

Coating Innovations

The influence of new technologies on a worldwide basis

Ask any experienced protective coatings engineer, consultant, salesman, applicator, or inspector what has most impacted his job during the last 10 years and the answer is most likely to be "The tremendous increase in technology, and the changes that technology has created in my job." The industry has gone from relying on multicoat thin-film technology to single- or dual-coat thick-film technology. Concurrent with these changes has come a need for a greater degree of surface cleanliness, shorter recoat times, and greater control of the curing process.



A quick look at some of the product catalogs from major multinational coatings manufacturers reveals the depth of this change. A review of the product catalog of one major manufacturer reveals a list of 42 products with an average volume solids of 74.6%. Seven of these products are 100% volume solids. Ten years ago, most of these products were in the laboratory development stage.

A significant result of this shift to higher solids is an increase in the reactivity of many of these products, resulting in shorter pot life and shorter recoat intervals

between coats of the system. Nearly all of the 100% solid epoxies and polyurethanes/polyureas have such short pot lives that they must be applied with plural-component airless spray equipment.

It is important to understand the impact of these changes in technology on both new construction and maintenance budgets. Plural-component airless spray systems can cost >\$25,000, whereas a conventional airspray system can cost <\$5,000 (excluding the cost of the compressor in both cases). Plural-component systems rely on pumping viscous fluids through very small orifices (typically 0.015 to 0.023 in. [0.038 to 0.058 cm]) at pressures from 1,500 to 4,500 psi (10 to 31 MPa). The pigments in high-build coatings are abrasive to varying extents, which wears the walls of the pumps and the orifices of the spray gun very quickly, thus costing more in maintenance than conventional airspray systems.

Another impact of high-solids coating systems is the shortened time between coats. It is not unusual to find a recommendation of a maximum of 72 h between coats. This leaves little room for error in scheduling or weather variances.

The cost-per-gallon impact of high-solids coatings can be dramatic. It is rare to find a 100% solids epoxy that sells for <\$50/gal, whereas traditional 60% solids epoxy products are normally <\$30/gal.

As refined products have become more and more pure, so has the penetrating power of those products increased. Some of the old tried and true, low-film-build, multicoat epoxy systems cannot resist the aggressive penetrating properties of products such as methanol and MTBE. Some of the newer novolac epoxies in volume solids ranging >75% serve exceptionally well in this service.

Despite the pressures brought upon the applicators of new technology coating systems such as better, more sophisticated equipment and more consistent training of employees, newer coatings technologies have had a tremendously positive impact on the coating industry. Systems last longer, require fewer repairs, and resist corrosion better. The result is less cost per ft² per year of service life. That should always be the defining measure by which an owner decides which protective coating system to choose for a particular project.

L.D. Vincent

L.D. "Lou" Vincent, Corrpro Companies, Inc., Port St. Lucie, Florida

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