

- 1) Reservoirs
  - A) Functions
  - B) Sizing
  - C) Inlet Requirements
  - D) Returns and Drain Requirements
  - E) Mobile Equipment Considerations
  - F) Clean-outs and Access Covers
  - G) Reservoir Maintenance
- 2) Filtration
  - A) ISO Particle Identification
  - B) Sources of Contamination
  - C) Typical Component Filtration Recommendations
  - D) ISO Filtration Standards
  - E) Filtration Locations
  - F) Filter Sizing
  - G) Critical Function Considerations
  - H) Filter Maintenance
- 3) Cooling
  - A) Calculating Cooling Requirements
  - B) Cooler HP Dissipation
  - C) Cooler Design Types
  - D) Cooler Flow Rate Considerations
  - E) Fluid Temperature Controls
  - F) Cooler Location
    - i) Ambient Air temperature
    - ii) Protection
  - G) Cooler Maintenance
- 4) Fluids
  - A) Types of Fluids Used in Hydraulic Systems
    - i) Petroleum Based Hydraulic Fluids
    - ii) Biodegradable Fluids
    - iii) Food Grade Fluids
    - iv) Fire Retardant Fluids
    - v) Multi-Use Fluids
  - B) Fluid and Seal Compatibility
  - C) Component Manufacturers Recommendations
    - i) Pressure and Speed Ratings for Different Fluids
  - D) Fluid Selection for Temperature Extremes.
    - i) Viscosity VS. Temperature
    - ii) Viscosity Index
  - E) Causes of Fluid Degradation
    - i) High Temperature
    - ii) Moisture