



# UV Coatings LIMITED

## EXISTING COATINGS TECHNOLOGY

The research and development of "a better industrial coating" has been ongoing for decades. Improvements in coating formulations have also resulted in a wide range of systems used in the industry. Currently, these coating systems include:

### COATING SYSTEMS

#### **Solvent-borne** (20% solids, 80% VOCs)

For every five drums of solvent-borne coating conventionally manufactured, fully four drums of VOCs are used to keep, in liquid form, one drum of coating solids. In order for the liquid coating to dry, this system requires heat and time for the solvent to "flash off" (evaporate into the atmosphere).

### PRODUCTION PROBLEMS / LIMITATIONS

- Fire and health hazards associated with solvent fumes
- Varying drying time due to humidity/temperatures
- Plant floor space dedicated to ovens/drying racks
- Equipment disassembly for cleaning to prevent buildup
- Requires spray system clean-up to prevent buildup/clogging
- Substantial VOC emissions

#### **100% Solids, Two-Part Hardener/Resin Systems** (epoxy, urethanes, etc.)

While this system is 100% solids and is capable of being spray-applied, it relies on a chemical reaction to cure, not to dry, the coating. This system requires no drying oven, but two-part systems have a limited pot life. Each production batch, therefore, must be mixed just before being charged into the spray system.

- Limited pot life
- Time-consuming
- Mixing two parts allows for human error
- Inconsistency from batch to batch
- Solid waste may be hazardous

#### **Mono-Epoxies** (heat-triggered cure)

Some mono-epoxy systems are capable of being spray-applied as 100% solids. Mono-epoxies, however, require heat soaking at temperatures of 150° F to 225° F in order to be activated.

- Requires use of large ovens
- Costly gas/electrical resource consumption
- Limits open floor space
- Curing emits toxic vapors
- Incurs environmental, health and safety costs

#### **Water-borne/High Solids** (60% solids)

This coating system decreases, but does not eliminate, VOCs in sprayable coatings. Solvents are still incorporated into this system though the bulk of the solvent carrier vehicle is replaced with water.

- VOCs still present upon curing
- Drying time affected by coating thickness, plant humidity, and temperature
- Entrapped moisture causes delamination