



Advantages

Painting process at production line

- ▶ drying lasts only few seconds, what allows immediate further processing
- ▶ no solvents

Low energy costs

- ▶ No pre-heating of parts which means short cooling period
- ▶ Low spatial demand of painting and hardening units (approx. 10 m²) for integration into the production line
- ▶ almost 100 % efficiency thanks to the recyclability of pre-sprays

Electric insulating coating of battery units with 100% UV-lacquer **EvoProtect 455 UV (UE 55)**

Our task was to develop a fully automated coating solution for electrical insulation (Dielectric strength: 10s at 2.7 kV, resistance > 5 GOhm) and to protect battery cells from long-life atmospheric and chemical influences.

The following secondary requirements were identified: maximum ecological (VOC equivalent to 100% dry matter), resource efficiency process (material recycling, mini-energy efficiency minimization) and optimal integration into the production process (low space consumption, minimum running time).

Description of the painting process

Painted objects

Battery cells

Material

Aluminium

Painting equipment

Application by hot air pressure

Painting process

- ▶ Pre-treatment: increase the surface tension to 46 N / m (e.g.: fleece grinding)
- ▶ Cleaning (eg: plasma)
- ▶ UV-varnishing
 - Automatic 2-layer 3D painting to prevent air bubbles
 - Pneumatically
 - Paint temperature 50 ° C
 - Total dry layer thickness approx. 120 µm
- ▶ UV-curing in 2 steps (every 3 s)
 1. Ga-emitter (or LED)
 2. Fe-emitter
 distance of UV-lamp / object: 2 - 10 cm
- ▶ Equipment cycle time 3 s - 5 s

Features /Approvals

- ▶ 240h exposure to condensed water according to EN ISO 6270-2: 2005 after 1 h and 24 h regeneration (commitment: Blasting degree <2 (S2))
- ▶ Dielectric strength: 3.15 kV (as well at high temperatures up to 90 ° C)
 - Class I: 3525 V (DC)
 - Class II: 5900 V (DC)
- ▶ Insulation resistance > 5 GOhm (10 s)
- ▶ Highest mechanical damage resistance (various internal vibration tests - shock resistance- and elasticity tests)

