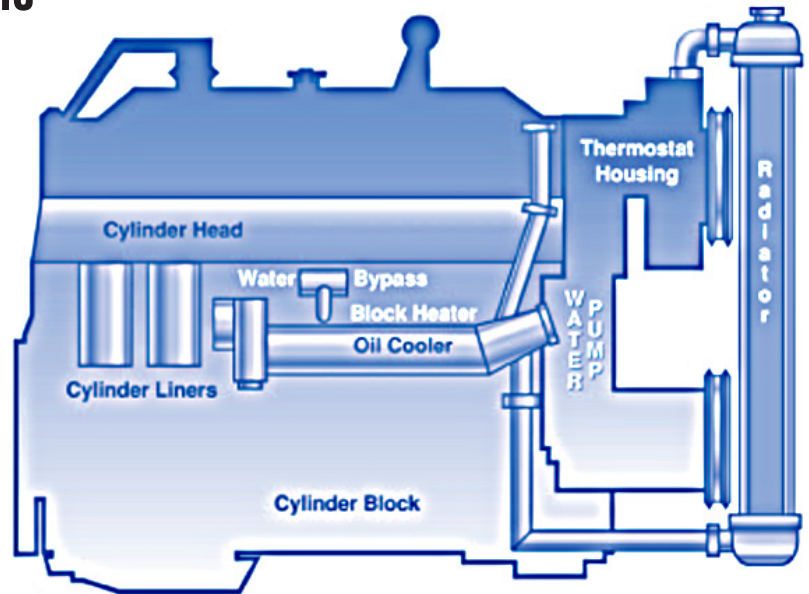




# 40% OF DOWNTIME IS COOLING SYSTEM RELATED...

## What Happens If A Diesel Engine Cooling System Is **NOT** Treated Properly With Chemicals?

- **Corrosion** of the steel and cast iron surfaces
- **Hard water scale buildup** on the cold side of the liner, creating an insulating effect and leading to hot spots
- **Fouling of the heater core** with silica gel and phosphate sludge, resulting in reduced heat to the cab and bunk heaters
- **Corrosion** of the water pump **impellers**
- Thermostat **malfunctions**
- Scale insulates on-off fan temperature sensors causing improper fan operation resulting in **overheating**
- **Fouling of the heat exchangers** with silica gel or phosphate sludge from the antifreeze
- **Severe pitting** of the wet sleeve liners



- **Malfunction** in block heater due to phosphate scale buildup
- Water pump **cavitation** due to foaming
- **Water pump seal failure** due to excess dissolved solids and/or high phosphate levels
- Hoses can become **soft and brittle** without proper protection
- **Corrosion** of the copper or aluminum **radiator cores**
- **Solder corrosion** and consequent solder bloom fouling

# PENRAY IS THE **LEADER** IN COOLING SYSTEM TECHNOLOGY.



## Pencool® 2000 Cooling System Treatment

- Prevents the formation of gel deposits that plug radiator passages, aftercoolers, and oil coolers
- Maintains proper cooling system heat transfer characteristics resulting in longer engine life
- Reduces water pump wear
- Reduces scale and corrosion
- Controls formation of harmful scale deposits
- Reduces metal corrosion
- Reduces cavitation erosion, liner pitting
- Lubricates water pump and other metal surfaces



## Penray Need-Release® Extended Life Cooling System Treatment

- Releases Supplemental Coolant Additives (SCAs) only when your cooling system needs them
- Senses the corrosivity of the coolant and keeps your cooling system protected at all times
- Lasts 150,000 miles, 15 months, or 3,000 hours
- Saves on labor costs
- Reduces filter inventory
- Replaces eight to ten ordinary filters



## Pencool® with Stabil-Aid® Cooling System Filter with Corrosion Inhibitor and Coolant Stabilizer

- One pint of Pencool® 3000 cooling system corrosion inhibitor and coolant stabilizer in a high quality filter
- Stops coolant gel formation
- Accepted for use by major engine manufacturers
- Compatible with all types of antifreezes



## Penray Universal 3-Way Test Strips

- For use in all heavy-duty coolant types, including extended life coolant
- Quick and accurate results in minutes
- Tests for dilution/contamination and chemical protection in extended life coolant
- Effectively tests freeze point of conventional coolants
- Accurately tests SGA (nitrite) concentrations in conventional coolants



## Penray Heavy Duty Test Strips

- Check the condition of your cooling system in less than two minutes
- Extremely precise
- Determines freeze point and nitrite levels

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