

Coolant Analysis Seminar

Course Curriculum

This seminar is an intense one-day session providing the attendees with a solid understanding of coolant types and systems. In addition, this seminar will provide a clear understanding of how a successful coolant analysis program will complement overall reliability initiatives and oil analysis programs.

Functions of Coolant/Antifreeze

Types of Glycol

- Ethylene Glycol
 - Advantages vs. Propylene
- Propylene Glycol
 - Advantage vs. Ethylene

Suggested Water Quality Limits

- Total Solids
- Total Hardness
- Chlorides
- Sulphates
- pH

Groups of Coolants

- Group 1 Traditional
- Group 2 OAT (Organic Acid Technology)
- Group 3 Hybrid

Types and Functions of Coolant Additives

- Silicate
- Nitrite
- Nitrate
- Phosphate
- Borate
- Molybdate
- Carboxylates
- Dicarboxylates
- Mercaptobenzothiazole (MBT)
- Tolytriazole (TT)
- Silicones
- Block Polymers
- Dispersants
- Surfactant

Coolant System Problems

- Stray Current
- Positive Voltage
- Negative Voltage
- Localized Overheating
- Exhaust Gas Blow-by

Cooling System Degradation

- Erosion
- Corrosion
- Electrolysis

Characteristics of Coolant System Deposits

- Iron Deposit
- Carbonate Deposit
- Silica Deposit
- Sulphate Deposit

Water Properties that Produce Acid

- Acid Processes
- Chloride
- Sulphate
- Conductance

Engine Problems Due to Acid

- Wet Sleeve Liner Pitting
- Radiator Pitting
- Oil Cooler Pitting
- Pump Damage

pH Concerns

- Alkaline
- Acidic

Benefits of Coolant Analysis

- Fluid Condition
- Component Failure
- Predictive Maintenance
- Management Practices

Coolant Test Program

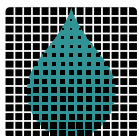
- Level 1 Test Basic Coolant Analysis
 - Visual Observations
 - Boiling and Freeze Point
 - pH
 - Conductivity
 - Total Dissolved Solids
 - Ion Chromatography D5827
 - Chlorides, Formates, Glycolates, Nitrites, Nitrates, Phosphate, Sulphates, Molybdates
- Level 2 Test Full Coolant Analysis
 - Level 1 Test Package Plus:
 - Reserve Alkalinity
 - Wear & Additive Elements ICP (D6130)
 - Iron, Copper, Aluminum, Lead, Tin, Zinc, Calcium, Magnesium, Phosphorus, Boron, Molybdenum, Silicon

Understanding the Analysis Tests

Data Interpretation

- The seminar will culminate with a hands-on data interpretation exercise providing the attendees with a clear understanding of the coolant analysis report and interpretation of the data.

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