

A Cure, But at What Cost?

Curing equipment makers challenged to sell new products in tight market.

By Greg Valero

THE SOFT ECONOMY is creating a Catch-22 situation for many users of radiation curing equipment. The latest ultraviolet light (UV) and electron beam (EB) technology is touted as higher performing and more cost effective than ever before. And while many companies require new machinery to increase productivity and efficiency, industry members report capital expenditures are limited by tighter operating budgets.

"There is very little money available for capital equipment," observed Greg Bachmann, General Manager, Equipment Division, at Dymax Corp. "But at the same time, companies want to make the efficiency improvements available with light curing processes."

Further complicating matters is much of the growth in light curing equipment came through the recent expansion in certain specialty electronic markets. "Now that expansion has turned to contraction so there is idle equipment," Bachmann pointed out, "The anticipated expansion in the optical and optoelectronic markets has not come on as fast as anticipated."

In cases where new purchases are out of the question, some companies may hold onto existing equipment while others acquire used machinery. "they are hanging on to equipment longer, so the buying cycle is slower," said Jim Raymont, director of EIT instrument markets at EIT. "They're trying to maintenance older equipment instead of buying new equipment."

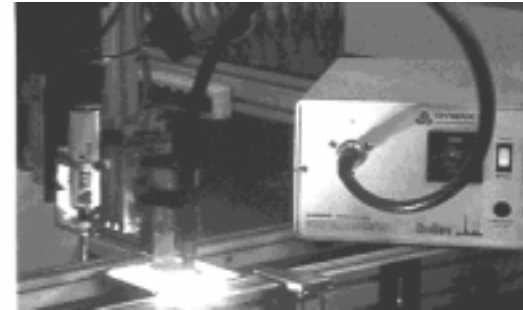
As a result, vendors find themselves selling more spare parts and refurbishing and modifying older machines than ever before. "Many prospects have been attracted to cheap, used equipment but found, unfortunately, that much of this equipment needed costly maintenance," Bachmann said. "No one wins when they purchase something on an Internet auction that needs an expensive repair."

All the more reason why radiation curing equipment users should consider investing in the latest technology, vendors say. For instance,



Dymax's light-curing adhesive and curing devices focus on maximizing manufacturing productivity for individual applications. "This means that the curing system must be matched to the application and to the resin for optimum efficiency," Bachmann said. "General principles that drive our new product development are lamp and resin 'pairs' that cure faster and deeper to lower overall costs, reduce capital equipment costs and offer lower maintenance."

Energy Sciences Inc. demonstrates to customers the benefits of instantly cured EB laminating adhesives that can eliminate, or significantly minimize "work-in-process" inventory typically associated with conventional time-cured adhesives, said Richard Sanders, sales and marketing manager. "Additionally, EB



laminating adhesives cure instantly, so real time quality control helps reduce waste associated with improper cure."

Other developments center on creating energy-efficient machinery that offers

Top to bottom, Dymax's BlueWave spot wand style lamp; KIT's UV Power Puce, a high energy UV integrating radiometer; and Energy Sciences' Fender Mex, a three dimensional rotary curing unit.



excellent value. "Products today have to be cost effective for the application and have a good life span of at least 10 years, except for items that degrade like lamps and light guides," noted Meredith Stines, president of American Ultraviolet. "Quality for the right price is still a major factor and American Ultraviolet has done that since 1960."

Energy Sciences reports that customers are seeking ways of reducing costs while delivering quality products quickly. "EB curing offers all the environmental benefits and energy savings of the solvent-

less systems," said Sanders. "In addition, it provides instantaneous cure, a property lacked by the incumbent time cured adhesives."

Energy Sciences is addressing these issues by creating low-cost, low-voltage EB equipment, Sanders said. For example, "in 1999 we introduced the EZCure-I as our first low voltage EB system for the wide web marker. Early 2002 saw the introduction of the EZCure-III, which features an even lower voltage threshold and price point."

An ongoing issue for curing equipment is extended lamp life, which vendors say they have addressed. Gordon Knight, President, UV III Systems Inc., noted that microwave lamps have a 5,000-hour life compared to 1,200 hours for filament lamps. "This is somewhat offset by the fact that filament lamps run on a very solid and reliable transformer backed by a two- to five year warranty as opposed to microwave units, which run on magnetron units and frequently need to be replaced," he said. "This evens out cost savings at best and depending on magnetron cost, can be a very expensive replacement."

Microwave lamps are also less cost effective relative to power consumption. "Our equipment already goes from 100 to 1,000 watts per inch (wpi). The most popular are 200 to 750 wpi," Knight said. "Our standard lamps range from 1.25 to 72 inches; we can go longer if required."

The latest curing equipment is also marketed as more stable, longer lasting and higher-powered. For instance, Dymax's new spot light, BlueWave, offers advantages such as faster and deeper resin cure.

"The characteristics of the spectral distribution in the UVA and blue light

wavelength range, 320 to 480 nm, react more favorably with photoinitiators for UV and/or visible light curing epoxies and acrylics," Bachmann said. "High intensity multi-wand cures that allow lower overall costs as the BlueWave can replace up to four 100-watt spot systems."

R&D is also concerned with creating systems that operate together with computers and other devices that eliminate potential user errors. "PLC compatibility is becoming a standard rather than an option," American Ultraviolet's Stines said. "We are looking at cost effective ways to utilize PLCs and other electronic control systems rather than using relays, etc. Solid state power supplies and other non-moving devices are used in all new designs."

Radiation curing instruments, particularly spot or wand style systems used in assembly adhesive applications, are requiring other shapes or "footprints" to do the job better or faster. "That is why we offer lamps from small 1/8-inch spots to 12 x 12-inch floods, or arrays of lamps mounted over conveyors," Bachmann said.

Moving forward, manufacturers are challenged to convince customers about the importance of process control and that investing in new machinery is more cost effective, long term, than leasing or maintaining old equipment. "I have seen some companies that are reluctant to use the resources of their equipment vendor/local sales rep to help solve problems," EIT's Raymont said. "Companies wind up delaying new products and applications because they did not use the experience of an outside source."

"The business environment makes it more challenging for capital equipment sales," Energy Sciences' Sanders added.

"The improved benefits and shorter return on investment time frames that the new technology brings to the converter helps to justify the investment in new equipment today."

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