

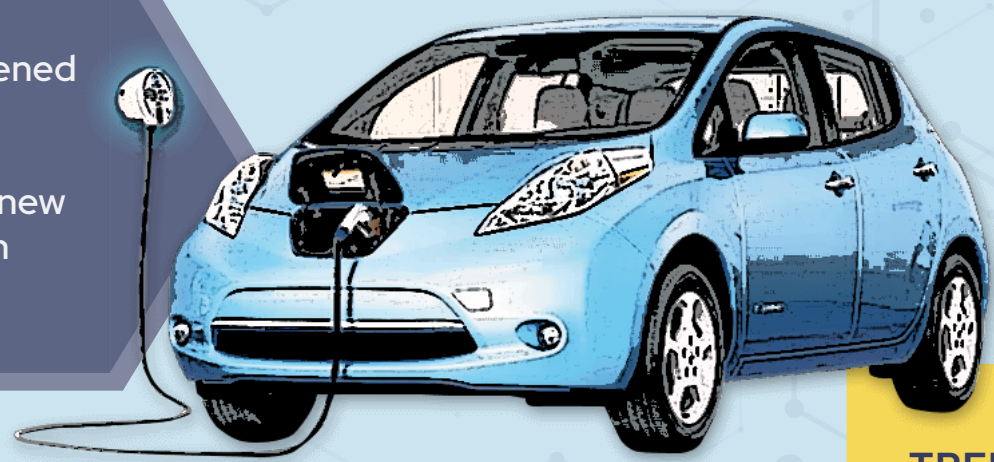
# THE AUTOMOTIVE SECTOR HAS A PROBLEM WITH PAINT

Sustainability trends continue to drive market innovation

The painting stage accounts for up to **60% of energy consumption** for automobile manufacturing and **95% of VOC emissions**.



- Climate concerns have tightened regulations worldwide
- Pressure to deliver on a new passenger-centric vision



## TRENDS

- ↑ Lightweighting
- ↑ Resource scarcity
- ↑ Autonomous vehicles

**FROM**  
DRIVER EXPERIENCE FOCUS  
ENGINE POWER  
UPFRONT COST

**TO**  
PASSENGER EXPERIENCE FOCUS  
LIFECYCLE COST  
SUSTAINABILITY

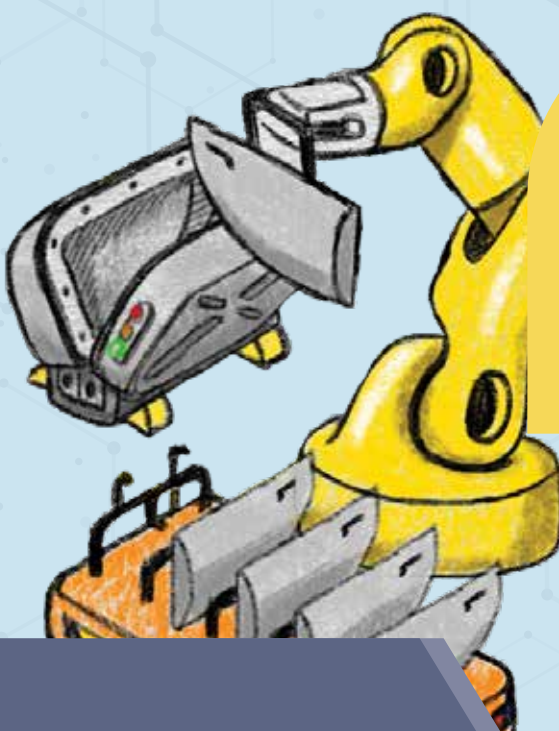
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## Requirements for Automotive Paint are responding ...

The Automotive Paint line is the focus for a step-change, as it makes up **40% of plant CAPEX** and **60% of plant energy**.

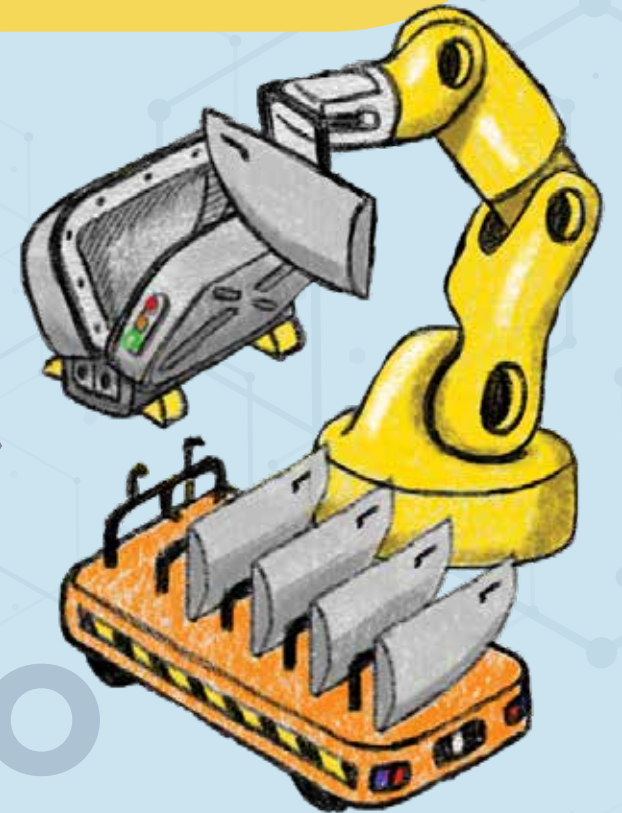


- A single-step, robotic process is the holy grail
- Single-layer coating system is the aspiration



## TRENDS

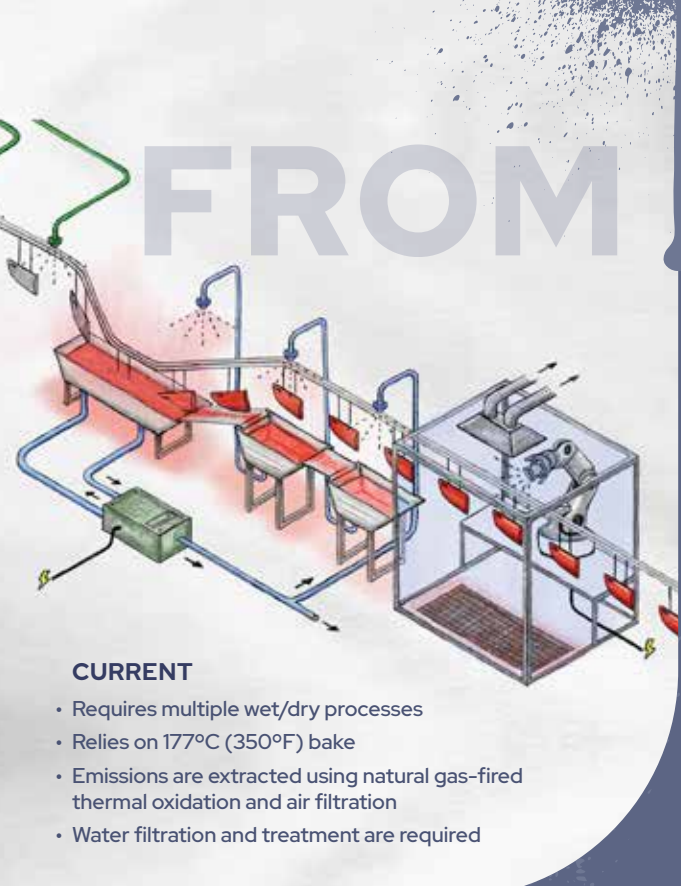
- ↑ Mixed substrates
- ↑ Component shape complexity
- ↑ Thermal mass challenges
- ↑ Warranty length
- ↓ Heavy metals



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## Disruptive solutions are emerging

Functional coatings will be an important enabler for the industry's innovation.

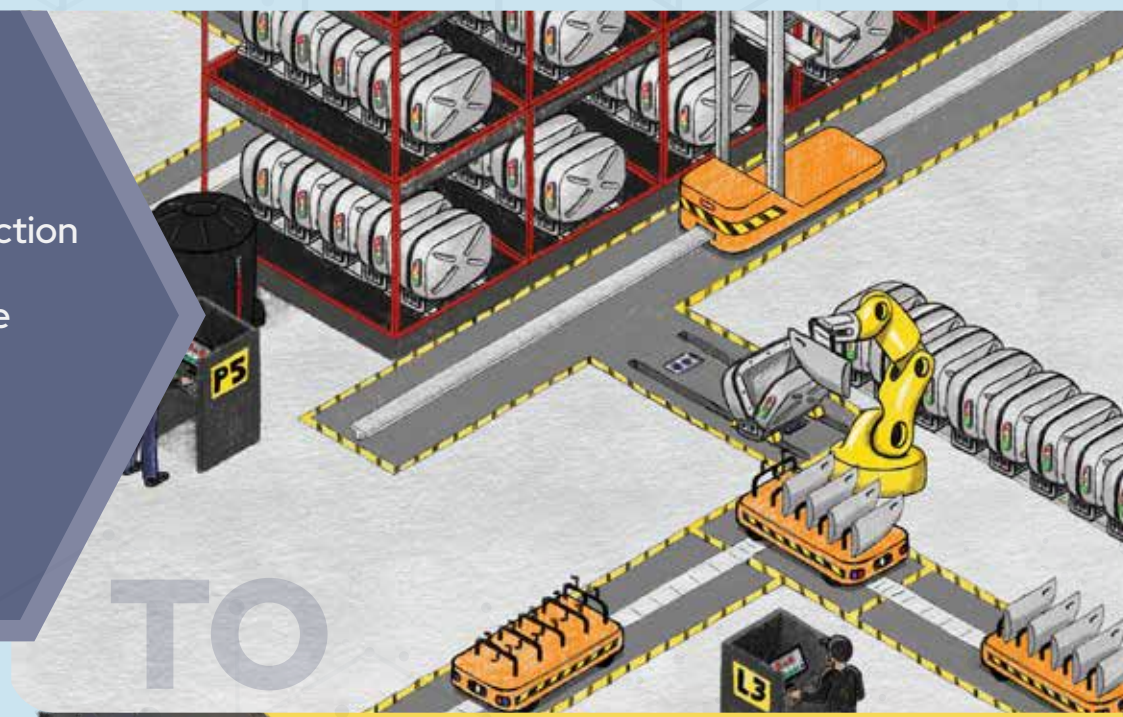


### CIRRUS CAN ASSIST YOUR TRANSITION

- ↓ **VOC** Full immersion, overspray collection
- ↓ **GHG** No-bake, ambient-temperature cure, lighter product
- ↓ **Cost** Fewer steps = smaller footprint
- ↓ **Wear** Lifecycle cost

### FUNCTIONAL SURFACE POSSIBILITIES ENABLED

- ✓ Novel mechanisms for generation of colour
- ✓ Impact on reflectivity (LIDAR)
- ✓ Thermal management
- ✓ Enhanced durability
- ✓ Self-cleaning
- ✓ Low drag



### PROPOSED CIRRUS PAINT-FREE COLOUR™ APPLICATION

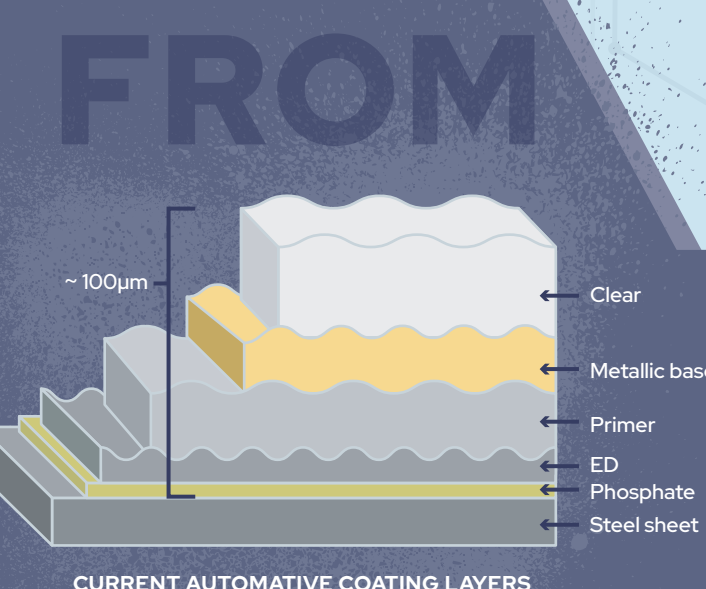
- Robotic loading of components into self-contained cells
- Closed-loop: Liquid discharge and heat loss ↓
- Automated despatch of finished parts

Cirrus black spiral coated aluminium →

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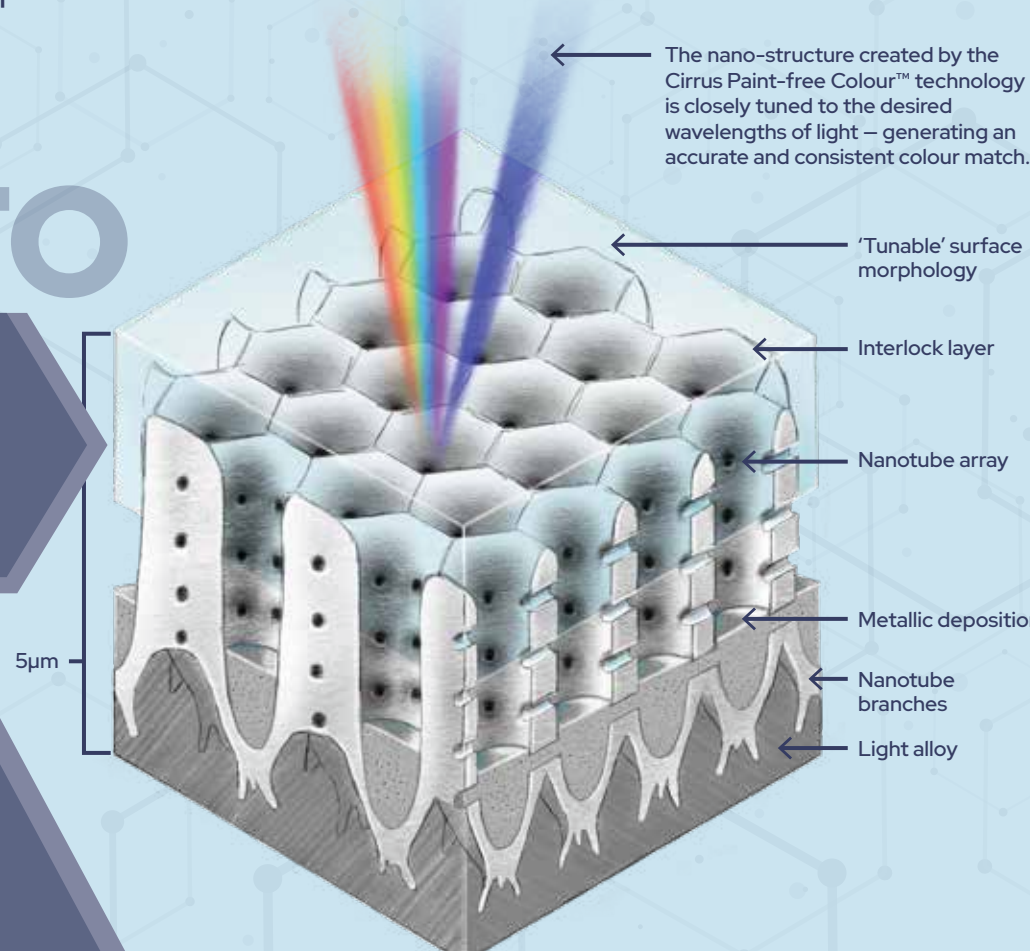
## The future of Automotive Paint

Cirrus Paint-free Colour™ is a patented coating technology that delivers greater energy efficiency, environmental friendliness, and lightest-weight protection.



CURRENT AUTOMOTIVE COATING LAYERS

**TO**



The nano-structure created by the Cirrus Paint-free Colour™ technology is closely tuned to the desired wavelengths of light – generating an accurate and consistent colour match.

- ← 'Tunable' surface morphology
- ← Interlock layer
- ← Nanotube array
- ← Metallic deposition
- ← Nanotube branches
- ← Light alloy

Cirrus black spiral coated aluminium ↓

### TOUGH

Composite coating – etches into and seals alloy.

### LIGHTWEIGHT

Subtractive process – components typically weigh slightly less post-coating.

### SUSTAINABLE

Closed-loop system – no VOC/particulate emissions, no baking.

Find out more about Cirrus Paint-free Colour™ at [cirrusmaterials.com](http://cirrusmaterials.com)

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