



## **1. Description of the facility**

Wayne Stamping and Assembly Plant is a unique Ford facility, integrating both stamping and assembly operations. Assembled body units and stamped body components are transferred from the stamping/body area of one building to the paint and assembly area of the adjacent building via an overpass bridge. The assembly process includes welding and sealing of sheet metal body components, metal finishing (sanding and surface preparation), phosphate coating, painting, and final assembly.

## **2. Description of the overall Waste Management system (for the process)**

### Paint Department

The vehicles are painted in spray booths that contain both automatic and manual zones. The spray booths are equipped with recirculating water wash sections to remove over-spray paint. The water streams in these sections are continuously recirculated when the system is operating, counter-current to the exhaust air from the spray booth. This water becomes saturated with paint solids which are removed and recycled utilizing Nortru emulsion technology.

## **3. Description of the problem being addressed in this project**

### Trigger point settings<sup>1</sup> :

In the automatic sprayers of the plant's three spray booths, trigger point settings determine when paint is sprayed out of the nozzle. These controls tell the robot when to start spraying paint and when to stop. Paint is wasted if it is sprayed into wheel wells or other open areas. Trigger point settings should be optimized/analyzed in terms of paint usage and associated costs.

### Pushout settings<sup>2</sup> :

Pushout settings determine the amount of paint that is sprayed (pushed) out of the line before it is purged. It ultimately determines the amount of paint in the line that goes to waste in the purge cycle. Although there is a minimum amount of paint that must remain in the line in order for the system to work properly, pushout settings should be optimized in terms of paint usage and associated costs.

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<sup>1</sup> Trigger point settings were analyzed per applicator per vehicle.

<sup>2</sup> Pushout settings were analyzed per color per style per applicator.

### Fluid pressure settings<sup>3</sup> :

Fluid pressure settings determine the pressure at which the paint is forced out of the line. Fluid pressure settings are standardized in each of the spray booths but they should be optimized/analyzed in terms of paint usage and associated costs.

#### **4. Description of the solution**

Paint department management, applications engineers and process operators baselined current Trigger Point, Pushout, and Fluid Pressure settings. Data was gathered on the amount of paint that was being used with the baseline settings. Optimum settings were established by comparing each of the three booths to one another in addition to comparing them to the guidelines set by the equipment manufacturer. The settings are checked monthly to ensure that they remain at optimum levels.

#### **5. Substance addressed / Reductions obtained (lbs/yr)**

- Prime paint
- Basecoat paint
- Clearcoat paint

|                     |                          |                          |
|---------------------|--------------------------|--------------------------|
| Reductions obtained | August 1995 to July 1996 | August 1996 to July 1997 |
| Totals:             | 79,158 lbs (Actual)      | 159,500 lbs (Projected)  |

The projected reductions for 1996/1997 are significantly higher than the reductions obtained in 1995/1996. Fifty seven separate activities were implemented incrementally from August 1995 to July 1996 and as a result, the totals represent the stages of implementation on those activities.

#### **6. Barriers (and how they were overcome)**

The primary barrier encountered in this project was gathering data regarding paint usage for each of the three settings. For example, it was difficult to quantify the amount of paint that was being over-sprayed. This was overcome by the development of an Operational Handbook which included a procedure for gathering such data.

#### **7. Highlights**

This project focused exclusively on paint usage. Total paint usage was reduced nearly 80,000 pounds. Associated materials such as solvents and spray booth maintenance products, were not analyzed in this study.

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<sup>3</sup> Fluid pressure settings were analyzed per applicator per vehicle style

**8. Savings, realized or anticipated (\$/yr)**

Realized cost savings:     \$339,893.75             August 1995-July 1996

Projected cost savings:     \$681,778.49             August 1996-July 1997  
(based on a normal production year)

**9. Capital investment / Length until payback**

There was no capital investment for this project. All of the changes involved re-programming the manufacturing equipment.

**10. Environmental hierarchy level**

Source reduction