

# Curing of Liquid Coatings on Form Parts

Robot-controlled curing by electron treatment



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

## Challenge

- High energy loss and emission of volatile organic compounds (VOCs) during industrial thermal drying of liquid coatings
- Overspray cannot be recycled

## Solution

- Targeted energy input into the liquid coating by electron beam curing (EBC)

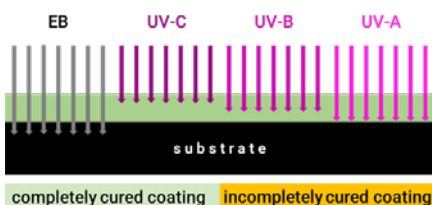
## Comparison to conventional systems

### Advantages of EBC over UV curing

- Higher curing levels: better chemical and scratch resistance
- Higher product speeds in the curing process
- Curing of pigmented, highly filled and thick coatings
- No use of toxic photo-initiators
- Low substrate heating

### Advantages of EBC over thermal drying process

- Low energy consumption
- Low CO<sub>2</sub> release
- High throughput
- High efficiency due to targeted energy input
- No use of solvents
- Lower facility dimension



Comparison of the penetration depth of UVH and EBC

Parameter	Thermal	EBC
Content of solid of the liquid coating	60 %	100 %
Mass of solid coating per m <sup>2</sup>	20 g	20 g
VOC per m <sup>2</sup> at a solvent density of 0.9 g/cm <sup>3</sup>	12 g	0 g
Energy consumption	~0,091 kWh/m <sup>2</sup>	~0,028 kWh/m <sup>2</sup>
CO <sub>2</sub> release due to solvent combustion	37 g/m <sup>2</sup>	0 g/m <sup>2</sup>

Energy consumption and CO<sub>2</sub> release for thermal drying and EBC