



## OREST: Optimized Equipment Replacement

### Purpose of Software:

- A decision support tool for analyzing reliability data
- To define the optimum preventive replacement policy for a piece of equipment based on reliability data
- Failure trend analysis
- Weibull analysis

### Benefits:

- Improved decision making, reduced cost
- Provides trend analysis of failure data
- Provides Weibull to show probability of failure at any point in time
- Shows optimal change-out time for equipment with age-degradation (decreasing performance with time)
- Easy to use data entry screens requires little training
- Easy to read graphical output shows results at a glance

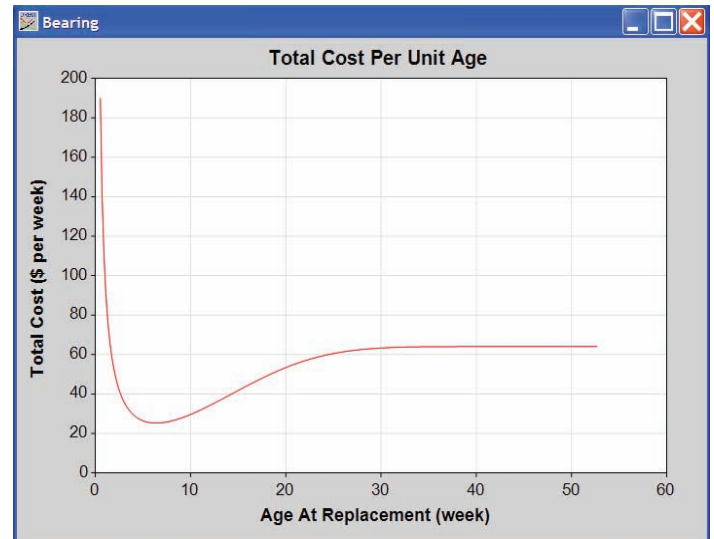
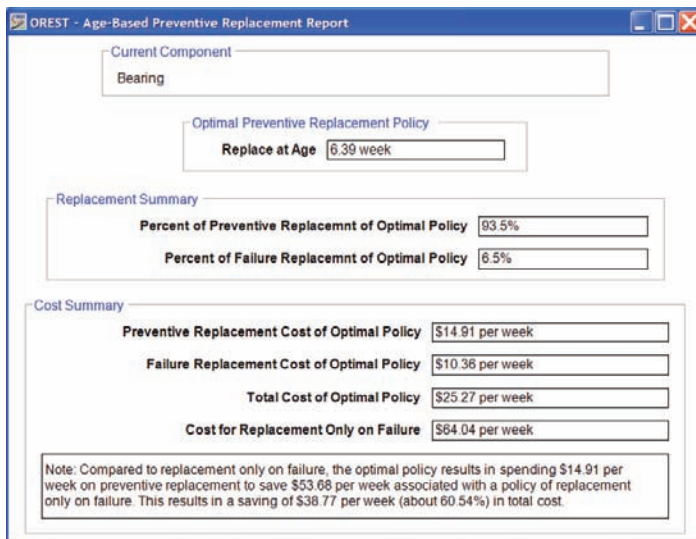
### Input Data:

- Component purchase age and cost
- Number of components in service
- Preventive and failure replacement costs
- Capital planning horizon
- Event data (data relating to events that affect the equipment, such as failures, suspensions, frequency, working age)
- Operating cost per year

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## Outputs:

- For age-related replacements:
  - ❑ Trend analysis to test if failure pattern shows increased reliability with time, decreased reliability with time or random failure (no reliability trend)
  - ❑ Weibull analysis to determine the shape of the failure curve
  - ❑ Optimal change-out time through balancing preventive replacement cost with failure replacement cost
  - ❑ Total replacement cost per year
  
- For preventive replacements, balances operating and replacement costs to provide the minimum cost point for an asset with increasing maintenance costs



## Target Industries:

- Any industry where asset replacement cost or equipment failures are a significant part of their operations
- Any heavy industry such as mines, steel, metals processing, chemicals, oil and gas, petrochemical, pulp and paper
- Discrete manufacturing facilities – automotive, electrical, components, furniture, tires, and plastics
- Process manufacturing – pharmaceuticals, food and beverages
- Municipal, state and federal departments, military, customs, airports, container ports
- Telecom, gas, electrical, water distribution companies