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Dispensing cell with thin layer degassing for optimal LED-potting

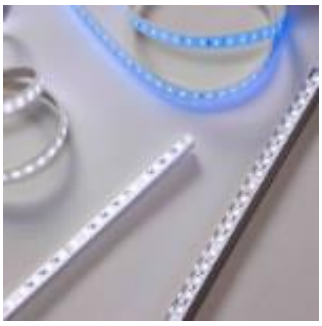
- Low pressure mixing and dosing system
- Crystal clear potting transparency free of air inclusions
- Automated “Formed In-Place” (FIP) provides protection for sensitive LED lighting

At the Fakuma plastics fair, Sonderhoff will present a new 3-component dispensing cell that features thin layer degassing for the complete air evacuation of the potting material in the pressure tanks. This degassing method results in crystal clear potting transparency free of air inclusions. The new dispensing cell SMART-L / DM 403 is thoroughly modular constructed and adaptable to various production concepts.

LED technology rapidly gains major shares in lighting market

Every 6 to 8 months a new LED generation emerges. For protection against moisture, water, dust and other weather effects as well as for temperature and vibration stability LEDs are mostly encapsulated with 2-component casting resins based on polyurethane or silicone. This affects long durability of LEDs, for instance, in weather resistant LED arrays for illuminated advertising, street and tunnel lights or information screens.

LED information panels



Flexible LED-stripes casted with transparent Fermadur potting

LEDs for tunnel lightings

Potting of flexible LED-stripes with transparent 2-Component polyurethane casting resin

Sonderhoff Chemicals, part of the Sonderhoff Group, is manufacturer of potting and foam seal material systems on the basis of polyurethane or silicone. At the fair Sonderhoff will demonstrate live the potting of flexible LED-stripes with a transparent 2-Component polyurethane casting resin system from the Fermadur product range using the new 3-component dispensing cell SMART-L / DM 403 with thin layer degassing. The air evacuation of the potting compound results in a crystal clear potting transparency free of air inclusions or streaks.

3-Component Dispensing Cell SMART-L / DM 403 with thin layer degassing

The transparent or opaque LED potting systems Fermadur do not become yellow after time. Using aliphatic isocyanate, they are highly resistant against ultraviolet radiation and feature very good light transmission of up to 89%. Unlike plastics, as for instance PC, PS or SAN, Fermadur clear potting compounds have the resiliency to return to their original undamaged condition by a “self-healing effect” on scratches and cracks which occur under mechanical load.

Potting systems available for various applications

Besides LEDs, electronics and electrical elements are also casted with the Fermadur potting systems on polyurethane basis for protection against moisture, dust, mechanical load and other environmental impact. The potting systems are available for various applications and according to requested properties, such as different hardness, material density, temperature resistance, mechanical stability and processing parameters like viscosity, pot life and tack-free time.

Ingress protection classes up to IP67 are achievable depending on the part construction, so that external applications, for example swimming pool lighting, are possible. For tunnel lighting in non-explosive areas, the Fermadur potting systems are adjustable flame-retardant, so that they pass the testing according to US fire protection classes UL94.

Dosing technique „Formed In-Place“(FIP), either semi or fully automatic

The application of industrial parts occurs economically and on a high level of process reliability with the dosing technique „Formed In-Place“(FIP) using semi or fully automatic low pressure dosing and mixing machines from Sonderhoff Engineering. Due to its good flow rate, the polyurethane based potting compound dispenses even into remote corners of complex parts, evenly distributed and full-surface. Using the thin layer degassing method, air inclusions in the potting material will be avoided. Several LED series of diverse parts or shapes can be casted with the same potting product processed on a mixing and dosing machine.

Two-layer application process

Flexible LED-stripes are encapsulated in a two-layer application process, first with a transparent potting and after curing in a second step covered with an opaque potting which provides an optimal light dispersion. Both potting layers are UV-resistant. Although LED light generates much less heat than traditional incandescent light bulbs, it is essential that protective encapsulations have a high temperature resistance.

LEDs are casted with transparent and opaque Fermadur potting for an optimal light distribution.

Summary:

The potting application of LEDs with the automated Formed In-Place process on the low pressure mixing and dosing machine provides protection of sensitive LED lighting against harmful influences. Which kind of potting system is used depends on the specific sealing requirements and the exact usage of the part. Specification and properties of the potting material should be discussed at best already in the construction stage of LED housings.