

Case Study: Auto Manufacturing

In 2014, General Motors invested \$2.8 billion to make its paint shops more energy efficient and to reduce coating times. These paint shop changes alone were taken on in order to reduce energy costs per vehicle by up to 50%. At the Orion, Michigan assembly plant, GM demolished the old paint shop and built a new one that was 10 percent smaller than the original, which saved on utility costs and also freed up much-needed floor space. The new paint shop used natural and landfill gas instead of coal-fired burners, using up to 50 percent less energy per vehicle for a total annual savings of about \$1.1 million. Using landfill gases also reduced greenhouse gases, sulfur dioxide, and nitrogen oxides released into the air.

Much of the cost savings are attributed to a water-based 3-wet painting system. The painting process removes the need for a primer bake oven, usually placed between the primer application and the color coats. With the 3-wet system, the three layers of paint are continuously applied one after another while still wet, before making a single pass through the bake oven.

In addition to cost savings, the 3-wet process improves the car's glossy sheen, reflectiveness, and durability.

Ford first used the 3-wet system at its Chennai, India, plant in 2009, part of a \$500 million upgrade to the manufacturing plant, but with an eye toward finding a better way to paint cars that reduced time and costs.

For a visual walk-through of the process, watch these two videos:

Ford 3-Wet Paint Process - Video 1

<https://youtu.be/tLVmXgpHdoM>

Ford 3-Wet Paint Process - Video 2

<https://youtu.be/HpTCHZbq2HY>

Source: Auto Makers Undergo Paint Shop Makeovers, Product Finishing,

<https://www.pfonline.com/articles/auto-makers-undergo-paint-shop-makeovers>

Questions for discussion:

1. Do you think auto manufacturers like Ford and GM use process costing or job-order costing? Why?

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2. How do you think these manufacturing companies compute the amount of costs and cost savings for these different departments? What kinds of cost accounting issues come into play?
3. In recent years, auto manufacturers have started implementing systems that allow customers to choose multiple options as they order a car directly from the factory (for example, see <https://www.miniusa.com/tools/learning/models-build.html>). How do you think auto manufacturers account for these customizable options?

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