

Van Leer produces eye-catching holographic papers at its new metallized paper plant

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EXPANSION WILL HELP MEET DEMAND FOR SPECIALTY PRODUCT

Whether selling beer, cereal, soft drinks, or paint, manufacturers in a crowded market are seeking to differentiate their products from those of their competitors. One way some companies are doing that is by using metallized papers for labels and packaging. To meet this growing demand, the world's largest manufacturer of metallized products, Van Leer Metallized Products (USA) Ltd., is doubling capacity at its 120,000-ft², US\$ 22 million plant in Franklin, MA.

Specialty Papers

When built in 1993, the primary goal of the plant, which produces Van Leer's metallized and holographic papers, was to work at greater volumes and a faster speed while maintaining high quality and process control.

Van Leer Metallized Products (USA) Ltd., a division of the Netherlands-based, US\$ 2.3 billion Van Leer Packaging Worldwide, manufactures industrial and consumer packaging. The company's current capacity is 12,000 tons of metallized paper per year, including electrosensitive paper (ESP), metallized paper for labels, and holographic papers, such as its proprietary HoloPRISM. Expansions to be completed in 1995 will double that capacity.

In 1991, Van Leer acquired Dennison Manufacturing's Metallized Paper Division, gaining the rights, patent, and equipment for manufacturing HoloPRISM, a holographic paper used for product labels.

HoloPRISM was introduced in 1989, and in 1990 it won the Technology of the Year Award from the Association of Industrial Metallizers, Coaters and Laminators (AIMCAL). The proprietary paper is available in hundreds of patterns and images, and customers can request specific designs related to their business. Some of the more complex papers use changing colors to generate a rainbow image; others reveal three-dimensional pictures, figures, or designs.

Holographic papers have been used by manufacturers for several reasons, primarily to make products appear different, exciting, and more noticeable. In addition, holographic images cannot be reproduced by color photocopy machines, so they are useful in security applications, such as identification cards and admittance tickets. HoloPRISM and other metallized papers have been used for gift wrap, print and billboard advertising, and to package household cleaners, paint, and automotive products. They've also served as labels or packaging for food, beverages, cosmetics, and fragrances.

According to Randy Jacobs, Van Leer's marketing manager, the commercial market for holographic products is anywhere from US\$ 100 million to US\$ 150 million. Van Leer's customers include Coors Brewing, Garvin Greetings, General Mills,

General Motors, Hallmark, Merck, Miller Brewing, Molson Breweries, Sears, Smith-Kline Beecham, and the Wardley Corp.

HoloPRISM can be used everywhere ordinary paper can, but at less cost than traditional holographic materials, Jacobs

noted. While HoloPRISM looks like holographic paper, it handles and prints like conventional paper because only two-millionths of an inch of metal is applied to the paper. The paper's holographic images can be overprinted with opaque and transparent inks, also, so that they don't dominate a label or package.

The first of HoloPRISM's strengths, its ease of use, is especially apparent when the product is compared to earlier holographic papers.

HoloPRISM can be laminated, slit, or sheeted without special handling requirements, and its primer topcoat is compatible with offset, gravure, flexographic, silk screen, or letterpress printing.

The paper's second strength is low cost. Van Leer attributes the relatively lower cost of HoloPRISM to the company's use of wide webs of 63 in. With the addition of a new embosser, web widths will be boosted to 92 in. HoloPRISM and other metallized papers compare favorably in cost to materials such as foil because variations in foil paper stock require more adjustments on the press, according to Van Leer.

HoloPRISM's third strength, Jacobs said, is that designers can incorporate the holographic images into the overall design of a label or ad. Where previous holographic papers dominated a design, making it appear overly splashy, chaotic, or even downscale, HoloPRISM can be used to subtly enhance a design without being overpowering because it can be overprinted by standard printing processes. "HoloPRISM is used primarily for the visual effect it offers," Jacobs commented, "and because it has all the benefits of regular paper."

Fourth, unlike traditional holographic papers, HoloPRISM is repulpable. It's considered a mono-structure when laminated to pulp base materials.

Van Leer's customers have been pleased with the company's proprietary paper. Molson Breweries turned to HoloPRISM for a new label after it was forced to abandon a highly success-



A Black Clawson coater used by Van Leer

ful applied ceramic label. Because of a change in Canadian law in 1991, all Canadian breweries were required to use an industry-standard bottle from which the label could be removed and the bottle reprocessed. Ceramic labels didn't comply with the new legislation, so Molson sought a replacement. The company's goal in moving to holographic labels was simply to minimize what it considered the inevitable loss of market share that would accompany a product repackaging mandated by environmental rather than market concerns.

The brewery selected a HoloPRISM label printed on Van Leer's 46 pound label stock. Much to Molson's surprise, it did not lose any market share in switching to the HoloPRISM label, and it attributed the success of the repackaging to HoloPRISM's imagery and appeal.

HoloPRISM boosted sales for another brewery in 1992, reports Van Leer. At that time, Miller Brewing was developing its annual Halloween promotion, a critical sales period for the beer industry. The ad campaign involved placing a holographic image of lightning streaking across the label to produce a spooky Halloween look. Bottlers and distributors ordered more than 25 million bottles of the brew sporting the holographic label, a 180% increase over the previous year's promotion, thanks again to an unusual and visually arresting label.

To produce such success stories, Van Leer is exacting in its purchase of raw materials, buying top quality papers from a number of domestic and foreign mills. Domestic suppliers include Bowater, Glatfelter, James River, Mead, Otis, and Westvaco. Van Leer is a stickler for consistency, specifying paper grade and weight and asking its suppliers to produce the same type of paper on the same equipment so it knows exactly what it is getting.

Van Leer creates its metallized papers in roughly five steps. Holographic papers like HoloPRISM require an extra step, that of embossing, to impart the holographic image.

The first step in developing metallized paper takes place at the coater, manufactured by Black Clawson and currently the largest in the industry. At the coater, pre-lacquer is applied in a thin layer to the base paper by two coating heads in widths up

to 92 in. at 1300 ft/min. This gives the base paper the grain-free surface needed to support a finish with a high sheen. Lacquer is applied to the web within the coating enclosure booths by either direct or offset gravure system.

The coater contains a computerized "process supervisor" which keeps track of 99 of the coater's variables, helping operators assess production details and make adjustments when necessary.

After the paper is coated (and embossed if the customer wants holographic paper), it is placed in the metallizer's vacuum chamber. Van Leer's metallizer is manufactured by General Vacuum Equipment. Like the coater, it's the



 The General Vacuum Equipment metallizer

largest in the world, boasting an internal diameter of 14 feet. The paper, which can weigh up to 15,000 pounds, is automatically loaded and unloaded into the metallizer's vacuum chamber with roll-handling equipment at speeds from 700 m/min.

In the metallizer, a very thin layer of aluminum is evaporated onto a substrate to form a metallic surface. Metallizing requires as little as one to three ounces of metal per 3000 ft² of paper, or only 2 millionths of an inch. This is the key which makes the metallized paper as easy to handle as conventional paper.

Van Leer ensures the consistency of the gloss by using a closed loop metal deposition monitor. The monitor measures the resistivity of the paper before and after metallizing, guaranteeing uniform deposition of aluminum across the web. By varying the evaporate conditions in the evaporator boats across the web, Van Leer can automatically control how much aluminum is deposited. The dual evaporate section permits operators to clean and repair the equipment while metallizing is taking place.

After the paper leaves the metallizer, it is returned to the coater for print primer and remoisturization. Van Leer's closed loop steam system automatically adds either water or steam as needed to make sure the entire web is consistently moist, a step that will keep the paper flat during printing.

Last, the paper is trimmed or sheeted according to customer specifications using an Atlas individual rewind arm slitter. The

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slitter trims the 15,000 pound rolls to be sheet cut for offset printed products.

Since it would be meaningless to possess the largest, fastest and most advanced equipment without well-trained operators, engineers, and support groups, Van Leer sent its 90-odd Franklin plant employees through intensive training on the new equipment. Operators participated both in Van Leer's internal training courses, held overseas at other Van Leer plants, and outside classes offered by the various vendors of its equipment.

Given that the equipment is larger, faster, and more complex, Van Leer built its Franklin plant with an eye to increased communication and efficiency. "We have the capacity to produce more volume because of the increased width and speed of our equipment," Jacobs explained, "but most of our focus has been on quality." The plant, completed in June 1993, contains only one interior wall. Teams working on the coater, embosser, metallizer, and slitter can readily spot problems and discuss solutions. Each of the teams is linked to the local area network to obtain up-to-the-minute details on scheduling and production.

In designing the plant from the ground up, Van Leer took care to determine the most efficient flow of materials and the optimal placement of machinery. Because Van Leer built the plant from scratch, it had the freedom to gear the size of the plant to its new equipment. Instead of buying the coater and metallizer off the shelf, Van Leer instead had the machines custom made to suit its applications, using the wider web widths and larger-sized equipment to speed production.

Van Leer designed the plant to be expandable by 25,000 ft². One of its exterior walls can become an interior wall after an expansion, and the groundwork is in place for a third crane to augment the work currently done by two cranes that move up to 10 tons of materials through the production area. The plant

is already being enlarged with the addition of both a second coater and a second embosser. "We currently have two expansions going on," Jacobs noted. Those will double the plant's

production from 12,000 to 24,000 tons of metallized paper per year in 1995.

Van Leer designed the Franklin plant to be safe for the environment and for employees. Coating operations are contained in air capture rooms allowing Van Leer to recover 98.5% of solvents, reportedly the highest recovery rate in the industry. The solvent vessels, manufactured by Barnebey & Sutcliffe Corp., are each blanketed with nitrogen under

slight pressure to avoid the risk of fire.

To preclude the risk of a spill causing environmental damage, Van Leer installed an external chemical delivery system of welded stainless steel pipe. It also has an outdoor liquid containment area in the form of a 350,000 gallon retention basin. This backs up the internal system in case something inside goes awry.

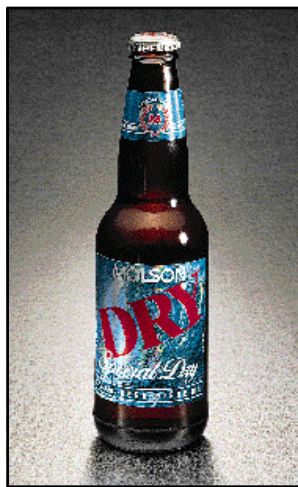
In addition, Van Leer touts HoloPRISM and its metallized papers as earth-friendly in that they use such small amounts of aluminum that they don't have any measurable impact on the environment. Recyclable as pulp, metallized papers reportedly require 97% less energy to produce than foil. The thin layer of aluminum which coats metallized papers can cover 125 times as much surface layer as foil to produce the same shiny and eye-catching paper.

Van Leer furthers its environmental goals from the top down, with the chairman of its executive board leading a Group Environmental Steering Committee. The committee meets with working groups throughout Europe and the United States, focusing on methods for reducing the company's use of raw materials, increasing its use of recycled and biodegradable materials, and reusing packaging. ■

Winchester is a technical writer based in Duluth, GA.



❖ Van Leer's Atlas slitter



❖ Metallized paper as labeling