

AN UPDATE ON RADIATION CURING SYSTEMS

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Radiation curing continues to move from laboratory curiosity into more mainstream applications in the North American coatings, adhesives and specialty product markets. This is partially due to the technology reaching critical mass with respect to installed equipment, but also because the benefits of radiation curing are striking a chord with an increasing number of end-users. The ChemQuest Group, Inc., a Cincinnati, Ohio, based management consulting group forecasts that the industry will continue on its strong or near double digit growth rate through the remainder of 2004.

Radiation curing refers to the use of light (usually UV) or electron beams to initiate polymerization reactions that “cure” formulated products such as coatings and adhesives. UV light is the dominant technology and is widely used across a diverse range of end-uses as shown in Figure 1. Radiation curing is well-accepted in several important markets including graphic arts, vinyl floor coatings, fiber optic coatings and electronic conformal coatings. However it is rapidly emerging in larger markets such as coatings for wood, automotive and optical storage as well as medical and dental materials and 3D solid modeling.



UV/EB Market North America - 2003

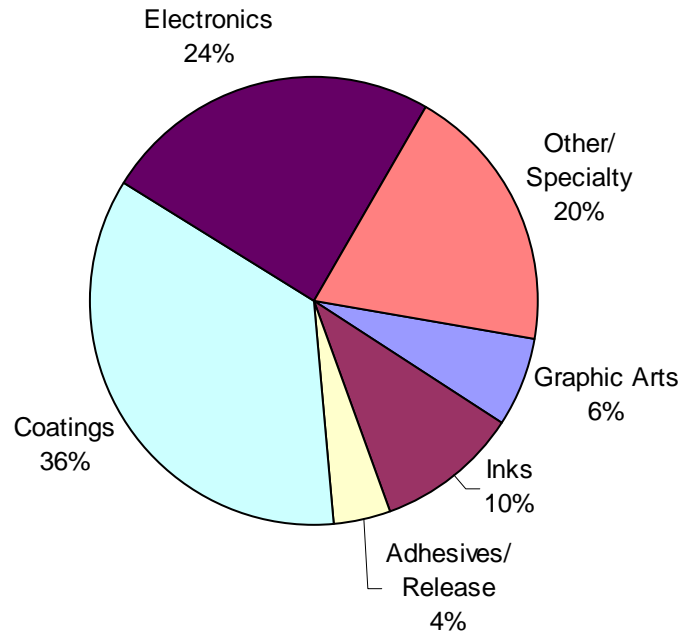


Figure 1 - End-Uses of Radiation Curing Technology

The radiation curing industry, through the trade organization RadTech International (Chevy Chase, MD), continues to do a marvelous marketing job of creating awareness of the value proposition and have successfully positioned radiation curing as having an advantage over thermal and oxidative curing along five dimensions:

- Energy savings
- Increased speed of cure
- Improved cured properties, particularly crosslink density
- Reduced environmental impact
- Reduced capital investment and footprint

The value proposition is especially strong in those industries facing new capital investment where avoidance of large thermal curing facilities can result in savings of millions of dollars. Even in established industries, end-users are finding that radiation curing can reduce emissions of solvents since



many of the radiation cured formulated products can use very low viscosity resins thus eliminating the need for solvents.

Perhaps the most promising area of growth is in automotive where radiation curing has the potential to enable new performance characteristics for primers and clearcoats that outperform thermally cured products. Automotive OEMs have specified radiation cured coatings for over a decade for forward lighting lens coatings and are familiar with the technology. Furthermore, automotive coatings is one of the largest coatings segments and even small penetration by radiation cure will drive substantial new volume. As this volume builds, other segments of the metal coatings market are expected to follow.



About the Author



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Michael joined ChemQuest in 1999 after 17 years with DuPont Automotive, where he was Business Manager, Light Industrial Coatings. Prior assignments were in marketing and product management positions with DuPont in the Refinish automotive and fleet aftermarket business. His automotive experience also includes sales and technical experience in the engineering plastics markets. He holds a B.S. in Chemical Engineering from Kansas State University.

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