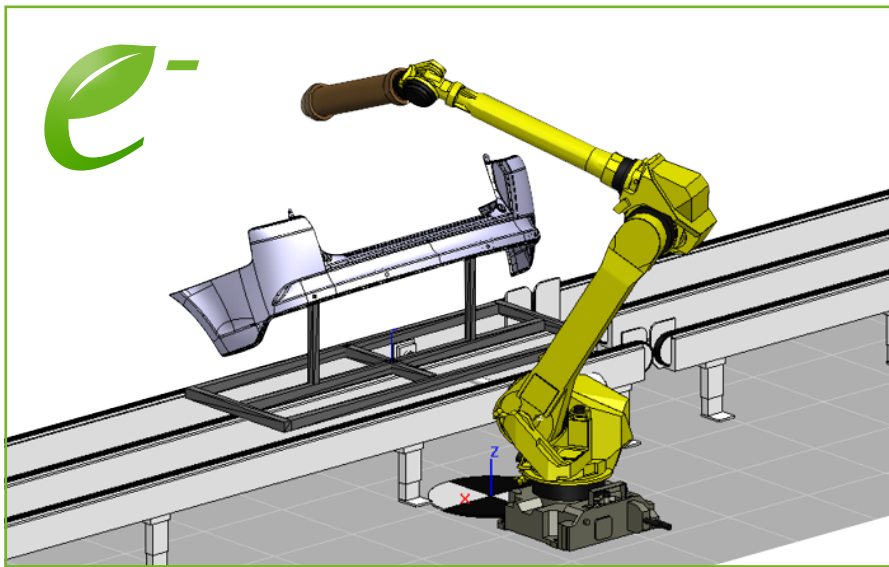


Paint Preparation of SMC Form Parts

Robot-controlled surface functionalisation and post-curing by electron treatment



The combination with an industrial robot enables the integration into the painting line

Challenge

- Surface defects in SMC components after coating
- Trapped air bubbles burst due to temperature increase (increased pressure), **as the surface layer is not fully cured**
- Cost-intensive corrective actions (sanding/filling)

Solution

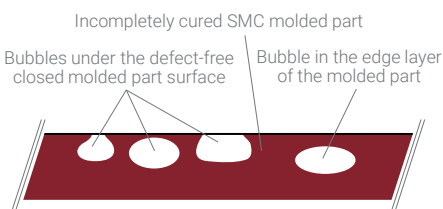
- Complete curing of the surface layer by electron treatment
- Simultaneous functionalisation

Advantages

- Improved coating quality
- Low, inline cycle times
- Saving of additional process steps
- Low running costs (< 0.10 €/m²)
- Low total costs (< 1 €/m² at 1.2 million m²/year)



SMC pressing process



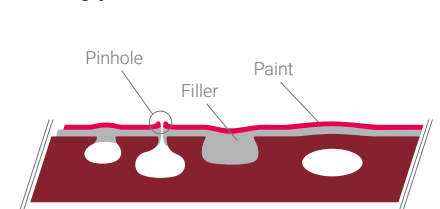
No surface defects at:

- Optimal process parameters such as insert size, production viscosity, pressure and temperature
- Good venting during the SMC process

but:

- Incompletely cured SMC component with trapped bubbles

Coating process:



Surface defects (e.g. pinhole) due to:

- Post-crosslinking and outgassing in the industrial painting process

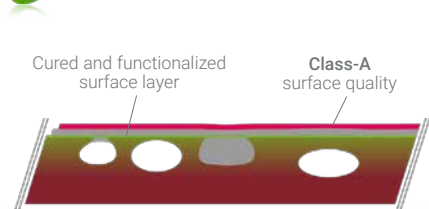
Corrective action required:

- Sanding, filling
- IMC coating (limited design freedom)

Cost & time extensive



Electron treatment:



Result:

- No residual enthalpy in the surface layer
- Contact angle < 80°, good wetting
- Reduced surface roughness
- Excellent paint quality after power wash
cross cut: < 1, degree of blistering: 0/S0

Process acceleration