

UV gel coat curing on filament wound SCBA tanks Increased production and improved quality

Engineering Technology Corporation, a leading manufacturer of filament winding machines, uses Heraeus Noblelight's microwave-powered UV curing system in their gel coat curing machine.

For over 50 years Engineering Technology Corporation has offered a wide range of products and services for the composite industry -- fiber placement and pultrusion machines, fiber handling and resin systems, mandrels, and ovens to name a few. Engineering Technology's pursuit of technological innovations led to the development of a UV curing gel station for filament wound tanks.

Their UV curing gel coat curing machines are used by customers producing small self-contained breathing apparatus (SCBA) tanks, the type used by firemen and scuba divers, and compressed natural gas tanks. These tanks are aluminum or steel and are wound with glass or carbon fiber in a filament winding process to add additional strength without adding too much weight. After the tank is formed, a thermal oven cures the resins.

The next step is to apply and cure the gel coat, the exterior surface coating that requires a nice looking, yet durable finish. The gel coat is either a pigmented or clear Loctite Corporation epoxy resin that is manually brushed onto the exterior tank surface. Once the tank is coated and the door on the unit closed, the tank rotates in front of a single Heraeus Noblelight microwave-powered F300 UV curing system with an H bulb that moves along the tank axis.

Previously the gel coat cured in a thermal oven for an hour or two. With the UV resins the curing usually takes less than two minutes depending on the length of the tank. Engineering Technology works very closely with customers to ensure a reliable process. Customers often come to Engineering Technology's Composite Technology Development Center to work out process design and control details. Engineering Technology feels confident using Heraeus Noblelight's state-of-the-art UV curing systems and expert technical assistance.

"Engineering Technology developed this process to improve handling, speed production rates, and simplify the whole process. Before customers had trouble with the gel coat dripping and sagging in the thermal oven. The UV cure is very quick and produces a higher quality finish." -- Dave Rasmussen, Project Manager



Benefits

- Improved handling
- Increased production rates
- Higher quality finish

Technical Data

- 6-inch microwave-powered UV lamp system with H bulb
- UV lamp head mounted to carriage travels along mandrel to expose entire part surface
- 2 minutes to cure gel coat resin

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