

NCR³ Automotive Parts Cleaning Project: Technical Report

*Replacement of mid-pressure spray washer with high-pressure spray washer at Arc Remanufacturing**

Old Process

Axles were separated from other cores and manually disassembled. A small fraction of axles were precleaned in a vibratory degreaser, depending upon the axle's specific features. A cleaning technician then arranged all axles in a specific configuration in baskets, after which they were washed in a front-loading mid-pressure spray washer at 190 °F for **30 minutes**. One week after the mid-pressure spray washer was charged with fresh cleaning solution, approximately 10 percent of the axles had to be cleaned again in the spray washer. A **cleaning bath lasted three weeks** before it had to be disposed of.

New Process

Axles are separated from other cores and manually disassembled as before. There is no need to preclean any axle in a vibratory degreaser. Axles are placed in cleaning baskets as before, although there is no need to arrange axles in any particular configuration. Axles are washed in a front-loading high-pressure spray washer at 190 °F for **5 minutes**. Because all axles are cleaned satisfactorily with this equipment, there is no need to reclean axles. A **cleaning bath will last for six weeks** at current production levels before it must be disposed of.

Savings (axles only)

- No more precleaning in a vibratory degreaser
- No more rework in primary cleaning process
- No need to configure parts in specific arrangements in cleaning baskets
- Longer bath lives save on soap costs, water costs, and waste disposal fees
- Shorter cycle times result in decreased labor costs and **reduced energy consumption, almost 1200 KWH/year**, even with the larger pumps

The Bottom Line

The installed cost of the equipment (minus the salvage value of old equipment) is \$67,000.

Annual savings in labor, chemicals, waste disposal, water, and energy total \$105,000.

Therefore, the system will pay for itself in less than eight months on savings from axles alone.

**The information in this technical report is the result of a two-year NCR³ project funded by New York State Energy Research and Development Authority (NYSERDA) to evaluate and demonstrate high-performance, energy-efficient and environmentally sustainable cleaning systems for New York State automotive remanufacturers. Arc Remanufacturing is an automotive remanufacturer in Queens, New York that was chosen as a test site to implement some of NCR³'s cleaning recommendations.*