

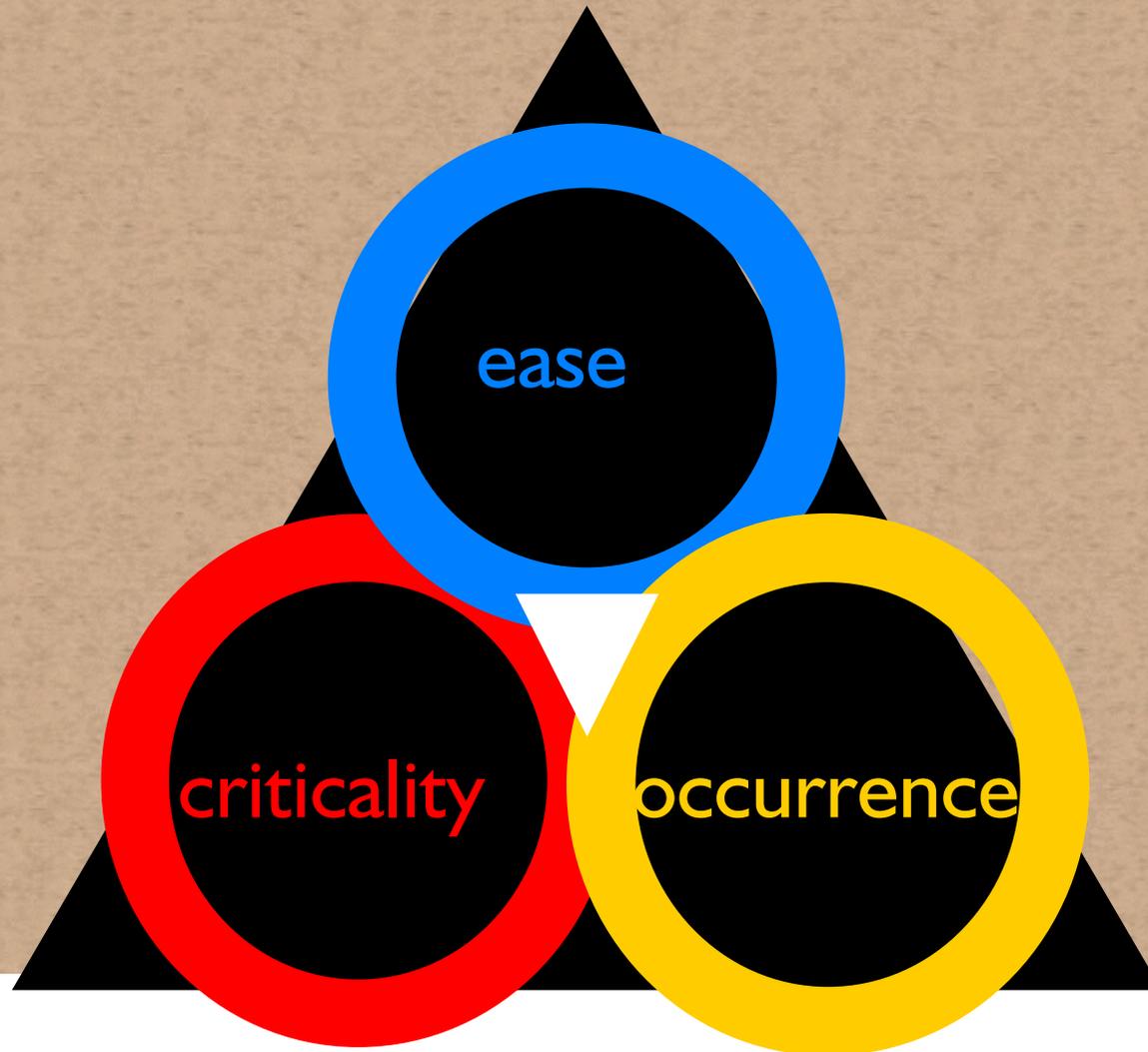
Portable/hand-held oil assessment devices

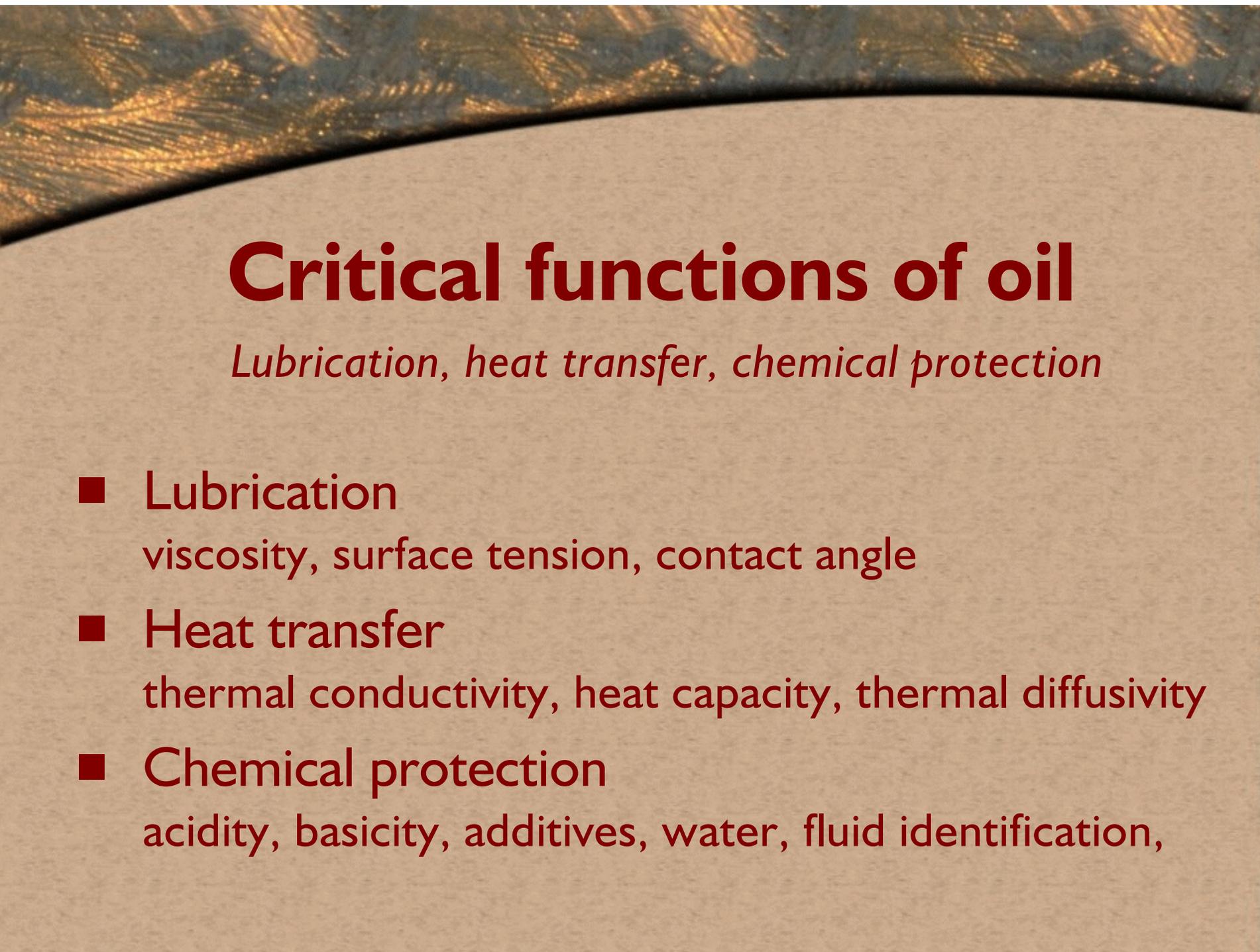
Equipping today's soldiers with tools for real-time, on-site, rapid oil assessment

- Testing done locally and immediately
- Sample taken from dipstick (drops not bottles)
- Sample submission eliminated
- Results available in minutes

Golden triangle

Picking the right properties to check





Critical functions of oil

Lubrication, heat transfer, chemical protection

- Lubrication

viscosity, surface tension, contact angle

- Heat transfer

thermal conductivity, heat capacity, thermal diffusivity

- Chemical protection

acidity, basicity, additives, water, fluid identification,

Chemical protection

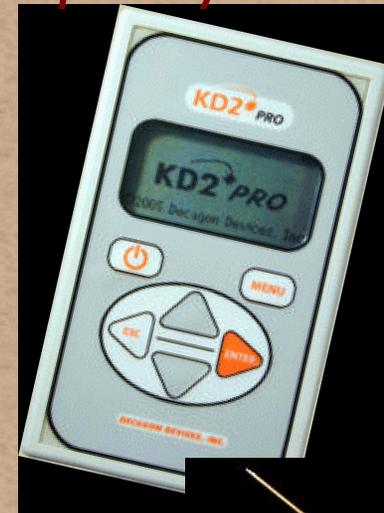
Measured by infrared spectrometry

- Water
 - Antifreeze/coolant
 - Wrong fluid
 - Anti-wear additives
 - Anti-corrosion additives
 - Dispersants
- ★ Battalion and company level solutions
 - ★ Small units with friendly interfaces and robust performance

Thermal properties

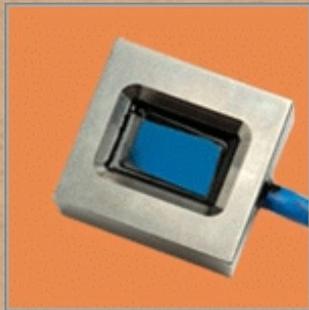
Diffusivity, conductivity, heat capacity

- Works with the infrared spectrometric unit to give an overall oil quality rating
- Makes sure your oil is carrying heat away from the moving parts so that the cooling system can do its job

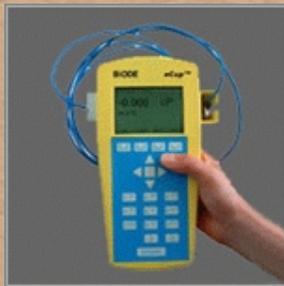


Lubrication

Measured by acoustic viscosity



ViSmart sensor measures viscosity based on response to a sound wave



eCup control unit works with infrared unit to give an overall quality rating

Infrared spectrometry

Backbone of the oil assessment device platform

smiths
bringing technology to life

Battalion motor pool

*OilCheckIR, a portable
FTIR spectrometer*

 Foster-Miller

Company motor pool

*FluidScan, a hand-held
dispersive IR spectrometer*

Guides user through steps; learned in minutes

Advantages

What you get with portable/hand-held units

- Immediate direction to change/keep the oil
- Platform-specific oil quality testing
- Reduced sampling so you can check faster
- Testing on demand so you can check anytime
- Centralized data tracking and mining to improve component health and performance

Cost savings/avoidance

Labor, shipping, materials, equipment, parts

- ★ Low cost/time per tests permits ground craft to be placed back into the program
- ★ Save new oil costs, reduce waste oil, reduce labor for oil changes
- ★ Save bottles, shipping expenses, analysis charges
- ★ Extend component lifetime and increase readiness