



The Pollution Prevention Equipment Program (PPEP) Book Web Site



[PPEP Home](#) | [Introduction](#) | [What's New](#) | [Equipment](#) | [Links](#) | [Help](#) | [FAQs](#) | [Site Map](#) | [<< Back](#)

POWER PARTS WASHER

COMPETITIVE INITIATIVE

DESCRIPTION:

The MART Hurricane 60 High Profile Power Washer is a large cleaning cabinet with spray nozzles along the interior walls and ceiling that blast an environmentally safe alkaline detergent in an aqueous solution onto soiled parts. The combination of high temperature and strong blast pressure enables the washers to remove contaminants such as grease, oil, loose rust and corrosion, ethylene glycol, and fuel residue from engine blocks and engine components. The system is entirely closed-loop, with no wastewater discharge.

DATA COLLECTION PERIOD:

1.5 years

Previous System: Hot Caustic Sodium Hydroxide Dip Tank

Consumables

Sodium hydroxide cleaner used at a rate of 350 pounds/90 days

Cost: \$1.48/pound

$\$1.48/\text{pound} \times 117 \text{ pounds/month} \times 12 \text{ months/year} = \$2,078$

Grease for agitator mechanism used at a rate of 1 cartridge/month

$12 \times \$7.26 = \87.12

Soap for steam cleaner used at a rate of 1 gallon/month

$\$7.50/\text{gallon} \times 12 \text{ gallons/year} = \90

Diesel fuel and engine oil (to prevent corrosion and flash rusting) used at a rate of 3

quarts /month

$\$0.263/\text{quart} \times 3 \text{ quarts/month} \times 12 \text{ months/year} = \9.47

Total: \$2,266/year

Labor

E-3 labor rate per hour: \$10.39
Loading: 10 minutes
Agitation: 4 hours to 32 hours
Steam cleaning or hot water rinsing:
10 minutes to 30 minutes
Blowdown: 10 minutes
Corrosion preventive spraydown: 10 minutes

Total labor typically averages 34 hours over 5 days

Total Annual Costs	
Item	Cost
Consumables	\$2,266
Labor	18,370
Waste Disposal	<u>6,192</u>
Total	\$26,828

Waste Disposal

Spent sodium hydroxide and soap mixture, disposed of at the rate of 350 pounds/90 days
\$2.10/pound x 117 pounds/month x 12 months/year = \$6,192

Total: \$6,192/year

Power Washer

Consumables

Detergent: 145 pounds/500 gallons
Approximately 150 pounds used in 500-gallon capacity
\$340/500 gallons = \$0.68/gallon
\$0.68/gallon x 500 gallons x 2 replacements/year = \$680/year
Defoamer used at a rate of 1 quart/year: \$11.39/year
Corrosion preventive compound used at a rate of 2.5 gallons/year:
\$10/gallon x 2.5 gallons = \$25/year
Grease cartridge used at a rate of 3/year: \$7.26/cartridge x 3 cartridges/
year = \$21.78/year
Total: \$738/year

Labor

E-3 labor rate per hour: \$10.39
10 minutes/cycle with 2 cycles required
10 minutes each for loading and unloading of engine blocks
Total of 30 minutes/engine block
2 engine blocks/week, including engine block components
 $\$10.39/\text{hour} \times 1 \text{ hour/week} \times 52 \text{ weeks/year} = \541
Total: \$541/year

Waste Disposal

Solution (500 gallons) disposed of every 6 months
\$21.30/55-gallon drum of wastewater

Total Annual Costs	
<u>Item</u>	<u>Cost</u>
Consumables	\$738
Labor	541
Waste Disposal	405
Total	\$1,684

Sodium Hydroxide Dip Tank	\$26,828
Power Washer	\$1,684
Total Cost Change	\$25,144
Initial Procurement	\$54,960
Expected Service Life	10 years
Return on Investment (per 10-year period):	\$196,490 per unit [$10 \times \$26,828] - [\$54,960 + (10 \times \$1,684)]$
Break even:	2.19 years \$54,960 / (\$26,828 - \$1,684)

COST ANALYSIS SUMMARY

- Power Washer reduces wastestream by more than 350 gallons per year, saving approximately \$5,800 in disposal costs.
- Power Washer saves 33 hours of labor per week.
- Power Washer eliminates the need for caustic solvents.