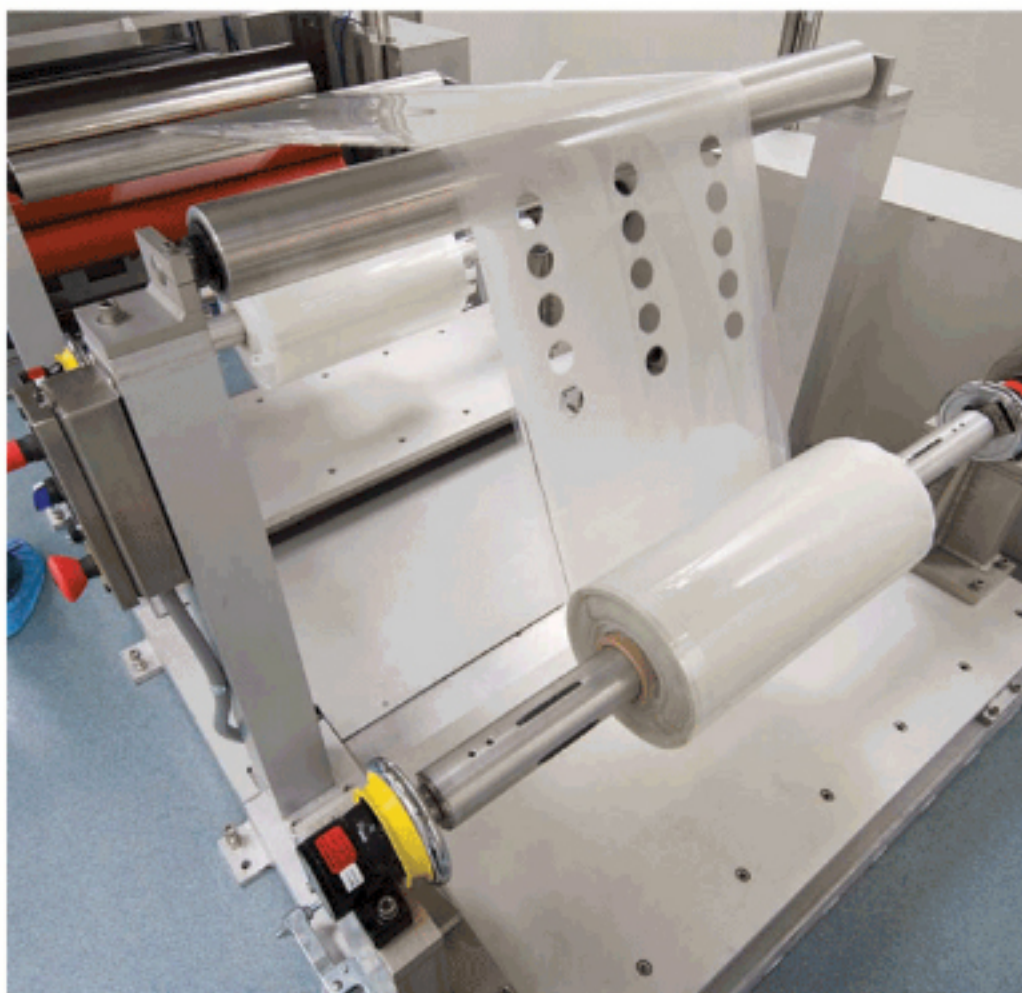
To achieve its production expectations of reduced downtime and waste in a cost-effective manner, Noven decided to add a new 30-ft coating line in addition to upgrading its existing lines, utilizing solutions from all three Maxcess brands: MAGPOWR, Fife, and Tidland.

*Noven says Tidland safety chucks provide quick mount/dismount on roll shafts with sealed internal bearings and clean room compliance. Here the dermal material has just left a chill section, and scrap is being rewound after the die-cutting process.*

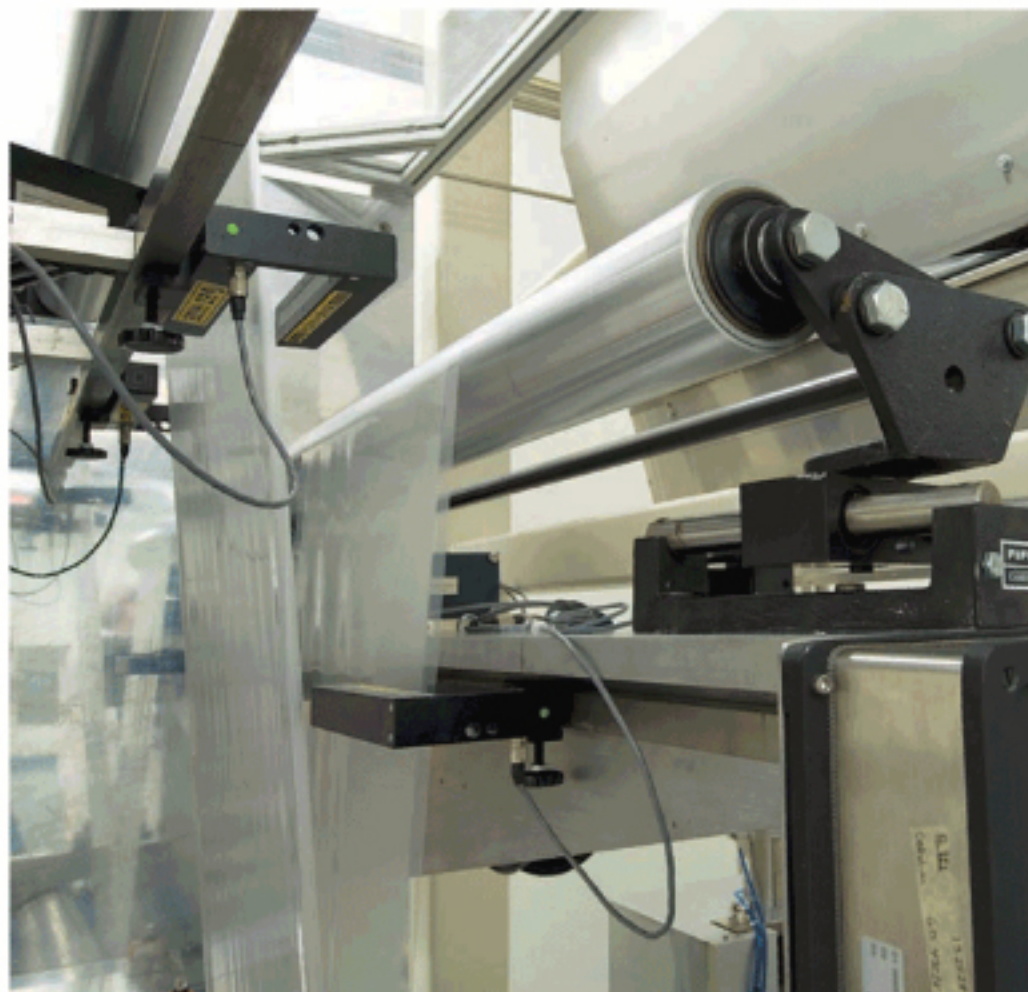
## **Retrofit Benefits Performance**

The project began with the two existing coating lines receiving complete upgrades to take advantage of newer technology. The existing MAGPOWR tension control system was updated to MAGPOWR's Versatec and Cygnus systems and TS series load cells. All controls then were integrated into a DCS (distributed controls system) with touchscreen controls.

All Fife pneumohydraulic guides were updated to Fife electromechanical models, controlled with a CDP-01 web guide controller and integrated into the DCS touchscreen control system.







*Noven Pharmaceuticals uses a Fife web guide controller with ultrasonic sensor to guide two webs to the sealing nip prior to oven/dryer.*

Tidland's cantilevered shafts were changed from button and lug styles to the external element design, and Performance Series knifeholders were added.

Jose Lima, director of manufacturing operations, comments on the huge benefits that have resulted from the upgrades. "Standardization of the equipment has led to a reduction in the number and variation of spare parts, streamlined maintenance, and the ability for operators to move between multiple machines without additional training."

He also is pleased with the coating lines' fully automated performance. "There is no human factor of subjective intervention, so runs are consistent through an entire shift as well as through shift changes. This consis-

tency is critical in the manufacture of pharmaceuticals. The faster production process moves smoothly from setup to line speed."

Another challenge addressed was tension control in the lamination process. According to Carlos Gonzales, technical supervisor, "I learned that our tension and guiding system is what it's all about. With the great brake system that we implemented and the guiding system, we have better tension throughout the lamination systems."

## Integrating the New

In addition to the successful overhaul of its existing lines, Noven brought in a new, 30-ft proprietary coating line.

"The main concern was the cost of floor space, which typically is \$500 per square foot in pharmaceutical manufacturing," Lima explains. "The local Maxcess representative brought in Partek Automation, an equipment OEM, to oversee the integration of

equipment into an entirely new process line."

An internal team at Noven designed the concept of placing the dryer over the unwind and rewind sections to maximize the use of space. After the initial installation, Maxcess provided ongoing technical support as requested.

Jackson has been pleased with the expertise Maxcess offered Noven throughout the two-year process. For him, it's been a valued working relationship.

"We've been working well with the Maxcess technician. If we want to upgrade something, we tell him this is the problem we have, and he'll come in and assess the job. Once we purchase [the upgrade], he comes in again. We have a pretty good working relationship as far as working out any bugs. Once he knows what our problem is, he lets us know our options, and then we can choose from those options."

For Noven, the results of upgrading and bringing in a new machine defi-

nately have met expectations. Jackson comments, "We always had a great process. We lived with some of the problems with the old equipment, and basically we've enhanced what we had. We now have more control of the web, less mechanical breakdown, and faster setups."

With its coating lines upgraded, Noven Pharmaceuticals can continue to focus on its core business—the next revolutionary development in transdermal drug delivery.

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## CONVERTER INFO

### Noven Pharmaceuticals

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## SUPPLIER INFO

**Maxcess Intl. (Fife, MAGPOWR, and Tidland)—PFFC-ASAP 305.** [www.maxcessintl.com](http://www.maxcessintl.com)  
**Partek Automation—PFFC-ASAP 306.** [www.partekautomation.com](http://www.partekautomation.com)