

UV-Curing Lamp Considerations for the Automotive Refinish and Repair Market



By Daniel L. Maloney Jr.



UV curing in the automotive refinish industry.

The use of UV coatings in the automotive refinish and repair market has been growing over the last two years. To date, only primer applications are available to the body shop; however, additional coatings may be introduced into the marketplace. Likewise, the number of suppliers offering UV coatings and related refinish products is expected to surge as the technology becomes more widespread and applicable to automotive refinish procedures.

Current Status

Currently, UV-cured primers are being used by body shops primarily in small damage repairs commonly referred to as “spot jobs.” The primers are available in both aerosol and sprayable formats. It is likely that UV-cure products will be expanded to possibly include basecoats, topcoats, fillers and glazes, and even adhesives and sealers.

UV-refinish processes do have application beyond the traditional body shop environment. UV coatings may also be used for the OEM end-of-line assembly, the mobile dent and chip repair services, and in auto auction and port of entry facilities. This paper will focus on the body shop.

As the entrance of UV products gain popularity in the body shop arena, the need for UV-curing lamps and the

understanding of their role in this technology becomes important. Effective and timely curing of UV coatings will require the use of a UV-curing lamp.

Considerations

The body shop owner who decides to invest in the features and benefits of UV technology would be wise to spend time learning about UV-curing lamps to ensure that the expected ROI (Return on Investment) is attained. The current cost for a quality UVA curing lamp in the refinish market is \$1,700 or more.

UV light used for curing applications is in designated three bands: UVA, UVB, and UVC. The only band considered appropriate for an aftermarket (body shop) application is UVA. UVB and UVC are considered too intense for refinish applications, requiring special health and safety precautions, such as segregated curing environments, which reduces cost effectiveness and ease of shop application. UVB and UVC curing is generally used in high-volume applications such as graphic arts or wood finishing industries.

When choosing a UV lamp for a refinish shop, it is important to follow the recommended curing range suggested by the coatings manufacturer. UVA lamps provide wavelengths in the 320-400 nm range. Many coating suppliers have tested available

lamps in the marketplace and can make recommendations.

Safety and operating costs are other factors when choosing a lamp. Like any new technology or tool used in a refinish shop, safety should be of the utmost concern. Look for certification from industry testing facilities, such as UL. Currently, UL does have a standard for a commercial curing (body shop type) designated as UL2422. In addition, other independent testing services may address future safety and hygiene aspects of UVA curing. Lamps should have appropriate warning and usage labels for user reference.

Lamps should be manufactured in accordance with the Ultraviolet Light Emitting Product guidelines. This safety and health information is provided by the ACGIH (American Conference of Government Industrial Hygienists) the FFD&CA (Federal Food Drug and Cosmetic Act) and the CDRH (Center for Devices & Radiological Health). Owner manuals for UV lamps should mention these guidelines and the manufacturer's commitment to supplying product accordingly.

Depending on the volume or expected increase in volume, the cost of investing in UV technology will vary from shop to shop. When analyzing the cost, it is important to consider the initial investment as well as the ongoing cost of operation.

Curing Area

Recent body shop interviews indicate that the most important feature in UV lamp design is the footprint (coverage area) and consistency of cure. These features are a result of lamp design and engineering, specifically, the energy output and the reflector design of the lamp. For example, a 400-watt lamp cures with more intensity than a 250-watt lamp. Combined with effective reflector design, larger and consistent curing areas can be attained.

Curing may vary from one coating to another, but currently they range from 2-5 minutes for complete cure. Investors should check with the particular coatings supplier to clarify expectations.

The size of the footprint is determined by the design of the reflector. A broadcast type or conical reflector generally produces a larger cure area than a focused type reflector design. Distance from the surface has an effect on curing times and consistency.

Additional Features for Consideration

- Detachable lamp head for hand-held operation.
- Variable power controls, e.g.:
 - On/off timer for continuous use.
 - Portable countdown timer with audible beep.
 - Built-in egg type timer with automatic shut off.
- Shutters to protect filter glass from dirt and overspray when lamp is not in use.
- Clear filter glass of any obstructions, such as reinforcement wire grids, to ensure even cure. Any shadowed areas require the lamp to be moved for complete cure of repair area.
- A cut-off switch provides extra protection, just in case a filter glass is broken. Never operate a lamp without filter glass.
- A fan-cooled head can increase UV emitter (bulb) life, 500+ hours.
- Lamp head can adjust in all directions to meet different curing angles.
- 110-volt power requirements for use anywhere in shop.
- Meets UL standard 2422.
- Unit should cure effectively at least 16" away from the surface.
- Easy of repair and maintenance.
- Stand design considerations:
 - Heavy-duty portable stand.
 - Large easy roll casters.
 - Large range of operation.
 - Lamp head rotates to accommodate

any surface and lamp set-up at repair location.

- Lamp should be user friendly and include hydraulic cylinder for easy one-man adjustments.

- Lamp can compress in size to allow for reasonable storage requirements.

Other factors to consider when choosing a UV-curing lamp.

- Availability and delivery time.
- Location of manufacturer.
- Local service and support network.
- Recommendation from coating supplier.
- Technical service support number from lamp manufacturer.

The bottom line—UV lamps and coating technologies should enhance shop processes. UV technology can reduce airborne contamination and reduce unnecessary heat, and in most cases, reduce heat costs associated with curing practices (i.e. heated spray booths) used with solvent-based coatings.

Operation safety should be foremost. Always wear protective clothing when operating UV-curing equipment. This would be similar to clothing used during normal solvent-based coating applications. Direct exposure to skin may cause irritation similar to that experienced from long-term sun exposure.

Protective eyewear is essential when curing with UV-emitting equipment. Never look directly at the UV-light source.

UV-curing lamps should only be used for curing paints and other associated refinish products. Care for a UV lamp is simple: keep lamp and reflector clean, keep filter glass intact, and use in an area of the shop where ventilation is available.

A body shop owner's decision to implement UV technology can prove both productive and profitable if proper guidelines and recommendations are followed. ▀

—Daniel L. Maloney Jr. is eastern regional sales manager with H&S Autoshop, Georgetown, Ontario, Canada.