

Current Technologies for Oil Purification

A Look at Vacuum Dehydration and Centrifuge Technology

March 17, 2006



Two Technologies to Consider



“Ultra-Vac”
Vacuum Dehydrator



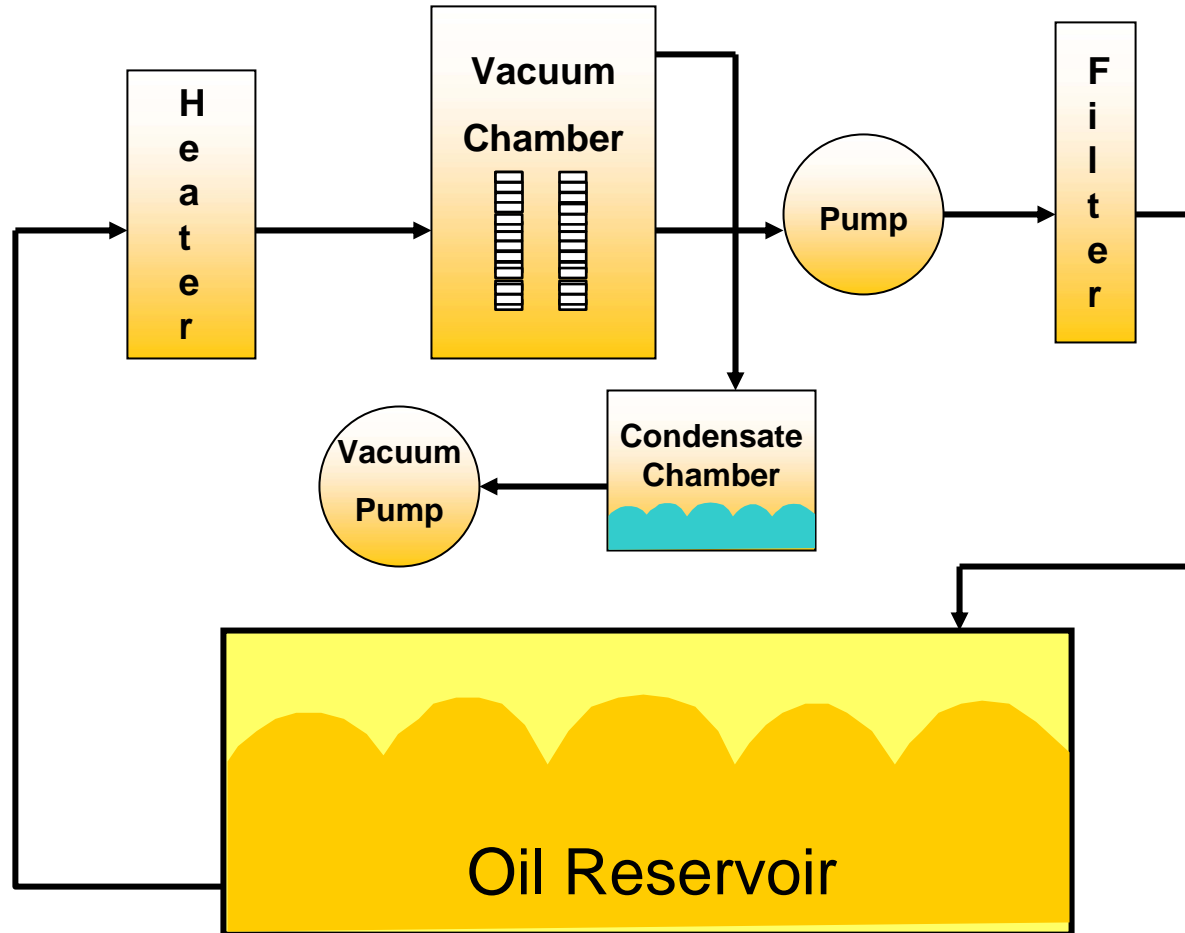
Centrifuge Systems



Vacuum Dehydration System

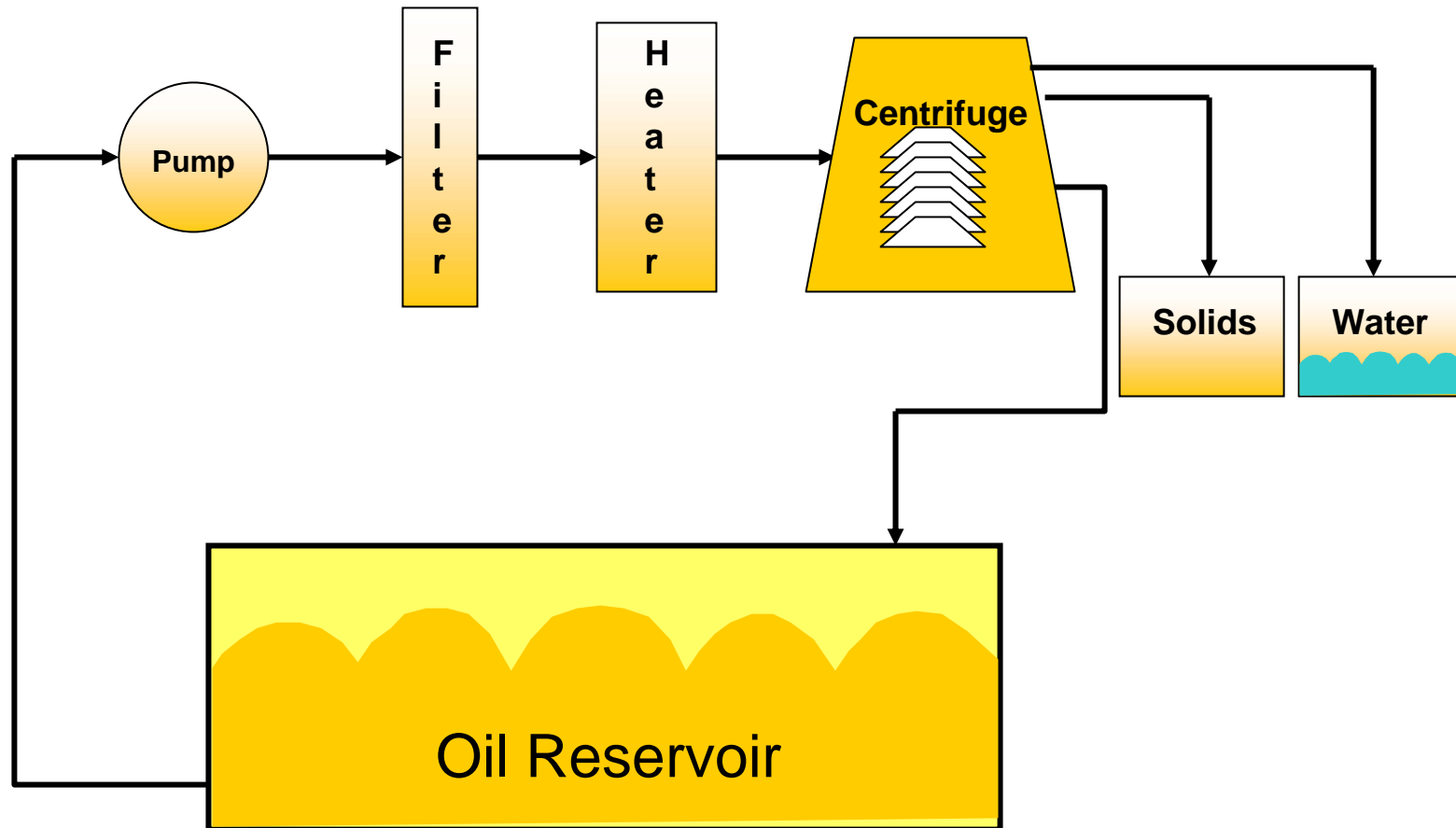


Separation based on vapor extraction.

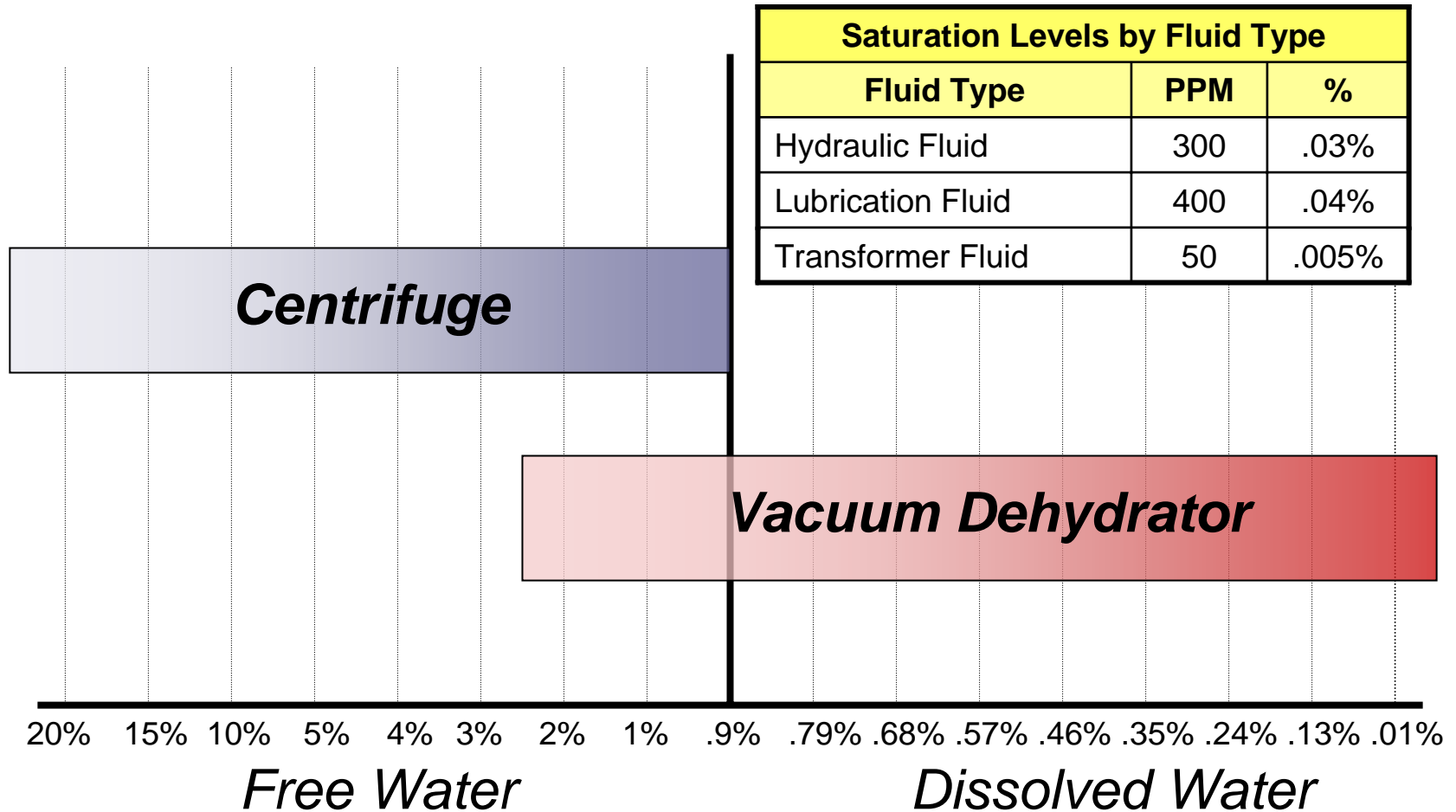


Centrifuge System

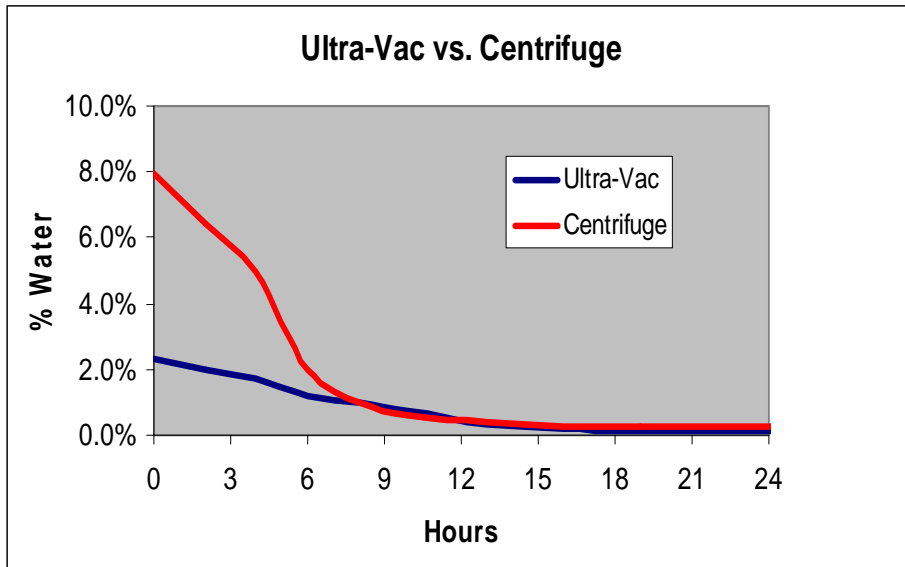
Separation based on specific gravity.



Water Removal Capabilities



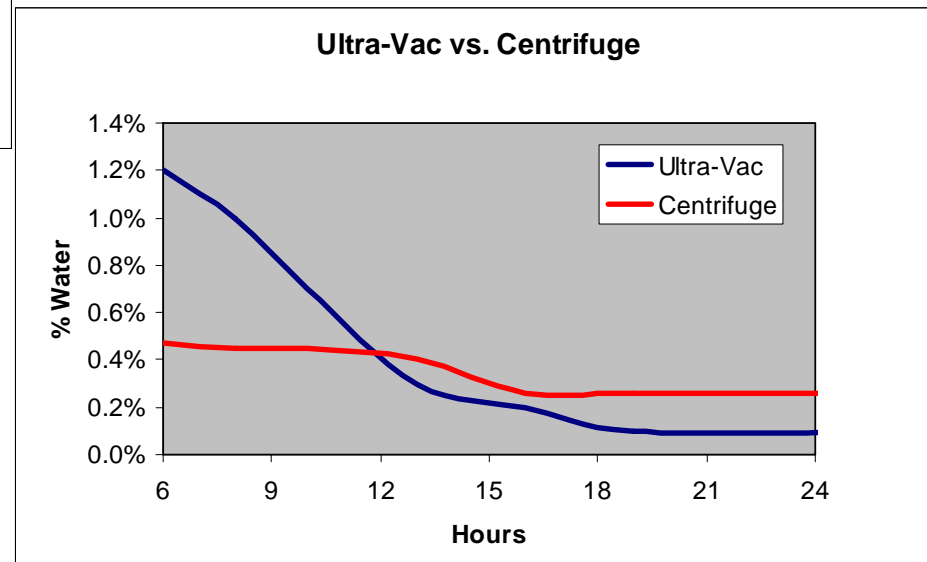
Rate of Water Removal



Test results based on running a UV1 vacuum dehydrator and an MAB 103 centrifuge on lube oil contaminated with water.

Test parameters:

- ISO 120 Gear Oil
- 25 Gal Tank
- 24 Hour Test
- Temp 150^oF



Solid Removal Capabilities



Centrifuge

Vacuum Dehydrator w/ Filtration

18/16/10

ISO Ratings

ISO Ratings by Equipment Type	
Machine/Equipment Type	ISO
Hydraulics, Rotary Screw Compressors	16/14/11
Vertical Motors, Turbines, Pumps	17/14/12
Recip. Air Compressors, Conveyors	18/15/13
Gear Reducers, Screw Conveyers	18/15/13
Turbine Drives	19/16/14

Ultra-Vac vs. Centrifuge System



Scale of 1 to 10 based on technical feasibility vs. cost with 10 being the best fit.

	Ultra-Vac	Centrifuge
Removing Free Water up to 20%	1	10
Removing Free Water up to 3%	8	10
Removing Dissolved Water	10	2
Gross Solids – ISO \geq 25/20/10	2	10
Removing Fine Solids (less than 3 microns)	8	2

Cost of Technology

