



## IMPROVEMENT CASE STUDY: THIN-FILM TECHNOLOGY

Reduce CO<sub>2</sub> emissions by cutting direct energy demand with thin-film TecTalis process powered by BONDERITE®.

Ambient conversion coating bath temperatures, process efficiencies and line compatibility work together to reduce energy consumption and promote manufacturing sustainability.



The TecTalis Process is compatible with existing metal pretreatment lines and equipment.



The TecTalis Process reduces water and energy use as well as waste – while eliminating heavy metals and sludge treatment requirements.

### CUSTOMER SITUATION

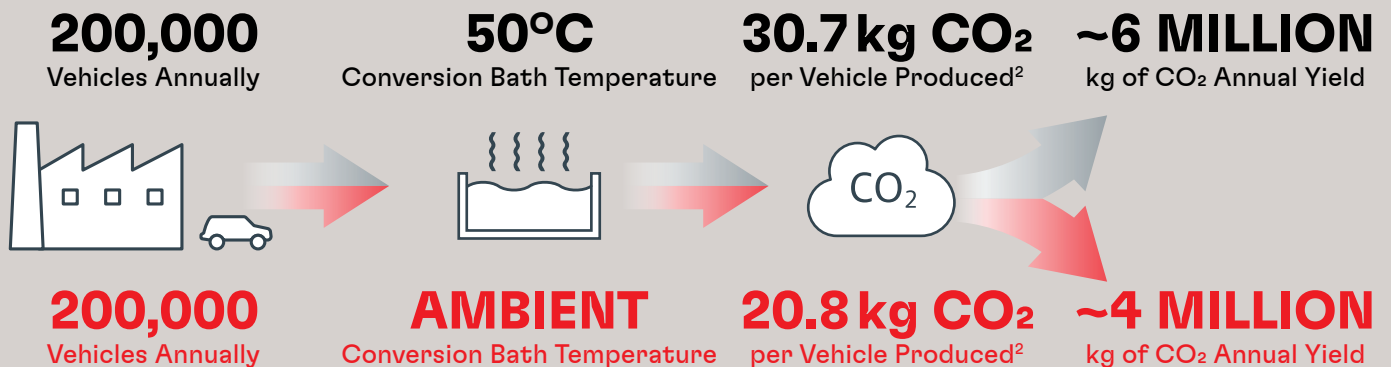
An OEM customer's sustainability initiative sought to lower CO<sub>2</sub> emissions generated in body-in-white production – and they recognized that their existing zinc phosphate metal pretreatment process consumed large amounts of energy. They asked Henkel to help identify a more energy-efficient metal pretreatment alternative.

### RECOMMENDED SOLUTION

Henkel recommended transitioning to TecTalis process powered by BONDERITE® to reduce energy demand for bath heating and cut CO<sub>2</sub> emissions. Switching to this thin-film technology also offered the customer significant process and waste management efficiencies.

## PRODUCTION SCENARIO:

### ZINC PHOSPHATE PROCESS – LIFE CYCLE ASSESSMENT<sup>1</sup>



### TECTALIS PROCESS POWERED BY BONDERITE® – LIFE CYCLE ASSESSMENT<sup>1</sup>



IN THIS SCENARIO, THE TECTALIS PROCESS REDUCED ANNUAL CO<sub>2</sub> EMISSIONS BY 32% – EQUIVALENT TO MORE THAN 16M KM DRIVEN<sup>3</sup>



<sup>1</sup> Per North American ASTM and EU DIN industry standards. <sup>2</sup> Primary energy usage. <sup>3</sup> Vehicles equipped with internal combustion engines.

# OUR GOAL

At Henkel, our goal is to improve sustainability across our products' entire value chain. We track three dimensions when evaluating our environmental footprint: CO<sub>2</sub> emissions, waste and water. And we deliver solutions that help our customers achieve similar goals for themselves and their customers as well. By 2030, our target is to triple the value we create for the environmental footprint made by our operations, products and services.

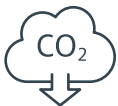


## SUSTAINABILITY OPPORTUNITY: THIN-FILM TECHNOLOGY

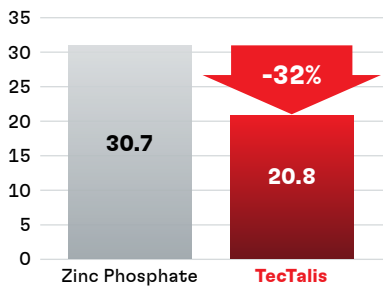
Transition from heavy metal phosphates to the TecTalis Process powered by BONDERITE®.

In a cradle-to-grave life cycle analysis, replacing traditional zinc phosphate pretreatment with Henkel's TecTalis Thin-Film Process reduces per-vehicle primary energy consumption by 28%. The TecTalis process steps are compatible with existing process lines, making for an easy transition to more sustainable metal pretreatment. Its low-sludge performance also eliminates the labor and waste disposal costs associated with scheduled zinc phosphate equipment boil-outs. These energy and waste reduction figures are just the start:

- 1 100% elimination of heavy metals – no nickel, manganese or zinc phosphate disposal
- 2 Virtual elimination of sludge – nearly 40,000 kg annually<sup>1</sup>
- 3 Reduced water use



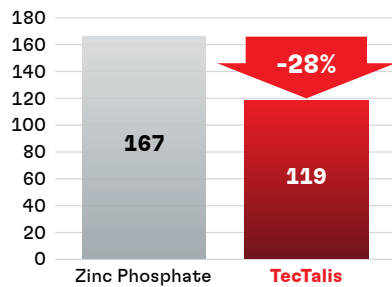
### REDUCED CO<sub>2</sub> EMISSIONS



32% less CO<sub>2</sub> generated over the life of each vehicle – from 30.7 to 20.8 kg/car<sup>1</sup>



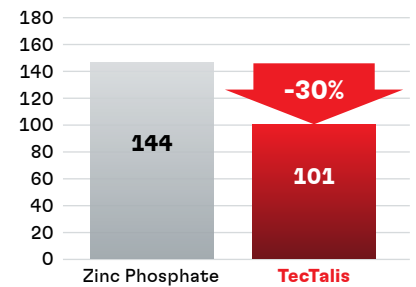
### REDUCED PRIMARY ENERGY CONSUMPTION



28% less primary energy consumption per vehicle from all sources – from 167 to 119 kWh/car<sup>1,2</sup>



### REDUCED FOSSIL-SOURCED PRIMARY ENERGY DEMAND



30% less fossil-sourced primary energy demand – from 144 to 101 kWh/car<sup>1,3</sup>

<sup>1</sup> Assessments based on a car body size of 142.7 m<sup>2</sup> and 200,000 vehicles produced annually, with a body composition of 5% aluminum, 5% steel (CRS) and 90% galvanized steel.

<sup>2</sup> Across the entire life cycle; includes end-of-life disposal, materials, hot water and electricity. U.S. country setting.

<sup>3</sup> Across the entire life cycle for fossil primary energy demand. U.S. country setting.

## LEARN MORE

[henkel.com/sustainability](https://henkel.com/sustainability)

